Approaches to Hungarian
Approaches to Hungarian (ATOH)

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Volume 11

Approaches to Hungarian. Volume 11: Papers from the 2007 New York Conference
Edited by Marcel den Dikken and Robert M. Vago
Approaches to Hungarian
Volume 11: Papers from the 2007 New York Conference

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Foreword

This is volume eleven of the series *Approaches to Hungarian*, which contains papers, listed alphabetically by author, from the 8th International Conference on the Structure of Hungarian (ICSH8), held on May 24–26, 2007, at The Graduate Center of The City University of New York (CUNY) and at New York University. ICSH8 was organized by the editors of this volume and Anna Szabolcsi of New York University.

Zsuzsanna Bárkányi and Zoltán Kiss present acoustic and perceptual evidence to demonstrate that in Hungarian word final v that follows a sonorant consonant undergoes partial neutralization with f, both phonetically and phonologically. They argue that their findings support a phonetically-grounded model of phonology.

Carlos de Cuba and Barbara Ürögdi present an extended argument to the effect that clausal complements of factive verbs are typically smaller than clausal complements of non-factive verbs, the latter allowing a double CP structure of sorts, with CP (a referential entity denoting a proposition) embedded within a cP (a non-referential entity denoting a speech act), whereas factive verbs generally do not tolerate cP complements. The evidence they bring to bear on this proposal comes, among other things, from the distribution and interpretive import of the Hungarian clausal expletive *azt.*

Based on the results of production and perception experiments, László Hunyadi refutes previous claims that systematic recursion is limited to the syntactic domain of language. He argues for the inherently recursive nature of speech prosody and shows that recursion is characteristic of non-linguistic modalities as well.

Presenting a refreshing look at a classic problem, Katalin É. Kiss studies the syntax, semantics, and prosody of Hungarian negative quantifiers, or *se*-words. One of the key ingredients of her proposal is that Hungarian has an overt Q-raising operation which freely adjoins a QP either to the left or to the right of the constituent over which it takes scope.

Donka Farkas’s paper is about the distribution of so-called polarity particles in Hungarian, including igen and nem. Embedded in a perspective on context structure, the proposal supports a distinction between absolute and relative polarity features, the former encoding the polarity of the asserted sentence itself and the latter the relationship of the asserted sentence to the immediately preceding utterance.

Working within the general theoretical framework of Government Phonology (and incorporating some of the ideas of Optimality Theory), Krisztina Polgárdi
suggests that the vowel / zero alternation in cases like bokor ‘bush,’ bokr-ok ‘bushes’ in Hungarian should be analyzed in terms of syncope, where alternating vowels are segmentally specified and lexically marked as properly governable. For Hungarian, Polgárdi proposes left-to-right or trochaic proper government and loosening the strict CV hypothesis at word edges by allowing words to end in a C position.

György Rákosi takes up the challenge of accounting for the distribution of ablative (‘from’) PPs harboring the cause in anticausative constructions (such as The window opened from the draught/*John), presenting a lexicalist account, couched within Reinhart’s approach to thematic relations, that treats these PPs as ‘thematic adjuncts’.

Adpositional preverbs and their ‘doubles’ (as in hozzá tolta az autóhoz ‘(s)he pushed it to the car’) are the subject of Balázs Surányi’s paper. For Surányi, the emergence of multiple tokens of an adpositional element is the result of partial chain reduction, with the adposition surfacing in two positions thanks to the fact that (as a result of reanalysis in the preverb position) the two copies of the PP are non-identical, hence both eligible for phonological spell-out. Surányi argues that the preverb doubling facts of Hungarian provide support for a particular phase-based, cyclic approach to the mapping of syntax to phonology.

Péter Siptár’s paper is concerned with accounting for the alternations exhibited by the infinitive suffix in Hungarian. Utilizing the principles of Optimality Theory, the conclusion is reached that the facts should be treated in terms of morphology rather than phonology. Specifically, the infinitive has a consonant-final allomorph before vowel-initial suffixes (e.g. vár-n-unk kell ‘we must wait’), and a vowel-final allomorph elsewhere (e.g. vár-ni-[j]uk kell ‘they must wait’; vár-ni ‘to wait’).

Anna Szabolcsi’s contribution to the volume is about the distribution of overt nominative subjects in Hungarian infinitival complements. Her paper argues on the basis of a variety of pieces of evidence that these nominative noun phrases are indeed located within the infinitival clause, and occupy their structural subject position. The fact that these nominative subjects of infinitival clauses consistently agree in person and number with the finite verb of the matrix clause is argued to be the key factor in allowing them to be overt.

Since the first ICSH, conference papers have appeared in the Approaches to Hungarian series. Papers from ICSH1 (held in Bloomington, Indiana in 1992) were published in volume four of the series, from ICSH2 (held in Szeged in 1994) in volume five, from ICSH3 (held in Amsterdam in 1996) in volume six, from ICSH4 (held in Pécs in 1998) in volume seven, from ICSH5 (held in Budapest in 2001) in volume eight, from ICSH6 (held in Düsseldorf in 2002) in volume nine, and from ICSH7 (held in Veszprém in 2005) in volume ten.

Each abstract submitted for presentation at ICSH8 and each manuscript submitted for publication in this volume was evaluated by multiple external reviewers. The following papers were presented at ICSH8 but are not included in this
volume (BUT = Budapest University of Technology; RIL/HAS = Research Institute for Linguistics of the Hungarian Academy of Sciences, Budapest):
Márta Abrusán (MIT): Akár and akárki: The role of focus particles in free choice indefinites
Huba Bartos (RIL/HAS): Eppur si muove? Backward control in Hungarian
Jeroen van Craenenbroeck (Hogeschool-Universiteit Brussel) and Anikó Lipták (Leiden Univeristy): Ellipsis bleeding sluicing: The interrogative suffix in Hungarian
Hans-Martin Gärtner (ZAS Berlin) and Beáta Gyuris (RIL/HAS): Interpreting ‘va-jon’
Veronika Hegedűs (Tilburg Univeristy): The Structure of Hungarian PPs
Edit Kádár (Babes-Bolyai University, Cluj-Napoca, Romania): The structure of Hungarian predicational and identification sentences
Bence Kas (BUT and ELTE, Budapest) and Ágnes Lukács (BUT and RIL/HAS): Acquisition of relative clauses in Hungarian children with and without language disorder: A comparison of comprehension and production
Anikó Lipták (Leiden University): De! A counter-expectational analysis
Ágnes Lukács, Péter Rebrus and Miklós Törkenczy (RIL/HAS): Paradigmatic space and defectiveness in Hungarian – An empirical study
Andrea Márkus (RIL/HAS): In which case there is no agreement
Christopher Piñón (RIL/HAS): Two kinds of durative adverbials in Hungarian
Csaba Pléh (BUT) and Ágnes Lukács (BUT and RIL/HAS): The relevance of Hungarian in studying language impairments: Experience and data from developmental disorders
Robert M. Vago (Queens College and The Graduate Center, CUNY): On the analysis of lowering in the inflectional system of Hungarian

We wish to express our gratitude to the external reviewers of the abstracts submitted to the conference and the manuscripts submitted to this volume, and to those who provided invaluable assistance in running the conference, including the Consulate General of the Republic of Hungary in New York.

We are also thankful to the sponsors of the conference: the Ph.D. Program in Linguistics, The Graduate Center, CUNY; the Office of the Provost, The Graduate Center, CUNY; the Department of Linguistics and Communication Disorders, Queens College, CUNY; the Office of the Provost, Queens College, CUNY; the Department of Linguistics, New York University; the Office of the Dean of Social Sciences, New York University; and the Research Institute for Linguistics of the Hungarian Academy of Sciences, Budapest.

The Editors
Hungarian \( v \)

Is it voiced?

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The present article describes an acoustic study and a perception experiment that investigate the contrast of the fricatives \( f-v \) after sonorant consonants in word-final position in Hungarian. In earlier work (e.g. Kiss & Bárkányi 2006) we found that in this context Hungarian \( v \) is mostly realized unphonated with considerable frication noise. The present paper shows that although the voicing of \( v \) is (partially) lost, its phonological contrast with \( f \) is not completely neutralized – there are other phonetic parameters (e.g. vowel and fricative duration, center of gravity) that differentiate between \( f \) and \( v \) in this position. However, we also demonstrate that \( v \) in this position is not fully recoverable perceptually either, in other words the contrast is not robustly cued enough. The paper also argues that phonetic features (such as the duration ratio of vowels and fricative constriction) that have been thought to be “redundant” in the phonology of Hungarian \( f-v \) (and obstruents in general) before are actually crucial and perceptually beneficial for maintaining their contrast in phonetically impoverished contexts.

1. Introduction\(^1\)

The seemingly odd phonological behavior of \( v \) in Hungarian has always attracted a lot of attention in the phonological literature, especially its two-fold patterning in voicing assimilation (see, among others, Szépe 1968, Barkai & Horvath 1978, Vago 1980, Olsson 1992, Kornai 1994, Siptár 1994, Zsigri 1994, Siptár 1996,

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\(^1\) We wish to thank Katalin Mády and Zsófia Gyarmathy for their help in the acoustic experiments as well as dealing with statistics. We also thank Katálín Baloghné Bérces for her help in a pilot perception experiment. We are also grateful to Péter Siptár, Anna Hamp and the reviewers for their comments. The research reported here was supported by the HNRF (“OTKA”) grants nr. TO49327 and nr. PD050018, as well as the Bolyai Grant.
Szigetvári 1998, Ritter 2000, Siptár & Törkenczy 2000 and Petrova & Szentgyörgyi 2004). V patterns with obstruents in being targeted by the process, but it behaves like sonorants as it does not trigger voicing assimilation. In Hungarian, if two obstruent segments with different values for voicing come to stand next to each other, it is always the second one that determines the voicing of the first, thus it acts as the trigger of the regressive voicing assimilation. The phenomenon is iterative, that is, it can apply to its own output. (1) illustrates this with a few examples:\(^2\)

(1) Regressive voicing assimilation in Hungarian

a. triggered by voicing
/\textipa{tb}/ \rightarrow [\textipa{db}]: e.g., \textit{hát-ba} ‘back-ill.’; \textit{két#barát} ‘two friends’
/\textipa{fb}/ \rightarrow [\textipa{3b}]: e.g., \textit{has-ba} ‘stomach-ill.’; \textit{hús#bolt} ‘meat shop’

b. triggered by voicelessness
/\textipa{bt}/ \rightarrow [\textipa{pt}]: e.g., \textit{láb-tól} ‘foot-abl.’; \textit{láb#torna} ‘foot exercise’
/\textipa{zt}/ \rightarrow [\textipa{st}]: e.g., \textit{víz-tól} ‘water-abl.’; \textit{víz#torony} ‘water tower’

c. voicing assimilation is right-to-left iterative:
/\textipa{skb}/ \rightarrow [\textipa{zb}]: e.g., \textit{groteszk-ben} ‘grotesque-iness.’
/\textipa{gdh}/ \rightarrow [\textipa{kth}]: e.g., \textit{smaragd-hoz} ‘emerald-allat.’

Unlike in Slavic and Germanic languages, for instance, obstruents in Hungarian do not devoice word-finally, as illustrated in (2):

(2) \[
\begin{array}{ll}
\text{láb-ak} & [\text{b}] \text{ ‘foot-pl.’ } \sim \text{láb} [\text{b}] \text{ ‘foot’;  láp-ok} [\text{p}] \text{ ‘marshland-pl.’ } \sim \text{láp} [\text{p}] \\
& \text{ ‘marshland’; méz-ek} [\text{z}] \text{ ‘honey-pl.’ } \sim \text{méz} [\text{z}] \text{ ‘honey’; mesz-ek} [\text{s}] \text{ ‘limestone-pl.’ } \sim \text{mész} [\text{s}] \text{ ‘limestone’}
\end{array}
\]

Sonorants are not devoiced and they do not voice the preceding obstruent:

(3) Lack of regressive voicing assimilation in obstreunt–sonorant sequences

a. Sonorants are not devoiced:
/\textipa{mt}/ \rightarrow [\textipa{mt}] (*[\textipa{mt}]): \textit{rémt-tól} ‘monster-abl.’
/\textipa{lt}/ \rightarrow [\textipa{lt}] (*[\textipa{lt}]): \textit{hal-tól} ‘fish-abl.’

b. Sonorants do not voice:
/\textipa{pn}/ \rightarrow [\textipa{pn}] (*[\textipa{bn}]): \textit{kép-nél} ‘picture-adess.’
/\textipa{sn}/ \rightarrow [\textipa{sn}] (*[\textipa{zn}]): \textit{rézsz-nél} ‘part-adess.’

\(^2\) The IPA transcription of the Hungarian letters the interpretation of which is non-obvious are as follows: \textit{ty}=/c/, \textit{gy}=/j/, \textit{sz}=/s/, \textit{s}=/ʃ/, \textit{zs}=/ʃ/, \textit{cz}=/tʃ/, \textit{cs}=/tʃ/, \textit{dzs}=/dʒ/, \textit{ny}=/n/, \textit{ly}=/l/, \textit{j}=/j/; \textit{a}=/æ/, \textit{á}=/aː/, \textit{e}=/e/, \textit{é}=/ɛ/. An acute accent over vowel letters signals length. Double consonant letters stand for geminates.
As we mentioned, Hungarian \(\mathcal{v}\) behaves asymmetrically with respect to voicing assimilation: it undergoes devoicing (4a), but does not trigger voicing (4b):

\begin{enumerate}
\item[4a.] /vt/ → [ft]: sav-tól ‘acid-abl.’
\item[4b.] /vh/ → [fh]: sav-hoz ‘acid-all.’
\item[4a.] /tv/ → [tv] (*[dv]): két vár ‘two castles’
\item[4b.] /sv/ → [sv] (*[zv]): kész vár ‘finished castle’
\end{enumerate}

As (4) shows, pre-obstruent (“coda”) \(\mathcal{v}\) behaves as an obstruent, while post-obstruent (and prevocalic) (“onset”) \(\mathcal{v}\) patterns with sonorants.

All previous analyses agree that \(\mathcal{v}\) is voiced both phonetically and phonologically in all positions. Views varied as to whether it is an obstruent or a sonorant. Few of the earlier works draw a parallel between \(\mathcal{v}\)’s two-fold patterning and its phonetic manifestation, and none of them are backed up by any experimental evidence. In Kiss & Bárányi (2006), Bárányi & Kiss (2007, to appear), Kiss (2007), we put forth an analysis of Hungarian (and Slovak) \(\mathcal{v}\), in which its phonological patterning (its allophony, behavior in voicing assimilation, and lexical distribution in clusters) can be explained in a model based on the phonetic properties of this sound and its immediate context. The most important claim we proposed was that the phonetic targets of \(\mathcal{v}\) (narrow constriction plus vocal fold vibration at a labiodental place) are compromised on aerodynamic grounds and can only be simultaneously maintained in phonetically favorable positions (on the contradictory articulatory targets of voiced fricatives, see, e.g., Ohala 1983). In such “beneficial” environments, the model predicted the emergence of a passively voiced “narrow” approximant \([\mathcal{v}]\), whose noise component is much less than that of voiceless fricatives (especially voiceless nonsibilant fricatives). We proposed and found that the articulatory targets of this consonant can be maintained next to sonorants – primarily vowels and (wide) approximants; see Kiss & Bárányi (2006). In such positions, \(\mathcal{v}\) is typically articulated as \([\mathcal{p}]\). The characteristic prevocalic realizations of \(\mathcal{v}\) vs. \(\mathcal{f}\) in word-initial and word-medial position are illustrated in Figure 1.

\begin{enumerate}
\item[3.] For an overview of former generative formalist/representational treatments of \(\mathcal{v}\) in Hungarian, see Kiss & Bárányi (2006) or Kiss (2007), and the references therein.
\item[4.] We adopted the term narrow approximant from Padgett (2002). He classifies Russian \(\mathcal{v}\) as [+sonorant, −wide], and provides an OT-based formalized phonological analysis of \(\mathcal{v}\)’s behavior in voicing assimilation in Russian (employing a constraint system and a binary feature representation). Padgett’s OT analysis can be extended to Hungarian as well; in this paper, however, we wish to focus solely on the phonetic properties of \(\mathcal{v}\) in word-final position (after consonants).
Figure 1. The typical realization of Hungarian \( v \) and \( f \) word-initially before a vowel (\( \text{vér} \) ’blood’, \( \text{fér} \) ’fits’) (top) and intervocally (\( \text{Keve} \) (proper name), \( \text{kefe} \) ’brush’) (bottom)

According to the model proposed in Kiss & Bárkányi (2006), in other positions \( v \) is predicted to give up either of its articulatory targets (voicing or narrow constriction, i.e., turbulent noise). As a result of this, two realizations are possible: when \( v \) becomes (partially or fully) unphonated, it turns noisy (it is produced with narrow constriction and wide abduction of the vocal folds); when its voicing target is preserved, it loses much of its friction (the constriction is wider). We argued that languages differ as to which of the two routes they follow. Hungarian was shown to be a language which prefers the “devoicing” strategy in aerodynamically unfavorable positions, while, for example, Slovak opts for “denoising”.

One of the contexts that our phonetically-based phonological framework predicted to be unfavorable for \( v \) to preserve all its articulatory targets simultaneously was the word-final position, especially after a consonant (\( \text{C} \_\# \)). In Kiss & Bárkányi (2006), Bárkányi & Kiss (2007, to appear) and Kiss (2007) we presented the results of acoustic experiments that verified this prediction: it was shown that the voicing
The target of Hungarian v was indeed partially lost,\(^5\) while its turbulence was preserved (actually enhanced) in words like kedv ‘mood’, nedv ‘fluid’, üdv ‘salvation’, terv ‘plan’, szerv ‘organ’, nyelv ‘language’, könyv ‘book’, enyv ‘glue’, ellenszenv ‘aversion’, ölyv ‘hawk’, and sav ‘acid’. Below we illustrate the two realizations of v in the alternating forms könyv ‘book’ (where v is noisy and unphonated) and könyvet ‘book-acc’ (where v is an approximant and phonated).

If it is indeed the case that Hungarian v is devoiced in (C)__# – a result previously unreported in the literature on this consonant (and any other obstruent in Hungarian) – the following question logically arises: with the loss of the voicing target, is there a complete loss of (possible) contrast, too? In other words, are speakers capable of recovering the possible contrast between word-final (post-consonantal) v and f in this language, or not?\(^6\) In this paper, we will present and discuss the results of an acoustic and a perception experiment that tried to investigate the question of the potential f–v contrast in post-sonorant, word-final (S__#) position in Hungarian (‘S’ stands for sonorants). We chose to investigate the post-sonorant context (rather than the post-consonantal position in general) because we wished

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\(^5\) According to the results of the acoustic experiment in Bárkányi & Kiss (to appear) for example, Hungarian v was realized with unvoiced frames of more than 50% in three contexts: after a consonant word-finally (mean unvoiced frames: 81%), before a voiceless obstruent (mean unvoiced frames: 67%), and word-finally after a vowel (mean unvoiced frames: 57%). v in this language was almost always voiced before voiced sounds, especially sonorants and vowels. According to the results of two-tailed t-tests, the differences between the mean unvoiced frame values of the preconsonantal vs. non-preconsonantal groups were always statistically significant (with \(p\) being always less than or equal to 0.007).

\(^6\) Note that there are no other contrastive fricative/approximant segments at the labial/labiodental place of articulation in this language, thus Hungarian does not have a contrastive /v/, /w/, for instance.
to only focus on word-final consonant–v clusters that actually exist in Hungarian. Obstruent–v clusters word finally are extremely marginal in this language; actually, the only obstruent that can occur before a word-final v in Hungarian is d.\(^7\) It is because of the very low type frequency of dv clusters (and the total lack of other obstruent–v clusters) that we did not consider d or other obstruents before final v in the present analysis.\(^8\)

Before we provide the details of this investigation, it is important to clarify the two senses of the term voicing that we are going to use in this paper. First of all, voicing in the narrow sense refers to the phonetic target of vocal fold vibration. This phonetic gesture may also be called phonation, or phonation event (in this paper, we will use phonation in this narrow, phonetic sense). Secondly, voicing may also refer to various phonetic properties that make the contrast between sounds like p–b, f–v, etc. possible to recognize (and describe in a phonological model). Periodicity of voicing itself is important, but the fact that the difference between say a whispered p and b is perceivable in the absence of phonation also shows that there must be factors other than phonation that cue the contrast.

If v is not (or only partially) phonated post-consonantal/post-word-finally in Hungarian, there are three relevant questions that may be asked:

1. Is there a complete neutralization of its potential contrast with f, or do other phonetic parameters remain that differentiate f and v in word-final position (“partial neutralization”)?
2. Can speakers nevertheless recognize v in this position (despite the lack of phonation)?
3. Is there a correlation between the various phonetic parameters cueing the contrast and the level of recognition of the f–v contrast? In other words: which are those phonetic properties that cue the contrast the most?

Accordingly, the main aims of this paper will be:

1. to enumerate the (acoustic) phonetic parameters that can be argued to cue the voicing contrast of f and v;
2. to present the results of an acoustic experiment we carried out that investigated these parameters for Hungarian f and v in post-sonorant/post-word-final position;
3. to present the results of a perception experiment that investigated the relevance of some of these acoustic cues in the perception of native speakers of the f–v contrast in this particular context.

\(^7\) Here is the total list of words with final dv: kedv ‘mood’, nedv ‘fluid’, üdv ‘salvation’.

\(^8\) Further research is necessary to investigate the phonetics of v and its phonological contrast with f in this marginal (and phonetically rather marked) context.
2. Acoustic cues of the contrast between \( f \) and \( v \)

(5) lists the acoustic properties that are generally thought in the literature to be relevant to the contrast of \( f \) and \( v \) after sonorants, word-finally.\(^9\)

(5) a. internal cues:
   i. phonation (periodic vocal fold oscillation) during the constriction phase of the fricative
   ii. duration of fricative
   iii. mean intensity level of fricative (not investigated here)

b. offset cues:
   i. duration of preceding vowel (+sonorant)
   ii. low frequency spectral features (e.g., \( f_0 \) and F1) of vowel (not investigated here)

In a previous paper (Kiss & Bárkányi 2006), we found the first spectral moment, the center of gravity (CoG) a relevant phonetic parameter to distinguish between the various realizations of Hungarian \( v \). In this study of word-final, post-sonorant \( v \), we also wished to check the effect of this phonetic parameter in addition to those listed in (5).

In what follows, we will provide a short overview of the phonetic parameters enumerated in (5) that we investigated in the experiments and will discuss in this paper.

Phonation. Phonation during the constriction phase of fricatives is an important acoustic correlate (and perceptual cue) of the voicing contrast of fricatives. Phonation is manifested in wideband spectrograms as periodic vertical striations that represent each pulse of the vocal folds and by strong intensity in the spectrum at the low frequencies. This periodicity is superimposed on the noisy spectrum in the case of phonated fricatives and is lacking in the case of unphonated fricatives.

Data on the articulation of voiceless fricatives show that they are produced with a widely adducted glottal configuration, very similar in size to that of voiceless aspirated plosives (Löfqvist 1981, Löfqvist & Yoshioka 1980, Yoshioka et al. 1981, 1982, Jansen 2004). The noisiest fricatives are typically unphonated or partially unphonated. Stevens et al. (1992) and Stevens (1998: 96) show that if the cross-sectional area of the glottal opening is larger than the opening at the oral constriction, transglottal airflow exceeds the airflow through the oral constriction, which causes an increase in intraoral pressure with a concomitant decrease in the transglottal pressure differential. As Jansen (2004: 40) writes, “since it removes both of the basic conditions for vocal fold vibration, any fricative that is produced with a substantial

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amount of glottal abduction therefore becomes devoiced during most if not all of the frication interval”. For example, experimental work on the phonation of English and German voiced fricatives suggests that fricatives tend to be produced as partially or fully unphonated, depending on the phonetic context. For instance, Docherty (1992) finds that on average 89.3%, 100.0%, and 84.8% respectively of the friction intervals of utterance-initial /v, ð, z/ is produced with phonation. The percentages found by Haggard (1978) show the same pattern with proportionally the longest voiced spans for /ð/ and the shortest for /z/. Jessen (1998) reports a somewhat lower figure of 76% voicing for the constriction intervals of German /v, z/. The total or partial lack of phonation in phonologically voiced fricatives (similarly to voiced stops) has been found to be more common in word-final/pre-pausal position than elsewhere. For example, according to the results of Jesus (2001) on European Portuguese fricatives, devoicing is most likely word-finally and for posterior fricatives.

**Duration.** It has been long observed that there is a correlation between the voicing properties of obstruents and the duration of preceding stressed vowels (or vowel+sonorant sequences), and the duration of closure or constriction of the obstruent (see, among others, House & Fairbanks 1953, Chen 1970, Lehiste 1970, Kluender et al. 1988). More closely, voiceless obstruents as opposed to voiced obstruents are relatively long, and vowels (or vowel+sonorant sequences) before them are relatively short. This has been referred to in the English literature as Pre-Fortis Clipping (Wells 1982, Harris 1994). On the other hand, voiced obstruents are relatively short, while vowel or vowels+sonorants before them are relative long. This is often called Pre-Lenis Lengthening, especially in the American literature (Chomsky & Halle 1968). For instance, Jones (1957: 233) writes, “the ‘long’ vowels (and diphthongs) are shorter when followed by a voiceless consonant than when final or followed by a voiced consonant. […]” Thus, the vowel i is shorter in *seat* siːt, than it is in *sea* siː or in *seed* siːd […]. […] The ‘long’ vowels (and diphthongs) are also shorter before a nasal consonant or I followed in turn by a voiceless consonant. Thus the x in *fault* fɔːlt is shorter than that in *fall* fɔːl or that in *falls* fɔːlz, the x in *learnt* lɜːnt is shorter than that in *learn* lɜːn or *learns* lɜːnz.” Later (p. 237), he adds “liquids10 are longer when followed by voiced consonants than when followed by voiceless consonants. Thus the n in *wind* wɪnd is longer than that in *hint* hɪnt, the l in *bald* bɔːld is longer than that in *fault* fɔːlt, the m in *number* nʌmbə is longer than that in *jumper* dʒʌmpə.”

Jongman (1989) and Kreitman (2008) found that different fricatives seem to have different intrinsic duration. According to the results of Jongman (1989) for instance, English /ʃ/ is longer than any other fricative. He also found that fricative length varied according to the quality of the neighboring vowel (he examined CV sequences).

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10. For Jones nasals are also ‘liquids’.
Since speakers typically talk at different rates, the absolute durations of the segments are highly variable, and this is of major concern in acoustic experiments, too. It has been found, however, for English and German for instance (Port & Dalby 1982, Port & Leary 2005) that the ratio of vowel duration to stop closure or fricative constriction remains rather constant in words with the same voicing feature. More closely, the V-to-C duration ratio is generally larger for voiced obstruents than for voiceless obstruents. This ratio is relatively invariant across changes in speaking rate, syllable stress, and segmental context. The durational effects have been given both articulatory and perception-based accounts. Already Chomsky and Halle argue, for instance, that “the very common lengthening of vowels before voiced obstruents can be explained on the grounds that it requires time to shift from the glottis configuration appropriate for vowels to that appropriate for obstruents” (Chomsky & Halle 1968: 301; see also Belasco 1953). Stevens et al. (1992) argue, however, that voiced fricatives have shorter frication intervals because they are produced with a smaller glottal abduction gesture, which satisfies the aerodynamic requirements for turbulent noise generation for a relatively short interval in comparison to the large abduction gesture that accompanies voiceless fricatives.

On the other hand, many perception-driven accounts derive the inverse patterning of voiced–voiceless obstruent length and preceding vowel duration as a form of mutual auditory enhancement for the voicing contrast. The idea is that increased vowel duration makes the duration of a following obstruent appear shorter, and conversely that a decrease in vowel duration increases the perceived duration of a following obstruent, and that vowel duration and obstruent duration are therefore integrated into a single percept (Port & Dalby 1982, Port & Leary 2005, Massaro & Cohen 1983, Kluender et al. 1988). This hypothesis has been largely supported by experimental evidence. Thus, listeners pay attention especially to the relative duration of a vowel and the constriction duration of a following obstruent (Javkin 1976, Parker et al. 1986, Kingston & Diehl 1994).

Center of gravity (CoG). Spectral moments have been widely used in the literature (Jassem 1979, Forrest et al. 1988; Ladefoged 2003: 156ff; Gordon et al. 2002, Hamann & Sennema 2005) to quantify consonantal – in particular fricative – characteristics, especially with the need to distinguish one fricative from the other, across vowel context and speaker.11 The first spectral moment, center of gravity (or ‘centroid’), is a measure for how high the frequencies in a spectrum are on average over the entire frequency domain weighted by the amplitude (the power

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11. See, however, Shadle and Mair (1996) and Shadle (2005) on the problems of using spectral moments in reliably quantifying the differences between fricatives. They can, however, be reliably used to quantify turbulence (‘fricative’) from non-turbulence (‘vowel-like/sonorant’); on this use of spectral moments, see especially Kiss & Bárányi (2006), Kiss (2007) and Hamann & Sennema (2005).
spectrum); it thus represents a spectral mean. For a labiodental/labial place of articulation, the power spectrum is expected to change as the constriction becomes less and less narrow (i.e., as the production changes from [f] through more ’lenis’ (more open) [v] and to wide [v]/[w]). Relatively high CoG is expected for [f]/[y] as frequencies in these sounds are assumed to be spread over a wide range (well up to 10 kHz) at a relatively constant intensity level (see, e.g., Jassem 1979, Stevens 1998: 394). In the case of the labial glide [v]/[w], as Stevens (1998: 523–526) reports, the lower frequencies (typically only until 1 kHz) will be more intense, and those above 2 kHz will have only very little intensity – this suggests a very low level of CoG for the labial glide. Narrow approximant [y] is then assumed to occupy an intermediate place between [f]/[y] and [v]/[w] as far as its spectral centroid is concerned – indicating, among other factors, an intermediate constriction degree for the articulation of this sound. Assuming that the place of articulation does not change considerably for v (it remains labial/labiodental), generally speaking, CoG is pulled towards the high frequencies by a sound excited by a noise source and towards the low frequencies in a sound whose production involves excitation by vocal fold vibration (and vowel-like formant structure).

3. The voicing of Hungarian v in S__#: An acoustic experiment

3.1 Method

To check the relevance of the acoustic correlates that we listed in (5), an acoustic experiment was devised with the following properties. The experiment tested eight minimal pairs, all with nonsense words. The words contained two vowels – i and á –, followed by a sonorant: r, l, ny, and j, and then the fricatives word-finally:

(6)  
birf – birv  
tárf – tárv  
bilf – bilv  
tálf – tálv  
binyf – binyv  
tányf – tányv  
bijf – bijv  
tájf – tájv

The words (and other, filler words) were put in the following carrier sentence: A _____ egy régies kifejezés, nekem mégis tetszik a ____. ‘_____ is an old-fashioned expression, yet I like ____.’ In each case, the sentence-final words were examined. The first occurrence of the test words was used to accommodate the subjects to the
test words so that they could produce them as naturally as possible (despite the fact that the words were all nonsense). The sentences were read out by six native speakers of Hungarian seven times (of which the first set was discarded from the acoustic analysis). Altogether 576 tokens were gained (6×6×16=576, with 288 v-tokens per set). The speech rate was controlled by using exactly the same carrier sentence, and test words also had the same number of segments. A laptop computer was used for the recording. This computer was hooked up with an M-Audio MobilePre USB preamplifier, which itself was connected to a Sony ECM-MS907 microphone (this way, the digital recording was kept intact: no retransmission (from digital to analogue, and back to digital) was necessary; also the possible noise interference coming from within the computer was circumvented). The recordings were sampled at 44,100 Hz, and before being analyzed in Praat (v. 4.5.18; Boersma & Weenink 2005), they were resampled at 22,050 Hz, so that the expected fricative ranges (up to 10,000 Hz) could be measured.

The degree of phonation was measured in the following two ways:

(7) a. measurement of the fraction of locally unphonated frames in percent;  
b. the periodicity-to-noise ratios of sounding frames in dB

The fricative interval was segmented out from the vowel–sonorant–fricative sequence by selecting the post-sonorant portion with a clearly noisy spectrum. It was in this turbulent interval that we measured the phonation properties listed in (7).

The fraction of locally unphonated frames was measured using Praat’s Voice Report (where frame refers to the analysis window that Praat uses for measurements). We used Praat’s default settings (pitch range: 75 Hz–500 Hz, advanced pulses settings, maximum period factor: 1.3, maximum amplitude factor: 1.6, pitch setting was optimized for voice analysis – see Praat’s manual). For example, if Praat’s Voice Report says “Fraction of locally unvoiced frames: 14.000% (14/100)”, it means that out of 100 analysis windows 14 were voiced, i.e., 14% of the selected interval.

To compare the relation of voicing to frication, we adopted Hamann and Sennema’s (2005) method of finding what they call the harmonicity median, i.e., the degree of acoustic periodicity in (intensity level, IL) dB. The harmonicity median was determined by calculating the average of the harmonics-to-noise ratio with the following (standard) Praat settings: time steps: 0.01 s, minimum pitch: 75 Hz, silence threshold: 0.1, and 1 period per window. The interpretation of the median values is the following (see Boersma 1993). A harmonicity median of 0 dB means that there is equal energy in the harmonics and in the noise signal, whereas a median approximating to 20 dB indicates that almost 100% of the energy of the signal is in the periodic part. Based on this, a v with a harmonicity median around 0–2 dB suggests that it has a turbulent/noisy (nonperiodic) realization.
The spectral qualities of \( f \) and \( v \) were compared by measuring the *center of gravity* in the constriction interval of the fricatives. Signals were high-pass filtered with a center frequency of 500 Hz and a smoothing of 100 Hz to exclude the influence of the fundamental frequency in the voiced fricatives. Several fast Fourier transform (FFT) spectra were computed for each fricative using a Gaussian window shape with a physical length of 50ms. The first measurement was taken at 28ms into the fricative interval, then the 50ms window was shifted with 5ms increments until the whole of the segment was covered. For the actual analysis, only the middle windows were used (between window nr. 5 (at 48 ms) and, if the sound was long enough, nr. 11 (78 ms)) to insure that no vowel-transition effects interfere. In this way several overlapping slices were made of each fricative. For shorter fricative samples (below 50ms), a 30ms Gaussian window was employed (with 15–15ms around the cursor) and only one or two slices were gained. This multiple, overlapping windowing method is indispensable in the spectral analysis of sounds (such as fricatives) whose distribution of energy is (quasi-) random, inconstant.\(^{12}\)

The *duration* experiments went as follows. In the vowel–sonorant–fricative sequence, the fricative interval was marked to be that portion where the preceding sonorant’s formants ceased (the spectrum became noisy) and the intensity level dropped. The end of the fricative constriction was marked at that point where the noisy spectrum ceased, the intensity sharply dropped, and was followed by silence. The vowel plus sonorant portion was segmented out as follows: the sequence was considered to start where the burst noise of the word-initial stop ended; the end of the vowel plus sonorant sequence was the point where the noise spectrum of the word-final fricative started.

We measured the following durations:

(8) a. duration of the vowel+sonorant sequence (Vd)
   b. duration of the fricative interval (Fd)
   c. the ratio of Vd to Fd
   d. the ratio of Vd to Vd + Fd together

3.2 Results

Figure 3 shows the percentage of unvoiced frames as well as the harmonicity median of \( f \)- and \( v \)-tokens respectively.

\(^{12}\) On the problems of the spectral analysis of turbulent sounds, and on the use of the overlapping windowing method, see for example, Ladefoged (2003: 153ff).
As Figure 3 indicates, both $f$ and $v$ in the tokens of the experiment were pronounced predominantly voiceless (the percentage of unvoiced frames were higher than 50% on average and the harmonicity median was only around 1–3 dB on average). This finding is in accordance with our earlier results (cf. Kiss & Bárányi 2006, Bárányi & Kiss 2007, to appear, Kiss 2007): Hungarian $v$ in S__# tends to be unphonated.13

Let us turn to the CoG parameter. Figure 4 displays the CoG averages of the $f$- and $v$-tokens in the word pairs used in the experiment. The phonologically voiceless member always has a higher CoG value than its voiced counterpart. As a two-tailed t-test proved, despite the fact that there is virtually no phonation in either sound, the CoG parameter can significantly distinguish between voiceless $f$ and phonologically voiced but phonetically unphonated $v$ (actually $[\ddot{y}]$) ($p<0.001$; see Figure 5).

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13. Bőhm & Olaszy (2007), in a work published subsequent to ours, also confirmed our results. They found the average harmonics-to-noise ratio (HNR) of Hungarian $v$ word-initially before a vowel and intervocally to be 17 dB and 16.5 dB respectively, while in word-final position after vowels the HNR was 8.3 dB, and in C__# it was 7.3 dB. Before voiceless consonants, they found the HNR of $v$ to be 2.3 dB on average.
Next, let us consider the duration-related parameters. As we mentioned above, fricative length can vary with the quality of the neighboring vowel (see, for example, Jongman 1989). However, we did not find statistically significant differences in absolute fricative length according to vowel quality context. The average duration of $f$ in $i$-tokens was 170.7 ms, while in $a$-tokens it was 169.1 ms (two-tailed t-test: $p=.746$).
Figure 6. Mean absolute duration (in s) of the fricative in f- vs. v-tokens. The bar charts on the left show means with extreme cases; the error bars on the right show the 95% confidence interval means.

The average duration of v in i-tokens was 116.9 ms, in á-tokens: 116.7 ms (two-tailed t-test: \( p = .945 \)). Figure 6 displays the aggregated mean absolute duration of the fricative in f- vs. v-tokens before both i and á. The difference between the two groups was statistically significant (\( t(567) = 18.641, \ p < 0.001 \)).

The average absolute duration of the vowel+sonorant sequence and that of the fricative for each word-type is shown in Figure 7. According to this figure, the fricative is always longer in f-tokens than in v-tokens (i.e., mean duration of v is shorter than that of f). Thus, the absolute length of the fricative can significantly differentiate between f and v in the tokens investigated. The length of the vowel+sonorant sequence (Vd) is always longer before the fricative in v-tokens than in f-tokens. This strongly suggests that Hungarian also shows the effect of “Pre-Fortis Clipping” or “Pre-Lenis Lengthening”, a phonetic effect that appears to be redundant in most contexts, but turns out to be crucial in maintaining the difference between f and v in S__#. The important role of vowel (plus sonorant, if available) duration in obstruent contrast word-finally has been well-known in Germanic languages, but it has not been reported to play a role in the contrast maintenance of fricatives in Hungarian before.
Figure 7. Mean absolute duration of the vowel+sonorant sequence and that of the fricative for all subjects by word type

Figure 8. Mean absolute duration (in s) of the $i$+sonorant sequence before $f$ vs. $v$. The bar charts on the left show means with extreme cases; the error bars on the right show the 95% confidence interval means
Since ă in Hungarian is always longer than i in all positions, we will discuss the duration-related results of i-tokens and ă-tokens separately. The mean duration of the i plus sonorant interval in the f-tokens vs. v-tokens is shown in Figure 8, whereas the mean duration of the ă plus sonorant sequence in the f-tokens vs. v-tokens is shown in Figure 9. As the figures show, the length of the vowel plus sonorant sequence was shorter before f than before v, both when the vowel was short i and when it was long ă. According to two-tailed t-tests, the difference between the two groups in each case was statistically significant (when the vowel was i: $t(283) = -4.581, p<0.001$; when the vowel was ă: $t(283) = -4.913, p<0.001$).
The mean ratio of Vd (i.e., duration of the vowel+sonorant sequence) to that of the duration of the fricative (Fd) in each word is exhibited in Figure 10. According to the figure, the Vd : Fd ratio is always smaller in the case of f-tokens than in v-tokens (as expected). The average Vd : Fd ratio in f-tokens was 1.27, whereas that in v-tokens 2.08. In simple terms, the mean length of the vowel+sonorant sequence was about the same as the length of the fricative in f-tokens, while it was twice as much in v-tokens.

We also measured the Vd : Fd ratio for the two vowel groups (i-tokens vs. á-tokens) separately. Figure 11 clearly displays that the length of the i plus sonorant sequence was almost twice as much as that of the fricative in v-tokens, whereas it was around the same length in the case of f-tokens. The difference between the two groups was statistically significant (two-tailed t-test: $t(285) = -11.460, p<0.001$). Figure 12 displays a very similar situation: the length of the á plus sonorant sequence is just over twice as much as that of the fricative in v-tokens, while the duration of the á plus sonorant interval is 1.36 times as long as that of the fricative in the case of f-tokens. Again, the difference between the two groups was statistically significant (two-tailed t-test: $t(282) = -12.188, p<0.001$).
Figure 11. Mean ratio of the duration of the $i$+sonorant sequence and the fricative duration in $f$- vs. $v$-tokens. The bar charts on the left show means with extreme cases; the error bars on the right show the 95% confidence interval means.

Figure 12. Mean ratio of the duration of the $á$+sonorant sequence and the fricative duration in $f$- vs. $v$-tokens. The bar charts on the left show means with extreme cases; the error bars on the right show the 95% confidence interval means.
The ratio of $V_d$ to the whole of the $V_d+F_d$ sequence was also measured. On average, the ratio was smaller for $f$-tokens (0.528 for $i$-words and 0.568 for $â$-words) than for $v$-tokens (0.644 for $i$-words and 0.681 for $â$-words). According to two-tailed $t$-tests, this parameter’s (“$V_d: (V_d+F_d)$”) ability to distinguish between the two voicing groups for each vowel group was also statistically significant ($p<0.001$).

3.3 Summary

To sum up, even though the various acoustic experiments showed that neither $f$ nor $v$ was phonated in $S__#$ (hence, this parameter cannot safely differentiate the two sounds in this environment in Hungarian), there are other relevant phonetic parameters that can unequivocally distinguish them. The average frequency distribution, or center of gravity was significantly different in $f$ vs. $v$ tokens. Thus, although both sounds are unphonated and fairly noisy, the mean frequency level is crucially different in them.

The absolute duration of the vowel+sonorant interval before $f$ vs. $v$, as well as the absolute mean duration of the two fricatives were also significantly different. The quality of the vowel ($i$ vs. $â$ in our experiment) did not influence the absolute duration of the fricative: after both $i$ and $â$ the constriction interval of $f$ was always longer than that of $v$. Similarly, we found the vowel plus sonorant interval to be always shorter before $f$ than before $v$ regardless whether the vowel was $i$ or $â$. Lastly, the ratio, between the vowel+sonorant duration and the duration of the constriction phase of the fricatives was also found to be significantly different in $f$- vs. $v$-tokens: the vowel plus sonorant interval was around twice as much as the fricative interval in the $v$-tokens, while it was around the same in the $f$-tokens. The ratio of the vowel plus sonorant interval to the whole vowel–sonorant–fricative sequence was smaller for $f$-tokens than for $v$-tokens. Again, the relational difference between the two groups was statistically significant and the relative difference between the two groups was the same for both $i$-words and $â$-words.

4. The voicing of Hungarian $v$ in $S__#$: A perception experiment

4.1 Method

The perception experiment used the same set of words as was recorded in the acoustic experiment; we repeat them in (9) here for convenience.
For the perception experiment we selected those tokens in which both fricatives (\( f \) and \( v \)) were fully unphonated. The test words were always presented in the following carrier sentence: *Nekem mégis tetszik a ____.* ‘But I still like ____.’ The subjects participating in the experiment had to write down what they heard (the sentences were played from laptop computers through headphones). The test words were presented to the subjects in randomized lists. Altogether 45 subjects took part in this experiment. The test words formed four sets, and all participants were tested on all four sets (there were 720 items per set). The four sets were assembled as follows:

(10) a. **Set A**: test words were used from the acoustic experiment without any modification.

b. **Set B**: the final fricatives were interchanged, so for example original *bijv* and *bijf* became *bijf* and *bijv*. In this set thus the vowel (plus sonorant) duration and quality information was misleadingly distorted.

c. **Set C**: the same set as **Set A**, except that the final fricative was cut from its original length to 80 ms. In this set thus the “absolute” length difference between *f* and *v* is eliminated (recall: the mean duration of *f* was 169 ms, while the mean duration of *v* was 117 ms).

d. **Set D**: the same set as **Set B**, but here the final fricatives were all shortened to 80 ms.

4.2. Results

Figure 13 exhibits the percentage of correct recognitions of all *f*’s and *v*’s by word set. “Incorrect recognitions” were those in which subjects perceived *v* as *f* and *f* as *v*, all else was considered an error and therefore discarded (error rate: 11/2880).

As Figure 13 clearly indicates, **Set A** performs the best (as expected), **Set C** performs very well, too, which suggests that the cueing capability of the vowel is more important than the (durational) cueing potential of the fricative constriction itself.
Let us break down the overall results to consider the correct recognition of $f$’s and $v$’s separately per each set (Figure 14).

Rounds of $\chi^2$ tests were computed to establish whether the difference between the various sets was significant or not. The difference between the recognition of $f$-tokens and $v$-tokens in all sets – even Set A – turned out to be statistically significant ($p<0.001$). This strongly suggests that the recognition of $v$ deteriorates considerably: although there is no complete neutralization, as we have seen, there is no full-fledged contrast preservation either. These facts are indicative of
**partial/incomplete neutralization**, in accordance with the results of other studies on other languages.\(^{14}\)

If we compare \(f\)-tokens, there is no statistically significant difference between Set B and Set C. This suggests that when vowel duration/quality cues are misleading but the fricative is not shortened (as in Set B), \(f\) is recognized as well as with appropriate vowel cues. In Set C the fricative was shortened to 80 ms, about half its “natural” (customary) length.

If we compare \(v\)-tokens, there is no statistically significant difference between Set A and Set C. This state of affairs strongly suggests that for the recognition of an utterance-final \(v\), vocalic cues are of utmost importance, they are more important than the cues supplied by the fricative itself. Lastly, no statistically significant difference was revealed between Set B and Set D, both perform below chance – this again confirms what has been suggested above, namely, that for the recognition of \(v\), vocalic cues are more important than fricative cues: in over 70% of the cases, \(v\) in these tokens was perceived as \(f\).

5. **Summary and conclusions**

Based on the results of the perception experiment discussed above, we can conclude that the lack of phonation in both \(f\) and \(v\) after sonorants/word-finally does not lead to a total neutralization of their phonetic differences (despite the fact that they are largely unphonated and fairly turbulent in this phonetic environment). However, the remaining set of phonetic parameters/cues – especially those related to the vowel (plus sonorant) do not result in a successful recognition of \(v\) in this position either. The results are indicative of partial/incomplete neutralization of the phonetic differences between \(f\) and \(v\) (and thus potentially of a partial/incomplete suspension of the \(f\)--\(v\) contrast, too). We found that in the recognition of \(v\), cues that reside in the vowel (and sonorant) interval weigh more than those in the fricative interval. However, future research must investigate which vocalic cues are those that seem to be playing a crucial role here (duration?, formant transitions?, low frequency spectral features?, etc.).

Furthermore, these results have an important consequence for the traditional (discrete-formal) view of phonology, in which incomplete loss of phonological contrast cannot be expressed. The loss of a, say, “[+voice]” feature in S____# (or a change in the form of “[+voice] → [–voice]”) simply means that the given segment becomes voiceless, hence there is voicing neutralization. In such a system, the fact that other features (phonetic parameters) remain that can cue the same contrast cannot be formally expressed. These properties are considered “redundant”, and as such, cannot play a role in phonology. In the phonetically-based model we assume, these “redundant” features (potential contrast-preserving cues) are thought to be important, especially when other properties are lost (due to various phonetic reasons, like the incompatibility of high amplitude noise and voicing). In such unfavorable situations, these “redundant” features are called upon and made good use of in aiding recognition, parsing, and thus helping to maintain the phonological contrast. Thus, whereas in other contexts, these “redundant” cues only play a secondary role, in contexts of neutralization (like the word-final, post-consonantal position) they remain the only crucial cues to preserve obstruent contrast.

We see the current paper as an important contribution to the phonetic and phonological description of Hungarian for two reasons. Firstly, we have shown that the phonetic difference between word-final $f$ vs. $v$ after sonorants is diminished: words with phonological $v$ are articulated without phonation or with only partial phonation – this has not been reported in the literature for Hungarian before. Secondly, we have also shown that despite the fact that $v$ is (partially) unphoned in this context, its phonological contrast with $f$ is not fully lost although it is not fully recoverable either. We argued that the neutralization of the contrast between $f–v$ in S____# is thus incomplete. We have found that vowel duration plays a crucial role in retaining the phonological contrast of $f$ and $v$ – this has been a well-known property of many languages (especially in the Germanic family), but has been regarded as phonologically irrelevant for Hungarian until now.

We also see the current paper as an important contribution to phonological theory in general. We wished to highlight an area of grammar – partial laryngeal neutralization in post-consonantal/word-final position – that poses serious challenges to traditional phonological theories. We consider such areas of the grammar important because they hold the potential seeds of future sound changes. Neutralization contexts like the one we described here can be considered unstable contexts, where change is likely to take place. Furthermore, the fact that the difference between $v$ and $f$ is not salient enough in S____# might be the crucial phonetic (phonetically-grounded) precursor to why such words are conspicuously rare in the contemporary lexicon of Hungarian (and in other languages): the likelihood of these sounds to be perceived as the same (“$f$-like”) is rather high (as the perception experiment has strongly indicated).
Overall, this paper has tried to show that phonetic factors may directly influence phonological patterning. Partial neutralization of $f$–$v$ has been argued to arise due to aerodynamic and perceptual factors; however, the eventual partial preservation of the contrast of $f$–$v$ has also been shown to be directly related to phonetic (acoustic and perceptual) factors. For this reason, we see this paper as one of the contributions to the growing body of works in the “phonetically-grounded/functionalist” phonological model.

References


Eliminating factivity from syntax*

Sentential complements in Hungarian

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This paper contributes to the ongoing discussion on the syntax and semantics of object clauses. Using data from Hungarian and English, we claim that ‘factivity’ is a lexico-semantic concept without a direct correlate in syntax. Instead, we propose that ‘referentiality’ is the feature that differentiates a simple [CP] (the syntactic realization of a proposition) from a more complex [cP[CP]] (encoding a speech act). We support this analysis by looking at the interpretation of sentential embedding constructions and the distribution of clausal expletives in Hungarian. Our account allows us to appeal to the referential property of CP to explain wh-extraction patterns (i.e. the ‘factive island’ effect), as well as syntactic and semantic constraints on wh-expletive constructions.

1. Introduction

This paper argues for the thesis that the syntactic complexity of a complement clause is directly mapped from the clause’s semantic type, and this can be read off the phrase itself without reference to external factors (such as the selecting verb). In particular, we argue against approaches making reference to the factivity of the main verb in analyses of the internal structure of embedded clauses. Since Kiparsky & Kiparsky 1971 (K&K henceforth), verb classes have been exploited to explain the syntactic and semantic behavior of sentential embedding constructions. While the classic Kiparskian stance is that factives embed a CP headed by a nominal (rather than a simple CP, as non-factives do), several recent works have argued that it is non-factive complement clauses that have a more elaborate left periphery.

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II. All syntactic, semantic and prosodic effects traditionally associated with factivity can be observed in non-factive contexts as well in cases where the embedded proposition is a referential CP (an option that is freely available on our account). In such contexts, non-factive constructions pattern with factive ones in a number of ways but, crucially, remain non-factive since the semantic type (and syntactic structure) of the complement is not in direct correlation with truth value or presupposition.

III. Since they are referential, CPs pattern with other kinds of referring expressions externally.

In what follows, we use Hungarian as a test case to investigate the validity of the above claims. The paper is organized as follows. Section 1.1 provides an overview of the relevant literature on this topic. We supply cross-linguistic evidence for the anti-Kiparskian line of analysis (to be improved upon) that factive complement clauses are in fact structurally simpler than their non-factive counterparts. A number of examples from Germanic languages are presented to show that factive

1. For a definition of the two complement types that is similar to ours up to this point (but diverges from ours due to the fact that it involves a direct relationship between predicate types and complement types), see McCloskey 2005 and his discussion of Krifka 1999, Ginzburg & Sag 2000, and other related work. We return to McCloskey’s analysis and its relationship to our account in Section 1.1.

2. An anonymous reviewer rightly points out that the ‘factive’ class of verbs must be separated into ‘true factives’ like resent and regret versus ‘semifactives’ (Karttunen 1971) like know and discover. In addition, the ‘non-factive’ class has also been argued to be divided further. We return to this below.
complement clauses do not allow certain internal movement types that are acceptable in non-factive complements (as well as in matrix clauses). Drawing on de Cuba (2006a, 2006b, 2007, 2008), we propose two distinct syntactic objects (CP and cP) that correspond to different semantic interpretations and display different syntactic properties. We claim, however, that the choice between these two types of sentential complement does not correspond directly to the factivity of the matrix verb. In Section 2, we turn to (in part novel) data from Hungarian to support the claims of the paper. Section 2.1 presents the basic factive/non-factive paradigm in Hungarian, which provides evidence for the claim that, contra K&K, factive complements are generally less complex. We show that, while non-factive verbs can freely take either a cP or a CP as their complement, factive verbs are rarely acceptable with a cP complement, which follows from the semantics we assign to cP. Section 2.2 provides evidence for the proposed referential property of CPs, while 2.3 discusses the semantic and syntactic effects associated with a non-factive verb selecting a CP. In Section 2.4, we show that wh-extraction patterns also support our claims. We note an interesting difference between English and Hungarian: In English, factive embedded clauses are weak islands but extraction out of non-factive clauses is allowed without restriction, while in Hungarian, non-specific adjuncts can never extract from finite embedded clauses, regardless of the factivity of the matrix verb. Instead, Hungarian employs a wh-expletive construction which is available for all speakers in cases where our analysis predicts that the complement is cP, and available for some speakers also with a CP complement (but with referentiality restrictions). We explore the consequences of the ability of verbs to select either a cP or a CP in this realm, and propose an account of this difference between English and Hungarian. Finally, Section 3 presents our conclusions, and outlines possible extensions of this proposal.

1.1 Background: Structural differences between factive and non-factive embedding

In the classic paper “Fact”, K&K examine the syntax-semantics interface in the English sentential complementation system. They note that there are two classes of predicates, those that presuppose the truth of their complement (factives) and those that do not (non-factives).

(1) a. **Factives**: regret, resent, hate, comprehend, forget, grasp, like…
   b. **Non-factives**: believe, claim, say, assert, think, conjecture…

Factives and non-factives differ in the semantic restriction they impose on their complement. In factive (2a), the truth of the sentential complement is presupposed, and the sentence is infelicitous if the complement clause expresses an untrue statement,
while in non-factive (2b) there is no such commitment, and the truth-conditions and pragmatic acceptability of the complex sentence are unaffected by the truth of the complement. This remains the case if the matrix clause is negated, as in (3).

(2) a. John resents [that it is raining] / #John resents [that the Earth is flat]
   b. John believes [that it is raining] / John believes [that the Earth is flat]

(3) a. John doesn't resent [that it is raining] / #John doesn't resent [that the Earth is flat]
   b. John doesn't believe [that it is raining] / John doesn't believe [that the Earth is flat]

K&K propose that factive complements contain the head noun fact which in turn selects a proposition, while non-factive verbs select a proposition directly. Updating the K&K structures to a more current representation gives us the basic structures in (4). Factive verbs select the NP (or DP) containing the silent head noun fact, and fact selects CP, as in (4a), while non-factives select CP directly, as in (4b).

(4) Updated Kiparskian structures
   a. VP
      factive-V NP
      fact CP
   b. VP
      non-factive-V CP

For K&K, semantic presupposition in factives (3a), (4a), is derived by the presence of fact. The lack of fact in non-factives (2b), (3b), explains the lack of presupposition in these cases. Syntactically, K&K exploit the presence or absence of fact to account for a number of syntactic asymmetries, using the transformational framework of the time. This influential analysis was more or less the canonized view until fairly recently, when several authors put forward proposals running counter to K&K’s intuition (McCloskey 2005; de Cuba 2006a, 2006b, 2007, 2008, 2009; Haegeman 2006, 2007, 2008a, 2008b; Bentzen et al. 2007; Bentzen 2007). While these proposals differ in implementation, they all share the insight that it is non-factives that are structurally more complex than factives – the opposite conclusion from K&K. This new line of analyses is based on a wide range of cross-linguistic data, some of which we review below.
1.2 Cross-linguistic arguments for positing more complexity for non-factives

McCloskey 2005 shows that in Irish English dialects, embedded T-to-C movement (not normally allowed in complement clauses) can occur under wonder-type predicates. In (5), subject auxiliary inversion (SAI) is available under non-factive wonder but not under factive found out.3

(5) a. I wonder what should we do [Irish English]
b. *I found out how did they get into the building

McCloskey proposes that factive verbs select a single CP structure, while wonder-type predicates select a recursive CP, as in (6).4 For McCloskey, selectional restrictions rule out SAI in a typical subordinate clause. Since verbs L-select particular complementizers, head movement into those C-positions will give rise to violations of L-selectional requirements. No such violation occurs in (6), as wonder selects a recursive structure where the lower CP-layer is available for SAI.

McCloskey claims that the availability of the complex structure under a predicate like wonder (and its unavailability under a predicate like find out) derives from the fact that the complement of a question predicate like wonder is a different semantic object from the complement of a resolutive predicate like find out, albeit both are realized as embedded questions. For the particulars of the analysis, we refer the

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3. Data in (5) from McCloskey 2005. Note that McCloskey refers to the found out class of predicates as ‘resolutive’.


   i. They wouldn’t say which candidate they thought [CP should we hire].
   ii. I’m not sure which one I think [CP should we buy].
reader to McCloskey’s paper. What is important for us here is that semantic complexity (which, roughly, comes down to Ginzburg & Sag’s (2000) distinction between questions and facts, or Krifka’s (1999) concept of question acts and sentence radicals) corresponds to syntactic complexity on this analysis, and (as McCloskey (2005: 30) points out), the more complex structure (both semantically and syntactically) properly contains the simpler one. The analysis extends naturally to predicates that embed declarative sentences. The consequence for syntax-semantics mapping is that the contrast between an object clause embedded under a factive and one embedded under a non-factive (or, in fact, a matrix sentence) is to be found in this additional layer of structure. McCloskey identifies this as the locus of illocutionary force.

As noted by McCloskey himself, his proposal is reminiscent of the CP-recursion analysis of embedded verb-second (EV2) constructions in Scandinavian languages (Vikner 1995, Holmberg & Platzack 1995, Watanabe 1992, Iatridou & Kroch 1992, among others. See Heycock 2006 for a summary). In Mainland Scandinavian, clausal complements of ‘bridge verbs’ can optionally exhibit verb-second (V2) word order (indicated by the post-verbal position of negation), which is not generally allowed in an embedded clause.5 Note that, typically, EV2 order is impossible under a factive (7b), but available under a non-factive (8b).6,7

(7) a. **Rickard ångrade att han inte var hemma**
   Rickard regretted C he not was home [Swedish]

   b. *Rickard ångrade att han var inte hemma
   Rickard regretted C he was not home ‘Rickard regretted that he was not home’

(8) a. **Rickard sa att han inte var hemma**
   Rickard said C he not was home

   b. **Rickard sa att han var inte hemma**
   Rickard said C he was not home ‘Rickard said that he was not home’

The CP-recursion analysis allows for verb-movement to (the lower) C in the presence of an overt complementizer (8b), but since factives do not license CP-recursion, (7b) is ruled out. As with McCloskey’s account, the CP-recursion analysis

5. For a critique of the notion ‘bridge verb’ as used in Vikner 1995, see Biberauer 2002.
7. Note that ‘factivity’ does not correctly predict where EV2 occurs. As far as we know, Hegarty 1992 (extending the analysis of Cattell 1978) was the first to tie the availability of EV2 to the ‘novelty’ vs. ‘familiarity’ of the complement clause, as opposed to the factivity of the selecting predicate. Hegarty’s analysis shares with ours the elimination of the direct connection between verb types and complement types.
postulates a more complex syntactic structure associated with non-factives as opposed to factives. In a recent proposal, Haegeman 2006 also argues for a more articulated CP structure under non-factives. In a discussion focusing primarily on adverbial clauses, she adopts (and adapts) a Rizzi 1997 style CP-field, with ‘peripheral adverbial clauses’ and non-factive complement clauses having a full left periphery (like root clauses), and ‘central adverbial clauses’ and factive complements having an impoverished left periphery.

(10) a. Peripheral adverbial clause:
[Sub Top Focus Force Fin]
b. Central adverbial clause:
[Sub Fin]

This structural difference is exploited to account for the fact that peripheral adverbial clauses allow Main Clause Phenomena (MCP) such as topicalization and speaker oriented adverb placement, while central adverbial clauses do not; the positions designated for these phenomena are present in (10a) and missing in (10a). Haegeman then speculates that factive complements, like central adverbial clauses, are structurally impoverished. She cites data from Hooper & Thompson 1973 and Maki et al. 1999, showing that factives are also resistant to MCP like topicalization.

(11) a. *John regrets that this book Mary read

(Maki et al. 1999: 3, their (2c))

---

8. Biberauer 2002 emphasizes the fact that EV2 in Mainland Scandinavian (MSc) is optional even when allowed, as is illustrated in (8). Unlike other authors on the topic, who are concerned mainly with the availability of EV2, Biberauer claims that the choice between the two options (EV2 vs. non-EV2) for a clause embedded under the same predicate is influenced by information structural concerns. In discussion surrounding a similar example to (8), Biberauer states the following: ‘Without exception, native-speakers who were asked to assess the acceptability and significance of MSc embedded V2 clauses responded by making reference to considerations of informational salience.’ (Biberauer 2002: 46). The claim is that EV2 clauses emerge when the speaker wants to express ‘a strong assertion’. She reports the same pattern for Modern Spoken Afrikaans (MSA) EV2. If Biberauer’s claim that ‘considerations of heavy informational salience’ condition the acceptability of EV2 in MSc and MSA is correct, this would support our claim that semantic complexity corresponds to syntactic complexity in these cases. However, an anonymous reviewer disputes the claims in Biberauer 2002, noting that the reviewer’s Danish, Norwegian and Swedish informants note no difference in informational salience between EV2 and non-EV2 clauses. We therefore withhold any grand claims on EV2 clauses and informational salience, and simply note that the present analysis does not hinge on the presence or absence of these effects. In our view, the selection of cP provides the possibility for EV2, so we do not exclude the possibility that EV2 can be freely optional even if cP is present.

b. *I resent the fact that each part he had to examine carefully
(Hooper and Thompson 1973: 479, their (109))

Bentzen et al. 2007 and Bentzen 2007 adopt Haegeman’s (2006) proposal and apply it to EV2 in Mainland Scandinavian languages. Bentzen et al. propose that Topic and Force are the loci of EV2 movement, ruling out EV2 in factive clauses like (10b).10 It is important to note that while Haegeman (2006) shares with the above authors the intuition that non-factivity (rather than factivity) is more marked semantically and syntactically, she places the distinction inside the embedded CP. In later work (see Haegeman 2007, 2008a, 2008b) this picture is significantly revised, albeit maintaining the idea that the relevant contrasts derive from a structural difference between factive and non-factive complements. For lack of space, we cannot discuss these proposals here, noting simply that we think that Haegeman’s recent proposals are much closer to our own in spirit. In particular, the abandonment of ‘CP-reduction’ in favor of an analysis reflecting the referential property of factive complements makes Haegeman’s account more compatible with ours. The idea that Haegeman 2006 shares with the proposal advanced here is that there are two different ‘sizes’ of sentential complements, and the less complex one appears under factive predicates.

1.3 Our proposal: cP and CP

The data in (5), (7), (8) and (11) clearly show that there are generally freer movement possibilities available in complements to non-factive predicates as opposed to factive predicates, which supports the view that non-factives are structurally more complex than factives. It is noteworthy, however, that while a number of authors have used and continue to use the terms factivity and non-factivity to refer to the semantic differences in clausal complement taking predicates that correspond with the syntactic differences we have been presenting, there is a long line of work that has moved away from this characterization (see Hooper & Thompson 1973; Andersson 1975; Cattell 1978, Hegarty 1992, Bentzen et al. 2007; Bentzen 2007; de Cuba 2007; Wiklund et al. 2008; among others). Following this general trend, we present evidence that the dividing line determining the contrasts illustrated above (as well as some others) does not coincide with the factive/non-factive distinction. In fact, we show that the semantic class of the selecting predicate is not the deciding

10. Note that Bentzen et al. 2007 and Bentzen 2007 do not characterize the semantic differences in predicate types as factive vs. non-factive. Instead, they appeal to a Hooper & Thompson 1973 (H&T) division between clauses selected by assertive and semifactive predicates (Class A, B and E for H&T), which have the structure in (10a), and clauses selected by non-assertive and factive predicates (Class C and D for H&T), which have the structure in (10b). We return to this point in footnotes 13 and 22.
factor for the syntactic structure or information structural status of the embedded clause at all. To illustrate our points, we use Hungarian as our test case.

For the remainder of the paper we will adopt the implementation of the anti-Kiparskian stance proposed by de Cuba (2007, 2006a, 2006b, and in earlier work), where the two complement types at issue differ structurally as in (12).

\[(12)\]
\[
\begin{align*}
    &a. \ V \ [cP\ [CP\ ]] \ > \ henceforth\ cP \\
    &b. \ V \ [CP\ ] \ > \ henceforth\ CP
\end{align*}
\]

Similarly to the CP-recursion account, cP complements have an extra layer of structure above CP, making MCP such as EV2 and topicalization grammatical in this more complex complement type. We argue that cP and CP represent different types of semantic objects whose internal properties as well as role in a complex sentence are determined by their structure (and not by the verb that selects them):

\[(13)\]
\[
\begin{align*}
    &CP: \quad \text{a referential entity that denotes a proposition without illocutionary force (a sentence radical in the sense of Krifka 1999), a semantic object encoding a proposition (without a necessary commitment to its truth) about which the complex sentence makes an assertion.}
    &cP: \quad \text{a non-referential semantic object denoting a speech act, which adds a new proposition or an open question to the context. A cP properly contains a CP both syntactically and semantically. When a verb takes a cP as its complement, the information focus of the complex sentence is the cP.}
\end{align*}
\]

Certain predicates will be shown to be compatible only with one or the other type of complement, but this grouping does not follow directly from the factivity of the predicate. Rather, the semantic restriction that factive verbs impose on their complement indirectly renders their combination with a cP infelicitous: a cP encodes a speech act, which, by definition, must contain some novel component in order to be felicitous (i.e. it must be ‘unresolved’), while factive verbs require that the truth of their complement be resolved. More importantly, a large number of verbs can

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11. The notation ‘cP’ is from de Cuba 2007. We maintain the notation, but explore a different semantic characterization for the distribution and contribution of cP from de Cuba 2007 in this paper. It should be noted that the ‘little c’ notation de Cuba uses represents a different type of animal than the ‘little v’ widely used and well-established in syntactic literature. For an explanation of the notation, see de Cuba (2007: 17–18).

12. The felicity conditions on cP are the same in matrix and embedded contexts:

\[
\begin{align*}
    &\text{Speaker A: Obama won the elections.} \\
    &\text{Speaker B:} \\
    &\quad a. \ # \text{Obama won the elections.} \\
    &\quad b. \ # \text{I think that Obama won the elections.} \\
    &\quad c. \ \text{I am happy that / You THINK that [Obama won the elections].}
\end{align*}
\]
select either cP or CP (although the choice impacts on interpretation and syntactic behavior). In the next section, we turn to data from Hungarian to show in more detail:

d. Obama won the elections (... but will he also win public opinion?)

As the above contrasts show, a matrix sentence that is entirely contextually given (a) is not felicitous, and such a proposition is not acceptable as the complement to a non-factive verb either in a neutral context (b). These two contexts involve a speech act (cP), which must contain some novel element. As (c) shows, not all embedding contexts have this restriction: A factive verb or an emphatic non-factive one (with a CP complement) is perfectly happy with a complement that is completely given. Example (d) shows that this is not an ‘echo-effect’ since the addition of focus to the same string renders the proposition an acceptable speech act. This is because some element now in the sentence (here: the contrast on the object) adds something to the context. Similar effects are discussed by McCloskey (2005) for questions (the examples are ours):

ii. Speaker A: Obama won the elections.
Speaker B: a. #Who won the elections?
 b. #I wonder who won the elections.
           c. John knows who won the elections.

Note that (iiBa) is only good in case Speaker B didn’t quite catch Speaker A’s question (as an echo question). In an extension of our account, open vs. resolved questions like those above would receive analogous treatment.

13. Returning to the discussion in footnotes 2 and 10, unlike true factives (a.k.a. emotives), semifactives can lose their factivity in questions, if embedded in the antecedent of a conditional, and under certain modals. The semifactives correspond to the Hooper & Thompson 1973 (H&T) class E predicates, and allow main clause phenomena (MCP), unlike true factives (H&T’s class D). On our analysis, this is expected because we allow all verbs to select either cP or CP in principle, unless the combination is excluded independently. (More detailed discussion of predicates that can select either structure (cP or CP), and the semantic differences that result from the selection of one or the other structure, follows below.) However, an anonymous reviewer made us aware of a recent paper on EV2 that contains a problematic example. Wiklund et al. 2009 provide an example with optional EV2 under a negated semifactive (ia) vs. (ib) where both word orders entail the truth of (ic) (i.e. have a ‘factive reading’).

i. a. Vi upptäckte faktiskt inte att han inte läste
    we discovered actually not that he not read
    den boken varje dag.
    that book-the every day
    ‘We actually didn’t discover that he didn’t read this blog every day.’

b. Vi upptäckte faktiskt inte att den boken läste
    we discovered actually not that that book-the read
    han inte varje dag.
    he not every day
    ‘We actually didn’t discover that this blog he didn’t read every day.’

c. Han läste inte den boken varje dag.
    he read not that book-the every day
    ‘He didn’t read this blog every day.’
    (Wiklund et al. 2009: 14 (their (35)))
detail the consequences of this proposal. In particular, we focus on the relationship between the choice of complement type and the information structure of the complex sentence.

2. Hungarian

2.1 Evidence for cP in Hungarian sentential embedding constructions

Hungarian sentential embedding constructions also exhibit different syntax depending on the information structure of the complex sentence, although the diagnostics are very different in this language from the Germanic examples discussed above. As a first approximation (to be made more precise below), we note that one robust pattern surfaces under non-factives and one under factives, as first discussed by de Cuba & Ürögdi (2001). In a neutral sentence (i.e. a sentence without contrastive focus or negation), non-factive verbs feature *azt in the preverbal position, while factive verbs are not possible with *azt.

\[\text{(14) a. Péter (*azt) sajnálja hogy havazik} \]
\[\text{Peter Dem-ACC regrets C snows} \]
\[\text{‘Peter is sorry that it’s snowing’} \]

\[\text{b. Péter azt mondta (hogy) havazik} \]
\[\text{Peter Dem-ACC said C snows} \]
\[\text{‘Peter said that it’s snowing’} \]

However, when the embedded clause is contrastively focused (i.e. contrasted with other potentially relevant propositions), both constructions feature *azt, so the string in (14b) is actually string-ambiguous between the two readings (neutral, or focus on the embedded clause).14 In what follows, we will use capital letters to

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The first important thing to note is that, as far as we know, this is the first mention in the literature of EV2 occurring in the presence of matrix negation. Vikner 1995 is but one of many works to claim that EV2 is ruled out under matrix negation. We return to this point below. Example (ib) is problematic in the present context because it is an EV2 clause which is interpreted factively. This is unexpected under our analysis, since we do not predict the presence of cP (which we argue allows EV2) with an embedded clause that does not seem to add ‘a new proposition or an open question to the context.’ At present we have no explanation for this but plan to look closer at the subtleties of interpretation in these examples.

14. Note that on the neutral reading of (14b), the complementizer is droppable, while it is obligatory when the embedded clause is contrastively focused. We abstract away from this difference here. Since our analysis posits a structural difference between the two readings (14b) and (15b), it is possible that a syntactic explanation can be found for complementizer drop. It seems that the complementizer in Hungarian is optionally droppable just in the cases where our
indicate instances of _azt_ that correspond to a contrastive focus interpretation on the complement clause (as we do in (15)). Although (14b) and (15b) have the same surface string, we will argue that the difference in interpretation between the sentences corresponds to a structural difference.

(15) a. _Péter_ _azt_ _sajnálja_ hogy _havazik_

   Peter Dem-ACC regrets C snows

   ‘What Peter regrets is that it’s snowing’

b. _Péter_ _azt_ _mondta_ hogy _havazik_

   Peter Dem-ACC said C snows

   ‘What Peter said is that it’s snowing’

We now discuss each example in the paradigm in turn. Setting aside the constructions involving contrastive focus on the embedded clause (15) for now, it becomes evident that the element _azt_ is something ‘extra’ in the neutral non-factive construction (14b) as opposed to the factive case (14a). Therefore, it is intuitively appealing to associate this pronominal element with the additional functional layer (cP) proposed for non-factive complements in other languages. In the spirit of Lipták 1998, we propose that the pronominal element _azt_ in (14b) originates in the Spec of cP, forms an expletive-associate chain via coindexation with the embedded clause, and moves to the so-called ‘verb-modifier position’ (the immediately preverbal position in a neutral sentence) representing the complement clause.\(^{15,16}\) As the complement of the verb here is cP, which by our definition is a non-referential entity, the movement of the expletive into the preverbal position is obligatory (cf. Alberti 1997 and Kiss 2004 on the obligatory movement of non-referential

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\(^{15}\) The precise articulation of the preverbal functional field in Hungarian has been a debated issue for decades. (We refer the reader to Kiss 2004 for an overview.) Here, we assume (as argued for recently by a number of authors, e.g. Ürögdi 2006; Surányi 2009) that a lower PredP dominating the VP is the locus of complex predicate formation, while the specifier of a higher TP is the surface position of negation, contrastive focus, a _wh_-phrase, or (in the lack of such operators) the final landing site of the ‘verb-modifier’. Accordingly, _azt_ in the construction (14b) arguably passes through the intermediate Spec,PredP position. This issue will not be relevant to anything we have to say here.

\(^{16}\) For an analysis along these lines, see Lipták 1998, as discussed by Kiss (2004: 234–5). Lipták’s expletive is in Spec,CP. In what follows we expand her proposal and claim that expletives may associate with CP or cP. The expletive-associate analysis of _azt_ dates back to Kenesei 1992, 1994.
elements from inside VP to the functional field dominating the VP in Hungarian). This movement is achieved via the expletive *azt* since the movement of its associate (i.e. the entire clause) to this position is impossible. The expletive receives main stress, and its associate is understood as constituting the main assertion of the complex sentence.

In a neutral factive embedding construction like (14a) on the other hand, it is invariably the matrix verb that constitutes the main assertion. The complement refers to a proposition (or alternatively a ‘resolved question’, cf. McCloskey 2005) about which the complex sentence makes an assertion. According to the definitions we give above, the semantic object selected by a true factive predicate is therefore always a referential CP (i.e. a semantic object that denotes a sentence radical in Krifka’s terms), as these predicates are semantically incompatible with a CP complement, which denotes a speech act (see (13)). Factive predicates normally carry main stress due to the fact that they are leftmost in the comment part of the sentence. As such, they constitute the main assertion themselves, so the information focus of such constructions is the subject’s relation to the embedded proposition. The CP complement, being referential, is not required to leave the VP, or to be otherwise associated with any functional projections. The structures for the sentences in (14) are represented in (16).

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17. As noted in Alberti 1997, ‘postverbal argument positions [in Hungarian] are reserved for referential expressions’ because, ‘arguments of the verb can be legitimized in one of two ways. In the unmarked case they have referential legitimacy […] Non-referential expressions can be legitimized by obtaining predicative legitimacy in the assertive part (i.e., the operator field) of the predicate.’ (citation from Kiss 2004: 29–30). This observation is normally held accountable for the fact that non-referential elements end up occupying the preverbal position in surface syntax: i. János keringőt táncolt. / *János táncolt keringőt
John waltz- Acc danced John danced waltz-Acc
’John was waltzing’ (example from Kiss 2004)
For our purposes here, it is enough to note that the general ban on non-referential arguments inside VP in Hungarian (or rather, the general requirement for such arguments to form a complex predicate with the verb) supports our hypothesis that the crucial difference between a CP and a CP lies in referentiality. (It should be noted — thanks to an anonymous reviewer for pointing this out — that this generalization is unrelated to the Diesing’s (1992) well-known Mapping Hypothesis, which could potentially confuse the reader unfamiliar with Hungarian syntax.)

18. As discussed in Kiss 2004, the ban on clausal constituents in the preverbal position (as opposed, for example, to Topic position) may be syntactic (related to head-finality), but could also be due to a PF requirement that focused constituents form a phonological word with the verb (cf. Kenesei 1992, Vogel and Kenesei 1987 for this line of explanation). Discussing this issue would take us too far afield, so we simply note that such a restriction exists.

19. Due to space limitations, we cannot discuss particle verbs (i.e. verbs featuring a pre-verbal particle) here.
Turning now to the contrastive focus examples in (15), we propose that such examples always involve an embedding predicate (factive or non-factive) taking a CP complement, as the focus in the sentence is the identification of a particular proposition among the relevant set of alternatives, as in (17).

(17) a. Péter azt sajnálja / mondta hogy havazik
   Peter Dem-Acc regrets / said C snows
   (… nem azt hogy hideg van)
   … Neg Dem-Acc Comp cold is
   ‘What Peter regrets/said is that it’s snowing (… not that it’s cold).’

b. Speaker A: Mit sajnál / mondott Péter?
   ‘What does Peter regret / did Peter say?’

Speaker B: Péter azt sajnálja / mondta hogy havazik
   Peter Dem-Acc regrets / said C snows
   ‘What Peter regrets/said is that it’s snowing’

As illustrated in (17a), focused AZT is possible with a contrastive interpretation where the embedded proposition is contrasted with other, potentially relevant alternatives in the context (i.e. other things that Peter could regret or have said, as shown by the possible continuation of the sentence given in (17a)), or makes the sentence a felicitous reply to a wh-question (as in (17b)). When the matrix verb is factive, this is the only interpretation associated with azt, while (as mentioned above) a non-factive construction with azt is ambiguous. We therefore claim that azt can be generated in Spec,cP or in Spec,CP as a clausal expletive, and in each case it inherits the properties of the phrase it stands for. In particular, we suggest that there is Spec-Head agreement for referentiality in clausal complements, a suggestion that will become important in our account of wh-extraction patterns.20 Therefore, when the expletive is generated in referential CP, as in (18a), it will result in a contrastive interpretation for the embedded clause in the preverbal position. When it is an expletive for cP, as in (18b), it will surface in the matrix clause as a run-of-the-mill verb-modifier, forming a complex predicate with the main verb, with its associate constituting the main assertion in the sentence.

20. While we are aware that [referential] is not commonly assumed to be a formal feature in syntax, its syntactic relevance is well-documented. For simplicity’s sake, we treat referentiality as a syntactic feature here, while we remain open to different implementations of the referential property of CP.
Given that referential CPs can remain inside the VP (as part of the background), we do not expect the clausal expletive to occur with factive predicates in a neutral sentence since the expletive is only needed when the complement clause is required to appear in a higher functional position. As discussed above, non-referential CP is subject to such a requirement. CP, on the other hand, is represented by a clausal expletive only in cases when it is contrastively interpreted, as seen in the examples above.

The proposal sketched above contains two explicit claims that we now examine in more detail.

I. Factive predicates are only felicitous with a CP complement

This is shown by the fact that \textit{azt} can only appear with factive verbs when the embedded clause is contrastively focused, as shown in the possible interpretations for (19a). In other words, \textit{azt} in the preverbal position of a factive construction is obligatorily understood as contrastive (rather than simply information focus, as in the non-factive case).\textsuperscript{21} We take this as evidence that this instance of \textit{azt} represents CP, a referential entity.

\textsuperscript{21} As mentioned above in footnote 14, examples like (19b) can be disambiguated by removing the complementizer, as only the neutral non-factive examples allow for dropping the complementizer.
(19) a. **Péter azt sajnálja, hogy havazik.**
Peter Dem-Acc said Comp snows
i. ‘Peter regrets that it’s snowing’ (non-contrastive)
ii. ‘What Peter regrets is that it’s snowing’ (contrastive)

b. **Péter azt/azt mondtta, hogy havazik.**
Peter Dem-Acc said Comp snows
i. ‘Peter said that it’s snowing’ (non-contrastive)
ii. ‘What Peter said is that it’s snowing’ (contrastive)

Although we cannot do this issue justice in this paper, in Section 2.2 we present some evidence for the claim that factive complements in fact pattern with referring expressions cross-linguistically.

II. **Non-factive predicates can select either a cP or a CP complement**

This is predicted by our analysis, given our claim that factivity does not directly determine the category of the complement a given verb selects. So, when a non-factive verb embeds a speech act (a statement with illocutionary force, or a true question) the complement is realized syntactically as a cP. However, there is nothing in the syntax or semantics of non-factive verbs that prevents them from combining with a referential CP. In this case the sentence’s information focus shifts either to the matrix verb (as illustrated in Section 2.3 for Hungarian and English) or to a higher operator (such as contrastive focus, negation, etc.).

22. Returning to the discussion in footnotes 2 and 13, non-factives are broken into three classes by H&T; class A (‘strongly assertive predicates’ like ‘say’ and ‘claim’), class B (‘weakly assertive predicates’ like ‘believe’ and ‘think’), and class C (‘non-assertive predicates’ like ‘doubt’, ‘deny’ and ‘be possible’). Class A and class B predicates allow EV2, while class C predicates block EV2. However, as has been widely reported in the literature, negated class A and B predicates also block EV2. Since all of H&T’s class C predicates are inherently negative or irrealis (irrealis predicates have also been reported to block EV2), we feel comfortable grouping these three classes together. The question remains as to why negative and irrealis predicates block EV2 – de Cuba 2007 provides an analysis claiming that declarative complementizers are banned from a cP which is featurally specified [+neg] or [+irr], meaning that the complementizer must appear in CP, blocking MCP (this configuration is possible anyway, given the optionality of EV2, even in the presence of cP). Whatever the proper analysis of matrix negation or inherently negative predicates blocking EV2 with non-factives is, it seems clear that the blocking effect is the same for all three classes. However, we do not at present have an explanation for the new negated semifactive data provided in Wiklund et al. 2009, and discussed here in footnote 13.

Due to space limitations, we do not discuss Hungarian examples here that involve negation (or inherently negative verbs such as ‘doubt’ or ‘deny’), or focus on an element other than the embedded clause. It is noteworthy, however, that such examples generally pattern with constructions involving a CP (rather than cP) complement in that they do not feature preverbal azt, have main stress on the matrix operator, do not allow complementizer drop, and display a host
connection with the contrastive focus examples in (15) (corresponding to structure (18a)) we suggested that when the embedded proposition is contrastively focused, the category of the complement is CP. This rules out interpretation i. in (19a): there is no cP (which could yield a non-contrastive interpretation) available under a factive predicate because these predicates are not compatible with a speech act complement. On the other hand, example (19b) is structurally ambiguous: the neutral interpretation i. is derived via the structure in (18b) and involves a cP complement, while the contrastive interpretation ii. has the structure in (18a) with a CP complement. In Section 2.3, we present evidence to show that non-factive predicates can select a CP in a neutral context also, so this option is not related in any way to the presence of contrastive focus in the sentence. Rather, non-factives are freely compatible with either type of complement, albeit with semantic consequences.

In the next sections, we briefly discuss some evidence supporting claim I. above, and then turn our attention to claim II. to demonstrate the semantic and syntactic consequences of the proposed selectional flexibility of non-factive predicates.

2.2 The referential character of CP

In this section we briefly sketch some evidence that CPs pattern with referring expressions. Most of this evidence is impressionistic at best, and much more careful research is needed to establish these patterns clearly. Nevertheless, we believe that the abundance of examples from various languages pointing in this direction indicates that this account is on the right track.

The first set of observations comes from the realm of association of sentential complements with different types of pro-forms. Data from English shows that different chunks of structure are replaced in the tree by different elements. Do-so replacement targets VP, as in (20a), while it-replacement works for referential arguments as in (20b). What is important for us here is to note that [so] replaces something predicational, while [it] stands for something referential.

(20) a. Bill tried the cake, and John did \[VP so\] too

b. Bill tried the cake, and John tried \[DP it\] too

of other syntactic effects traditionally associated with factive embedding but tied to the semantic type of the complement clause on our account. Given that this pattern extends to examples involving long-distance focus movement and other complexities, discussing them in this paper is unfortunately impossible.
Under a non-factive, as in (21a), the phrase *that Bill had done it* can be replaced with *so* (just like the VP *ate a cake* in (20)), or with *it*. However, only *it* is available under the factive predicate in (21b).23

\[(21)\]
\[\begin{align*}
\text{a. John supposed} & \ [\text{CP} \text{ that Bill had done it}], \text{ and Mary supposed} \ [\text{it}/\text{so}] \text{ too} \\
\text{b. John regretted} & \ [\text{CP} \text{ that Bill had done it}], \text{ and Mary regretted} \ [\text{it}/*\text{so}] \text{ too}
\end{align*}\]

In the terms of the present analysis, *so* is able to replace non-referential *CP* in (21a), while the pro-form *it* can be substituted for referential *CP*. Since non-factive predicates are compatible with either *CP* or *CP*, we predict that either substitution will be fine.

Hungarian has a similar pattern when it comes to replacement by pro-forms. Most non-factive verbs are compatible with the pro-form *úgy* ‘so’ as well as with *azt* (although the choice is reflected in a slight difference in interpretation).24 Factive embedded clauses do not allow association with *úgy*.25,26

\[(22)\]
\[\begin{align*}
\text{a. János úgy gondolta, hogy holnap indulunk} \\
\text{John so thought} \quad \text{Comp tomorrow we-leave} \\
\text{‘John thought that we would leave tomorrow’} \\
\text{b. *János úgy sajnálja, hogy holnap indulunk} \\
\text{John so regrets} \quad \text{Comp tomorrow we-leave} \\
\text{Intended: ‘John regrets that we leave tomorrow’}
\end{align*}\]

The pattern is not exactly the same as in English because Hungarian *azt* (unlike English *it*) can stand for either a *CP* or a *CP*.27 Nevertheless, it is noteworthy that *úgy*

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23. Data in (21) from Kiparsky & Kiparsky (1970: 362); the labels and the interpretation are our own.

24. The choice of *úgy* implies more uncertainty than *azt*, and in fact *úgy* is possible with the semifactive *know* which does not take *azt*. (cf. the English *I know so.*) This fact indicates, on our view, that semifactives are compatible with a *CP* complement, although the difference between *azt* and *úgy* in this domain should be examined.

25. Kiss 2004 discusses this construction, noting that *úgy* has the same distribution as *azt*, but not taking *úgy* to be an associate of the embedded clause.

26. (22b) also has the irrelevant reading ‘John is so sorry that...’

27. This duality of the pro-form *az* is not limited to clausal complementation. For example, *az* can be used to replace nominal or adjectival predicates in answering patterns i. and coordinated structures ii.:

\[\begin{align*}
\text{i. a. János boldog? / János tanár?} \\
\text{John happy John teacher} \\
\text{‘Is John happy?’/ ‘Is John a teacher?’} \\
\text{b. Az} \\
\text{Dem} \\
\text{‘Yes.’ (Lit.: ‘(He is) that.’)}
\end{align*}\]
cannot be used in cases where we predict the complement clause to be of the category CP. For instance, úgy cannot stand for a contrastively focused complement.

(23) *János úgy gondolta, hogy holnap indulunk (nem úgy, hogy…)

János so thought Comp tomorrow we-leave Neg so Comp

‘John thought that we would leave tomorrow, and not that …’

Given these facts, úgy patterns structurally with neutral azt in appearing in a structure like (18b), but not in a structure like (18a). Although we are clearly simplifying here, this preliminary survey shows that pro-form replacement correlates with the referential vs. non-referential property of the complement clause.

Another piece of evidence for treating CPs as referential expressions comes from the observation (Den Dikken 2008, citing Reeve 2007) that in English it-clefts, only specific clefted XPs are compatible with the wh-pronoun which. Factive complements, interestingly, are also acceptable with which.

(24) a. It’s this book which I want to read. (referential)
   b. *It’s a doctor which I want to become. (predicative, non-ref.)

(25) a. It’s that John didn’t show up which I resent. (referential CP)
   b. *It’s that John didn’t show up which I believe. (non-referential cP)

Once again, this preliminary observation suggests that the embedded CP here patterns with referential DPs (rather than predicative elements).

Due to lack of space, we cannot go into discussing data from other language families here. Among the most interesting, relevant facts come from Kwa (Collins 1994, Aboh 2005) where factive clauses are formally relative clauses, or Albanian (Kallulli 2006) where a clitic pronoun normally associated with referential DPs shows up with factive embedded clauses. While we believe that this aspect of our proposal warrants more careful exposition, we now return to the main topic of our paper.

2.3 Non-factive verbs with a CP complement

We now turn to evidence showing that non-factive predicates are freely able to take a CP or a cP complement in a neutral context. Given our claim that non-factive verbs are compatible with either type of sentential complement, we expect that this should be possible without special restrictions. This expectation is in fact borne

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ii. Péter gazdag, és János is szeretne az lenni
   Peter rich and John also wants Dem be-Inf
   ‘Peter is rich, and John also wants to be rich’

28. Note that Kallulli interprets the Albanian data in a very different way, taking it to support K&K’s analysis.
out. Below, we demonstrate the semantic effects associated with a non-factive verb taking a CP complement, using Hungarian and English examples. We show that while a non-factive verb selecting a CP patterns with factive constructions in a number of ways (in terms of syntax, semantics, and prosody), such a construction does not yield a factive reading on the complement (contra Kallulli 2006). Thus, factivity – as argued here – turns out not to be the relevant factor in predicting or diagnosing differences between [V [CP]] and [V [cP [CP]]] structures.

Observe the contrast shown by a typical non-factive verb with or without azt in (26).29

(26) Context: Marinak hirtelen rengeteg pénze lett, de senki nem tudta, honnan ‘All of a sudden, Mary ended up with a lot of money – but nobody knew how’

a. János azt állította, (hogy) Mari megnyerte a lottót
   John Dem-Acc claimed Comp Mary won the lottery-Acc
   ‘John claimed that Mary won the lottery’

b. János állította, hogy Mari megnyerte a lottót
   John claimed Comp Mary won the lottery-Acc
   ‘John claimed that Mary won the lottery’

While the verb állít ‘claim’, like many other non-factives (see further examples below), can appear with or without azt (i.e. with a cP or a CP complement, as discussed above), the two constructions have different interpretations. Example (26a) is a prototypical non-factive construction, where the embedded proposition is the information focus of the complex sentence. The construction can be used out-of-the-blue, so in a situation where the proposition ‘Mary won the lottery’ is being offered up for consideration by the speaker. This is the typical interpretation of a cP complement (a ‘speech act’ in Krifka 1999/McCloskey 2005 terms). Example (26b) has a different information structure (and intonation), although (crucially) it is still non-factive, so the truth of the complement clause is not presupposed. Main stress in (26b) falls on the matrix verb, which thereby constitutes the focus of the sentence. Abstracting away from the reading where the matrix verb is contrastively focused, the example has an information structure that is analogous to a neutral factive sentence, where the main verb is understood as the main assertion (but not interpreted contrastively).30 For example, (26b) can be used in a situation

29. Example (26a) also has the reading where the embedded clause is contrastively focused, as discussed in Section 2.1. This reading does not concern us here since we are now looking at neutral sentences with cP vs. CP.

30. On our account, contrastive focus on the matrix verb patterns syntactically with all other instances where the embedded clause is a CP, and thus backgrounded. This means that, once
where Mary’s winning the lottery is already under consideration as a possible reason behind her unexpected display of wealth, or in a situation where this proposition is otherwise salient (for example, it is something difficult to believe about Mary). In this case, the speaker can use this sentence to specify John’s stance on this issue (namely, that he claimed that this was the case), although the speaker need not commit to the truth of the complement clause. Crucially for our analysis, a verb like ‘claim’ appearing without azt does not become factive, although it shares one aspect of semantics with factive constructions: the complex sentence’s focus is located in the matrix verb. The CP complement is used to point out a particular proposition, and the complex sentence asserts the subject’s stance on or attitude towards that proposition.

There is an interesting set of examples illustrated here with the verbs mond ‘say, tell’ and gondol ‘think’ as well as their English equivalents. In the past tense, these verbs give rise to an additional, at first glance factive, interpretation both in English and in Hungarian, as in (27) and (28).31

again, the factivity of the verb will not make a difference for structure. Example (26b), for one, can be understood as involving contrastive focus on the matrix verb, in which case the predicate ‘claim’ is contrasted with alternative predicates such as ‘know’, for example. In this case the sentence can mean: ‘John claims P, although he does not know P.’ We do not talk about this reading here in order to avoid muddling the discussion. It should be noted, however, that the same reading exists for factive verbs as well. The two readings are disambiguated by prosody (de-accenting of the post-focus domain), which may or may not indicate surface-syntactic differences. We do not take up this issue in this paper.

31. Kallulli 2006 discusses similar examples from English, claiming that main stress on a non-factive verb like believe renders the construction factive (her Example 15):

   i. I didn’t see John leave my party, but then he called me from his home phone. Now it was obvious. I believed that John left.

   According to our analysis, no such ‘factivization’ is expected because our proposal is that factivity is part of the lexical semantics of the verb but not a factor that is active or can be tampered with in the syntactic derivation. And in fact, examples can be constructed easily that feature believe with main stress but are clearly non-factive:

   ii. a. I believed that John was going to marry me. What an idiot I was!
   b. John is really gullible. When I told him, he believed that the moon was made of cheese!

   These examples are not factive, although they share with the Hungarian examples (27b) and (28b), for example, the characteristic that the main verb (rather than the embedded clause) is the information focus of the sentence. There is also an aspectual issue here (the uses of believe here have an eventive flavor) that we leave aside at this point.

   An anonymous reviewer also points to examples like the following:

   iii. I regretted it that I kissed John
   iv. I believed it that John got drunk
(27) a. Azt mondta Péter, (hogy) későn kezdődik a meccs
   Dem-Acc said Peter Comp late begins the match
   ‘Péter said that the match will begin late’

   b. Mondta Péter, hogy későn kezdődik a meccs
   said Peter Comp late begins the match
   ‘Peter said that the match will begin late’

c. Peter told me that the match would begin late

d. Peter told me that the match would begin late

(28) a. Azt gondoltam, (hogy) nem fogsz eljönni
   Dem-Acc I-thought Comp Neg you-Fut come-Inf
   ‘I thought you wouldn’t show up!’ (possible continuation: but you did)

   b. Gondoltam, hogy nem fogsz eljönni!
   I-thought Comp Neg you-Fut come-Inf
   ‘I thought you wouldn’t show up’

c. I thought/figured you wouldn’t show up

d. I thought/figured you wouldn’t show up!

While in Hungarian, the presence or absence of azt serves to detect the presence or absence of cP (and thus the locus of information focus: on the embedded clause or on the matrix verb), in English there are prosodic cues for this. When the matrix verb is focused in English, it (rather than the embedded clause) gets main stress, whereas the embedded clause is prominent in the run-of-the-mill non-factive case (more on this below). Therefore, the (a) and (c) examples above are prototypical non-factive constructions, while the (b) and (d) examples are the constructions at issue, where the most prominent element (both informationally and prosodically) is the main verb. It is interesting to note that the (b) and (d) examples in both languages are ambiguous between a contrastive verb focus reading (so: ‘Peter TOLD me that P, but he didn’t explain it.’) where the matrix predicate is contrasted with other possible predicates (this reading is available for all predicate types, see fn. 29), and a non-contrastive reading (as in example (26b) above), and

The reviewer worries that the pronoun it in iii. and iv., which is associated with a ‘factive’ reading of the embedded clause, is problematic for our analysis of azt as being an ‘extra’ expletive associated with a non-factive reading. Kalluli 2006, in fact, analyzes the it in these cases as a trigger for factivity, and takes its presence to support a K&K-style syntax. However, we reject Kalluli’s analysis on two counts. One, sentences like iii. are factive regardless of the presence or absence of it, and iv. is not productive in English (*I think it that…, *I claim it that…, *I assert it that… – unlike Hungarian aza). Two, the so-called ‘factivity’ of iv. is questionable along the same lines as ii.. Thus, we analyze iii. and iv. as verbs selecting a referential DP it, not a CP with an expletive. We would argue that these examples do not involve a ‘factivizing’ effect of any sort.
in the latter case the complex sentence often enables a factive interpretation. On the latter reading, the matrix verb is the information focus of the sentence, meaning that, as with the ‘claim’ examples, the sentence asserts the subject’s relation to a contextually given proposition. When used in the past tense, these examples give the impression of factivity so that the embedded proposition is taken not only to be part of the common ground but also presupposed to be true. Note, however, that this reading is i. only preferred (or even available) in the past tense (cf. 29), and ii. not obligatory (cf. 30):

(29)  

a. *Mondja Péter, hogy későn kezdődik a meccs*  
says Peter Comp late begins the match  
‘Peter says (has just said) that the match will begin late’ (non-factive)

b. Peter tells me that the match will begin late.

(30)  

Context: Peter was supposed to lie to B so B would miss the match. A asks B as follows:

Speaker A: Didn’t Peter tell you that the match would begin late? (So why are you here so early?)

Speaker B: *Péter mondta, hogy későn kezdődik, de…*  
Peter said Comp late begins but…  
bolond lennék hinni neki! Folyton hazudik.  
fool I-would-be believe-Inf him constantly lies  
‘Peter said that it would begin late but I’d be a fool to believe him. He’s always lying’

In (29), the most natural context is that the speaker has just heard something and is asking for confirmation. In (30), meanwhile, it is clear that what is at stake is simply the referentiality of the embedded clause (it refers back to a proposition that has been mentioned) and not its truth, as in the context supplied for (30) we explicitly know that the proposition at issue is a lie. The cause of the factive-like reading on examples like (27b,d) or (28b,d) is, therefore, to be found in the use of past tense in combination with the interpretation of CP. If the discourse situation is such that the embedded proposition happens not only to be part of the contextually salient set of propositions but also turns out to be true (and its truth is known to all discourse participants), then a sentence like (27b,d) or (28b,d) will happen to assert the fact that the subject had previously held a stance or attitude towards that proposition (at that time not known to be true). This, however, is not part of the meaning of the matrix verb, or even a necessary entailment of the construction.

The existence of such readings is not only compatible with our analysis but is actually predicted by it. Our claim is that presupposed (i.e. assumed to be true) propositions constitute a subset of referential propositions (cf. (13)). This means
that there could easily be cases where a non-factive verb selecting a CP happens to combine with a proposition that, in addition to being salient in the discourse, has also turned out to be true in the time that passed between the reference time of the complex sentence and the utterance time. We take this as additional evidence that non-factive verbs can, without any special restrictions, combine with referential CPs. Admittedly, the wide variety of semantic effects associated with the combination of different predicate types with $cP$ vs. CP requires much more detailed discussion, which falls outside the scope of this paper.\(^{32}\) The points we wish to make here are simply that the choice between $cP$ and CP does not directly correlate with the factivity of the matrix verb, and that the choice does, however, determine the information structural relations in the sentence.

2.4 Wh-extraction and the wh-expletive construction

One of the strongholds of positing factivity as a syntactically relevant factor is the existence of so-called ‘factive islands’. It is well-established that factive embedded clauses are (universally) weak islands.\(^{33}\)

\begin{align*}
\text{(31) a. } & \text{How do you think (that) Peter behaved \(_t\)?} \\
\text{b. } & \text{*How do you regret that Peter behaved \(_t\)?}
\end{align*}

\(^{32}\) An issue left open here is whether factive verbs can ever combine with $cP$. Given the semantics we assign to $cP$, the short answer should be no. That is, a truly factive verb (one that semantically requires a complement that is presupposed to be true) cannot take a speech act as complement. There are borderline cases, however, mentioned in Haegeman (2006) where a verb like \textit{regret} behaves more like a non-factive (speech) verb, as in her example (24b).

\begin{itemize}
  \item i. I regret that those details, I cannot reveal to non members.
\end{itemize}

The point to note is that, unlike most factive verbs, this instance of \textit{regret} allows the topicalization of \textit{those details} in the embedded clause. (This use of \textit{regret} also allows a modal in the embedded clause, which is not typical for factives – see Haegeman (2006:fn.28)). Such examples, as noted by Haegeman, are not truly factive (“in this reading regret becomes like a speech act verb and, as a result, its complement can be enriched with the ‘speaker deixis’ component” – Haegeman (2006: 16)) and have very limited distribution. As such, they confirm our prediction that a factive verb taking a $cP$ complement cannot be interpreted as truly factive. Nevertheless, such cases warrant closer examination from the perspective of our proposal.

\(^{33}\) For a treatment of factive islands in the spirit of K&K, arguing that the complexity of factive complements blocks extraction, see K&K, Cinque 1990, and Rizzi 1990, among others. For a treatment of factive islands under the extra structure for non-factives hypothesis, see de Cuba 2006a, 2007. Semantic accounts of factive islands include Cattell 1978, Szabolcsi & Zwarts 1993, and Abrusán 2007. We briefly discuss Szabolcsi & Zwarts 1993 below, but will leave aside more detailed discussion of these analyses.
In Hungarian, however, extraction of a non-specific *wh*-phrase from both factive and non-factive complement clauses is equally degraded.

\[(32)\]  
\[\text{a.} *\text{Hogyan gondolod, hogy viselkedtél?}\]
\[\text{how you-think C you-behaved}\]
\[\text{Intended: ‘How do you think that you behaved?’}\]

\[\text{b.} *\text{Hogyan sajnáld, hogy viselkedtél?}\]
\[\text{how you-regret C you-behaved}\]
\[\text{Intended: ‘How do you regret that you behaved?’}\]

Extraction of a specific argument *wh*-phrase\(^{34}\) is acceptable from either type of complement.

\[(33)\]  
\[\text{Kivel mondta/sajnálja János, hogy beszélt a partin?}\]
\[\text{who-with said/regrets John Comp he-spoke the party-at}\]
\[\text{‘(Of the guests) who did John say/does John regret that he spoke to at the party?’}\]

Thus, in terms of long-distance *wh*-extraction, the sharp difference between factives and non-factives documented for English is not attested in Hungarian. Examples like (32) show that – at least in this particular construction – the complement clause of a factive or a non-factive verb behaves analogously in this language, which is unexpected if the ban on extraction is accounted for with reference to factivity. Note, however, that there is a difference between factives and non-factives in Hungarian when it comes to ‘*wh*-expletive constructions’\(^{35}\). While the *wh*-expletive construction is freely available for all speakers with non-factive verbs, regardless of the specificity or argument status of the *wh*-phrase, when it comes to factives, there are (at least) two groups of speakers to account for. For one group of speakers, the *wh*-expletive construction is never available with factives. For the second group, the construction is possible with factives, but only if the *wh*-expression can be construed as specific\(^{36}\).

\(^{34}\) Cf. Szabolcsi (2006) and numerous references cited there for the claim that argumenthood in and of itself is not enough to escape a weak island – the extractee must be referential (in some sense) as well.

\(^{35}\) This construction is also known as *partial wh-movement* in the literature (see Fanselow 2006 for an overview). The term ‘*wh*-expletive’ implies an analysis where an expletive element checks the [+wh] feature in the matrix clause, and this expletive may or may not stand in a derivational relationship with the embedded *wh*-phrase. (The expletive can also be viewed as a scope marker that undergoes operator movement to a matrix scope position.) Since this type of analysis is close to our position (see below for exposition), we opt for this terminology here.

\(^{36}\) Note that Horvath 1997 reports data similar to our (35b) as grammatical (hence our use of the ‘%’ notation), which, if correct, would actually be unexpected, given the apparently universal ban on non-specific *wh*-expressions construed inside a factive complement (cf. Szabolcsi and
(34) a. *Mit gondolsz, (hogy) kivel beszéltél?
   what-Acc you-think Comp who-with you-spoke
   ‘Who do you think that you spoke to?’

   b. *Mit gondolsz (hogy) mikor érkezünk?
   what-ACC you-think C when we-arrive
   ‘When do you think we’ll arrive?’

(35) a. %Mit sajnálsz, hogy kivel beszéltél?
   what-Acc you-regret Comp who-with you-spoke
   ‘Who do you regret that you spoke to?’

   b. *Mit sajnálsz, hogy mikor érkezünk?
   what-Acc you-regret Comp when we-arrive
   Intended: ‘When do you regret that we will arrive?’

Support for our claim that there is a referentiality requirement in wh-expletive constructions formed with factive verbs (that does not apply to the non-factive counterpart) comes from the following contrast. The wh-expletive in (36) is interpreted as referential, so the existence of an answer is presupposed. This requirement does not apply in (37), where the wh-expletive is interpreted non-referentially. (The contrast is similar to that observed with which vs. what questions in English.)

37. The test is modeled after Horvath’s (1997) example (55), albeit with somewhat different results.

38. Interestingly, Horvath (1997) herself also notes a particular kind of correlation between the D-linking of the complement clause and its participation in the wh-expletive construction. The observation is that Hungarian wh-expletive constructions exhibit negative island effects just in case the complement clause is interpreted as non-D-linked. With matrix verbs that require a D-linked complement clause, the negative island effect is obviated:

   i. *Mit nem gondolsz, hogy kivel beszélt Mari?
      what Neg you-think Comp who-with spoke Mary
      Intended: ‘Who is the person you don’t think Mary spoke to?’
      (example from Szabolcsi&Zwarts 1993, cited by Horvath)
(36) a. \textit{mit} sajnál János, hogy kivel randizott Mari? \\
what-Acc regrets John C who-with dated Mary \\
‘Who does John regret that Mary has dated?’

b. \textit{# Semmit. Nem is ismeri Marit} \\
nothing-Acc Neg prt knows Mary-Acc \\
‘Nothing. (i.e. ‘Nobody.’) He doesn’t even know Mary’

(37) a. \textit{mit} mondott János, hogy kivel randizott Mari? \\
what-Acc said John C who-with dated Mary \\
‘Who did John say that Mary has dated?’

b. \textit{Semmit. Nem is ismeri Marit} \\
nothing-Acc Neg prt knows Mary-Acc \\
‘Nothing. (i.e. ‘Nobody.’) He doesn’t even know Mary’

These examples illustrate that there is evidence in Hungarian for two different syntactic structures when it comes to question formation, a difference that we will claim comes down to the CP vs. \textit{cP} distinction we have argued for in preceding sections. Although space limitations do not allow for detailed exposition, in the rest of this section we explore the following points:

i. Extraction of a non-specific \textit{wh}-phrase through Spec,\textit{CP} is unavailable both in English and Hungarian. This means that it is the presence of \textit{cP} that allows for the extraction of a non-specific \textit{wh}-expression in the English example (31a).

ii. This has the consequence that both (32a) and (32b) must involve a \textit{CP} (rather than a \textit{cP}) complement, since we can see that the extraction of the non-specific \textit{wh}-phrase is disallowed in these examples. This possibility is predicted by our analysis, given our claim that non-factive verbs can freely select a \textit{CP} complement.

iii. With non-factive verbs, the choice of a \textit{cP} complement is also available. In Hungarian, the \textit{wh}-expletive \textit{mit} is generated in Spec,\textit{cP} analogously to \textit{azt}.39

ii. \textit{Mit nem ismert} be János, hogy \textit{hányszor} hamisította \\
what Neg admiter Prt John Comp how-many-times forged \\
\textit{az} \textit{aláírásodat?} your signature \\
‘Forging your signature how many times did John not admit to?’

This observation clearly fits in with our proposal, and merits closer investigation with respect to the role of negation.

39. Interestingly, a \textit{wh}-expletive equivalent of \textit{úgy} (see Example 22) also exists in Hungarian:

i. János \textit{úgy} tudja/érzi/mondja, hogy Mari \textit{utálja} \\
John so knows/feels/says C Mary hates \\
‘John knows/feels/says that Mary hates him’
Thus, whenever the complement is cP, any wh-extraction is barred from the complement due to the presence of the wh-expletive in Spec, cP. Herein lies the difference between English and Hungarian.

iv. For some speakers, a wh-expletive can also be generated in Spec, CP, making this an alternative to long-distance extraction. Still, there is a specificity requirement on this expletive (see (36)), which furnishes evidence that it is an associate of CP (rather than cP).40

v. The prediction then is that non-factive verbs, which can select either a CP or a cP, should allow both long-distance wh-extraction and the wh-expletive construction for all speakers when the wh-expression at hand is a specific argument. (Given the scenario outlined above, it follows that non-specific wh-expressions will never be extractable long-distance in Hungarian.) This provides us with a minimal contrast between the two constructions. According to the semantic characterization we have offered for CP and cP, we expect to witness an information structural difference between such minimally different sentence-pairs.

In what follows, we will discuss the above predictions in some detail, showing that they do in fact cover the empirical data quite well, and also that the semantic effects predicted by the different syntactic structures assumed do obtain. For clarity, the structures we propose for the constructions (long-distance wh-movement, as in (33), and the wh-expletive construction, as in (34)-(35a)) are in (38).

(38) a. (=33) 
\[
\text{TP} \left[ Kivelmondta \ldots \text{VP} tj \left[ \text{CP ti hogy } t_j \right] \right]
\]
b. (=34) 
\[
\text{TP} \left[ Mitgondolsz \ldots \text{VP} tj \left[ \text{cP ti } \text{CP hogy } \text{TPkivelk } \ldots \text{tk} \right] \right]
\]
c. (=35a) 
\[
\text{TP} \left[ Mit \text{sajnalsz} \ldots \text{VP} tj \left[ \text{cP ti } \text{CP hogy } \text{TPkivelk } \ldots \text{tk} \right] \right]
\]

There is an implication of the structures in (38), namely that the wh-expletive is a ‘stand-in’ for the entire embedded clause (just as azt represents the complement clause in a declarative scenario), not for the embedded wh-phrase. Although we will not discuss this consequence in detail, we refer the reader to Julia Horvath’s extensive work on the wh-expletive construction (Horvath 1995, 1997, 1998),

ii. János hogy tujda/érzi/mondja, hogy ki utálja?
John how knows/feels/says C who hates
‘Who does John know/feel/say hates him?’

This adds support to the analogous treatment of the wh-expletive and declarative embedding constructions.

40. We note a technical issue here that will need to be worked out in future work. While all the other clausal expletives we posit are obligatory in the sense that they do not vary freely with a movement option – at least not without an effect on interpretation – this occurrence of the wh-expletive seems to be optional, and in free variation with the movement option. Further research is needed to see whether this is true optionality.
where she argues (on different grounds) precisely for this point – that in these constructions the *wh*-expletive is the associate of the embedded clause and bears no direct (semantic or syntactic) relation to the embedded *wh*-expression. In the present account this is nicely borne out since there is no movement or other relation between the two *wh*-phrases, as the expletive originates in Spec,*cP* or Spec,*CP* and the contentful *wh*-expression occupies Spec,TP in the embedded clause. We discuss the contrasts between the constructions (33) and (34), leaving aside the more marginal (35a) for lack of space, noting merely that the referentiality requirement on *mit* in (35a) supports our analysis (see also fn. 43.).

Let us now walk through the two syntactic configurations in Hungarian – first, verbs selecting CP, and second, verbs selecting *cP* – and the movement possibilities and interpretational effects predicted by each of these configurations. In the first configuration, the verb (be it factive or non-factive) takes a CP as its complement as in (32). Since CP is a weak island, only specific *wh*-expressions can be extracted long-distance in this construction. This scenario covers ‘factive islands’, or, more precisely, the specificity requirement on a *wh*-phrase extracted out of a CP complement (i.e. (38a)). This means that this island effect correlates directly with the semantic type of the complement clause: referential CPs are islands to the extraction of non-specific *wh*-phrases.41 While we aim to eliminate ‘factivity’ from the set of semantic concepts that have a strict syntactic correlate, the correspondence between structure and interpretation is also derived on this account. At the same time, a syntactic explanation is also possible, namely that non-specific *wh*-expressions simply cannot move through Spec,CP, barring extraction of such elements from CP altogether (unless *cP* is available as an alternative escape hatch). Given that CP is a referential entity, it is not unreasonable to assume that it has a specific feature that is incompatible with a non-specific element moving through its specifier. We cannot undertake to tackle this issue here, although we tentatively suggest that there is Spec-Head agreement for specificity in CP that disallows a [–spec] element in Spec,CP at any point in the derivation. This idea finds support in the fact that a clausal expletive that is arguably generated in this specifier position is invariably interpreted specifically.42 This is so in the case of both *azt* and *mit* when associated with this position.

41. Note that this means that – although we will not undertake to elaborate this point here – a fully semantic account is also compatible with this observation. (In fact, Szabolcsi & Zwarts 1993, advocating a semantic account of factive islands, note that while factive embedded clauses are universally weak islands – something that is predicted on our account also, as factives always take CP complements – language-specific syntactic factors also come into play that cannot contradict but can largely overlap with the semantic restriction.)

42. Marcel den Dikken (p.c.) points out that this restriction could be related to Fiengo & Higginbotham’s (1981) observation that a variable generally cannot be bound from outside a
In the second configuration, the (non-factive) verb takes a cP complement. In Hungarian, a wh-expletive is generated in Spec,cP, barring long-distance movement of any wh-phrase. The embedded wh-phrase moves only as high as the canonical wh-position in the embedded clause (Spec,TP), thereby forming a construction that, for all intents and purposes, looks like a true question (as predicted by the cP structure). Meanwhile, the wh-expletive mit moves up to the matrix wh-position as a scope marker. This means that azt (the expletive element occurring with declarative clauses) and mit (the wh-expletive) originate in the same position, and represent the sentential complement in the matrix clause (in line with Horvath's (1995) analysis of this construction, who claims the wh-expletive is an associate of the entire embedded CP, not of the wh-element found in the embedded clause).

As mentioned above, the semantic characterization we have offered for cP and CP predicts that there should be interpretational differences between cases where a non-factive verb takes a cP complement (resulting in the wh-expletive construction) or a CP complement (allowing long-distance extraction of a specific wh-element). Such differences are actually attested, as shown in (39).

(39) Mit gondolsz, (hogy) kivel találkoztam tegnap?
what-ACC you-think Comp who-with I-met yesterday
‘Guess who I met yesterday?’ (out-of-the-blue context)

(40) Speaker A: Tegnap találkoztál valakivel!
yesterday you-met someone
‘You met someone yesterday!’

specific DP (hence the ban on subextraction from specific DPs). It seems to be the case that such extraction also improves for specific extractees:

i. a. ?Which movie star did you see the (latest) picture of?
b. *Who did you see the picture of?

In general, the structural parallelism between DP and CP (which has received a lot of attention in the literature) in this domain is certainly worth exploration. There are many recent works that converge on this point, including Aboh's (2005) work on Kwa factives (which are shown to be ‘event relatives’) and Haegeman's (2008a) recent account (which argues that factive embedded clauses involve an operator chain in the left periphery, much akin to Den Dikken's (2006) idea about specific DPs). We also believe that there are many interesting issues left untouched by our paper, which we intend to get to in upcoming work.

Alternatively, we can take the expletive to be the same as the one featured in embedded statements (which later surfaces as azt) but this pronominal would additionally pick up a [+wh] feature in the matrix wh-position. Note that the obligatory movement of this element to the matrix clause is already predicted by the fact that the cP (or its associate) must be informationally prominent in the complex sentence. We leave this issue open.
Speaker B: És kivel gondolod hogy találkoztam?
and who-with you-think Comp I-met
‘And who do you think I met?’ (not possible out-of-the-blue)

While the embedded clause in (39) constitutes a potentially out-of-the-blue question, B’s response in (40) is only natural in a situation where the complement clause is part of the background (see Speaker A’s context), and the fronted *wh*-element is interpreted referentially. On our account, this difference derives from the semantic type of the complement clause: a cP involves no necessary presupposition (since the proposition or question it dominates is brought into the context via the speech act denoted by it).44

Finally, let us return briefly to the difference between English and Hungarian. As shown above, the main difference is seen in the cases where cP is projected – when it is not, extraction of non-specific *wh*-phrases is always prohibited. When cP is there, English and Hungarian behave differently – in English, where the *wh*-expletive strategy is not used, cP provides an escape hatch for the extraction of elements

44. The account we have outlined has the consequence that for speakers who accept the *wh*-expletive with either cP or CP, the contrast between the two (an ‘open question’ vs. a ‘resolved question’, cf. McCloskey (2005)) should still be detectable. Although this is all very tentative at this point, we seem to have two pieces of evidence that point in this direction. Firstly, verbs that can normally take a cP complement can also embed questions not involving *wh*-expressions in the *wh*-expletive construction (contra Horvath 1997), as in i. Factive verbs cannot embed such question acts. A related observation is that an answer to a *wh*-expletive construction formed with a factive verb cannot consist of the answer to the embedded question, illustrated in ii.. These contrasts furnish evidence that cP-constructions actually involve an embedded ‘question act’. 

i. a. Mit gondolsz, hogy a TV vagy a Rádió hozta a legnagyobb változást az emberek életében?
what you think Comp the TV or the radio brought the greatest change-Acc the people life-in
‘Do you think TV or radio brought the greatest change into people’s lives?’

ii. a. Speaker A: Mit gondolsz, hogy Mari kivel randizik?
what you-think Comp Mary who-with dates?
‘Who do you think Mary is dating?’

Speaker B: Péterrel.
Peter-with
‘Peter’

b. Speaker A: %Mit sajnálsz, hogy Mari kivel randizik?
what you-regret Comp Mary who-with dates?
‘Who do you regret that Mary is dating?’

Speaker B: Azt, hogy Péterrel (randizik). / *Péterrel.
Dem-Acc Comp Peter-with dates Peter-with
‘That (she is dating) Peter’
that cannot move through Spec,CP, while in Hungarian cP is a place where clausal expletives (azt and mit) are generated. This difference is also attested in declaratives: while cP is not filled by any overt element in English (thus providing space for negative preposing, for example), Hungarian generates a clausal expletive in this projection, which then moves up to represent the complement clause in the comment part of the complex sentence, thereby deriving the correct interpretation for this semantic object.

3. Summary and conclusion

In this paper we have argued for the thesis that factivity is not the relevant concept for predicting the syntactic complexity of an object clause. We showed evidence from Hungarian and English that, by and large, factive embedded clauses are syntactically simpler (CPs, which we take to be referential entities denoting a proposition) than non-factive embedded clauses (cPs, which encode speech acts). At the same time, we also argued that non-factive verbs, which do not impose any special semantic restriction on the referentiality of their complement, are compatible with both cP and CP, although the choice has clear implications for the interpretation of the complex sentence. In the last section, we sketched an account of the strikingly different behavior of English and Hungarian with respect to long-distance wh-constructions.

Clearly, many important questions are opened up and left open by this paper. The semantic characterization we have offered for cP and CP is very minimal in some sense: we bared the definition down to the core property of referentiality. Given the complexities of interpretation presented by embedding constructions, something needs to be said about the relationship between our definition (which we take to be essentially syntactic in nature) and other concepts that seem to come into play, such as novelty of information, first vs. second mention, information vs. contrastive focus, as well as the interaction between the semantic type of the complement clause and operators such as negation. Also, languages where the syntactic difference between the two complement types manifests itself differently from the languages surveyed here will provide a good testing ground for our hypotheses, especially with respect to the selectional flexibility of non-factives. We hope to tackle these issues in future work.
Eliminating factivity from syntax

References


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Negative quantifiers in Hungarian*

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This paper derives the properties of Hungarian se-pronouns from independently motivated assumptions, among them an adjunction theory of Q-raising allowing both left- and right-adjunction. Se-pronouns are identified as negative polarity quantifiers not conveying any negation, licensed by the negative particle. Based on results of Surányi (2006a,b), se-pronouns interpreted universally are analyzed as universal quantifiers, whereas se-pronouns interpreted existentially are analyzed as Heimian indefinites bound by existential closure. Universal and existential se-pronouns have different word order possibilities. The former, targeted by Q-raising, are left- or right-adjointed to NegP (either to the NegP dominating PredP, or to the NegP dominating FocP). Right-adjointed quantifiers participate in the free PF-linearization of postverbal constituents. Existential se-pronouns can be left in situ in the verb phrase, or can be focus-moved into Spec,FocP. The scope interpretation of se-pronouns is determined by the Scope Principle. The particle sem is analyzed as a negative polarity item, a minimizer to be preceded by nem, or to be fused with it.

1. Goal

This paper describes the grammar of Hungarian se-pronouns and se-proadverbs, analyzing them as universal and existential expressions appearing in negative sentences. It aims to account for their licensing, their word order behavior, their scope, and their prosody – to the extent prosody interacts with scope interpretation. It shows that Hungarian is a strict negative concord language, in which negation is conveyed by a negative particle heading NegP, and is also indicated on universal and existential pronouns and proadverbs under appropriate conditions. [+specific] se-pronouns are universal quantifiers undergoing overt Q-raising to NegP. If Q-raising is analyzed as adjunction freely linearizable as either left-adjunction or right-adjunction, then all their properties follow from independent constraints.

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[-specific] *se*-pronouns, interpreted as existentials, on the other hand, are Heimian indefinites bound by existential closure below negation, potentially undergoing focus movement – as proposed by Surányi (2002, 2006a,b).

The paper is organized as follows. Section 2 presents the empirical facts to be accounted for. Section 3 discusses Hungarian sentence structure. Section 4 surveys current theories of Hungarian quantification (Szabolcsi 1997, Brody & Szabolcsi 2003, Surányi 2002, 2006a,b, and É. Kiss 2007), and argues for an adjunction theory of Q-raising. Section 5 puts forward the proposed account of *se*-pronouns, identifying their two types in 5.1, analyzing universal *se*-pronouns in 5.2, and existential ones in 5.3. Section 6 contains a novel account of the behavior of the particle *sem*. Section 7 is a summary.

2. The problems

An analysis of negative quantifiers (referred to as *n*-words in Universal Grammar, and as *se*-pronouns and *se*-proadverbs in Hungarian syntax) must answer the questions enumerated under i.–vi.

i. What are their licensing conditions? How can we account for the distribution of grammaticality in sentences like (1a-g) and (2a-c)?

(1) a. *Senki jelent meg.
   nobody showed up

   b. Senki nem jelent meg.
      nobody not showed up
      ‘Nobody showed up.’

   c. *Mindenki nem jelent meg.
      everybody not showed up

   d. Nem jelent meg senki.
      not showed up nobody
      ‘Nobody showed up.’

   e. Nem jelent meg mindenki.
      not showed up everybody
      ‘Not everybody showed up.’

   f. Nem mindenki jelent meg.
      not everybody showed up
      ‘Not everybody showed up.’

---

1. (1c) is acceptable with a hat contour, i.e., with a fall-rise on the universal quantifier. This is not the intended reading; the universal quantifier is to be pronounced with the usual falling tone.
g. **Mindenki csak az első órán nem jelent meg.**
   everybody only the first class-on not showed up
   ‘For everybody it was only the first class where he did not show up.’

(2) a. *Nem érkezett valaki.
   not arrived somebody

b. Nem érkezett senki.
   not arrived nobody
   ‘Nobody arrived.’

c. Valaki nem érkezett meg./Nem érkezett meg valaki.
   somebody not arrived prt
   ‘Somebody did not arrive.’

As shown by (1a,b), a *se*-pronoun requires a clause-mate negative particle. (1c) suggests that a *se*-pronoun is a kind of universal quantifier confined to negative sentences. However, as the minimal pair in (1d–e) shows, the presence of a negative particle is not enough to license a *se*-pronoun. We might suspect that the positive universal quantifiers in (1e–f) are not affected by the presence of the negative particle because they are in the scope of negation instead of taking scope over it, but (1g) refutes this assumption. In the minimal pair in (2a,b) the *se*-pronoun appears as an alternative to the existential pronoun *valaki* ‘somebody’. (2c) raises a further question: the pronoun *valaki*, required to be replaced by the negative *se*-pronoun in (2a,b), becomes grammatical after the addition of a perfectivizing verbal particle to the sentence. The role of the particle may actually be indirect; the perfectivizing particle has been argued to change the selectional requirements of verbs of creation and appearance/coming into being. Whereas a bare verb of creation and appearance/coming into being selects a [–specific] theme argument, the particle variant – presupposing the creation event, and asserting its completion – selects a [+specific] theme (cf. É. Kiss 2006a).

ii. Some *se*-pronouns and *se*-proadverbs are interpreted universally, some are understood existentially, and some are ambiguous:

(3) a. **Senki nem érkezett a déli vonattal.**
   nobody not arrived the noon train-with
   ‘There isn’t anybody who has arrived with the train at noon.’

b. **Senki nem érkezett meg a déli vonattal.**
   nobody not arrived prt the noon train-with
   ‘Everybody is such that he/she has not arrived with the train at noon.’
(4) **Senki nem jelent meg a vizsgán.**
   nobody not showed up the exam-at
   a. ‘There isn’t anybody who showed up at the exam.’
   b. ‘Everybody is such that he/she didn’t show up at the exam.’

(5) a. **Senki nem PÉNTEKEN vizsgázott.**
   nobody not Friday-on took.exam
   ’Everybody was such that it wasn’t on Friday when he took the exam.’
   
   b. **Soha nem a PROFESSZORNÁL vizsgáztam.**
   never not the professor-with took.exam-I
   ‘Never was it the professor who I was examined by.’

What does their interpretation depend on? Do universal and existential se-pronouns represent the same semantic category and display the same syntactic behavior?

iii. How can all the word order possibilities of se-pronouns and proadverbs be derived? As is well-known, in the preverbal section of the sentence the word order of se-pronouns is strictly fixed; postverbally, on the other hand, it is completely free. Compare (6) and (7). In (6) senkit sem ‘nobody-ACC’ must precede the focussed csak két cikket ‘only two paper’, and must follow the topicalized subject. In (7), where these constituents have been crossed by verb movement, their relative order is free.

(6) a. **A vizsgára senki sem csak két cikket olvasott el.**
   the exam-for nobody not only two paper read PRT
   ‘Nobody read only two papers for the exam.’
   b. *Senki sem a vizsgára csak két cikket olvasott el.
   c. *Csak két cikket a vizsgára senki sem olvasott el.

(7) a. **EZÉRT nem olvasott el csak két cikket senki sem**
   therefore not read PRT only two paper nobody MIN
   a vizsgára.²
   the exam-for
   ‘That was why nobody read only two papers for the exam.’
   b. **EZÉRT nem olvasott el a vizsgára csak két cikket senki sem.**
   c. **EZÉRT nem olvasott el csak két cikket senki sem a vizsgára.**

Question iii. is related to question ii., i.e., word order position affects interpretation. For example, a se-pronoun in pre-focus position can only be universal – see (5a,b).

iv. What determines the stress of se-pronouns and proadverbs?

². On the minimizing particle *sem* see Section 6.
The *se*-pronouns in (1b,d) are obligatorily stressed. Those in (8a,b), licensed by a negative particle below focus, on the other hand, are obligatorily destressed:

(8) a. Péter csak egyszer nem hívott meg senkit sem vacsorára.
   Peter only once not invited nobody min dinner-for
   ‘It was only once that Peter did not invite anybody for dinner.’

b. Péter csak egyszer nem hívott meg vacsorára senkit sem.

v. What determines the scope interpretation of *se*-pronouns and proadverbs?
What is the role of word order, and what is the role of prosody? Compare:

(9) a. ‘Senki nem ‘két tárgyból nem vizsgázott le.
   nobody not two subject-from not passed prt
   ‘For nobody was it two subjects that he didn’t pass.’

b. ‘Nem két tárgyból nem vizsgázott le ‘senki.
   ‘For nobody was it two subjects that he didn’t pass.’

c. ‘Nem két tárgyból nem vizsgázott le senki.
   ‘It wasn’t two subjects that nobody passed.’

The scope order of the preverbal scope bearing elements in (9) corresponds to their linear order. The scope of the postverbal *se*-pronoun, on the other hand, depends on its stress: the stressed *se*-pronoun in (9b) has scope over the focus, whereas the unstressed *se*-pronoun in (9c) is in the scope of the focus and the higher negation.

vi. Can *se*-pronouns and proadverbs be negative?

The grammatical examples under (1) suggest that they cannot; negation is carried by the negative particle *nem*. However, the negative particle can also be absent; it is missing when a *se*-pronoun supplemented by the optional minimizing particle *sem* is preposed into preverbal position, as in (10b-d).

(10) a. Nem jelent meg soha sem senki sem.
   not showed up never min nobody min
   ‘Nobody ever showed up.’

b. Soha sem (*nem) jelent meg senki sem.

c. Senki sem (*nem) jelent meg soha sem.

d. Senki (*sem) soha sem (*nem) jelent meg.

In (10b-d) *sem* blocks the appearance of the negative particle *nem*, which raises the possibility that logical negation is expressed by the *se*-phrase modified by *sem*. Interestingly, only the rightmost one of preverbal *se*-pronouns can have a *sem*
cliticized to it, as shown by (10d). It needs to be clarified what governs the distribution of the particle \( \textit{sem} \) and the cooccurrence of \( \textit{sem} \) and \( \textit{nem} \).

3. Hungarian sentence structure

The answers to these questions must follow from Hungarian sentence structure, from the syntax of negation and quantification, and from general principles of universal grammar.

I assign to neutral Hungarian sentences the base structure in (11). The layered \( \text{vP} \) is dominated by \( \text{PredP} \), a projection proposed by Zwart (1994) and Koster (1994) for Dutch particle verbs, establishing a specifier-head relation between the secondary and the primary predicates, thereby ensuring their complex predicate interpretation. The \( \text{PredP} \) projection also has an aspectual function; situation aspect depends on whether Spec,\( \text{PredP} \) is filled by a resultative/terminative element, or a bare nominal, or is left empty. TenseP is assumed to dominate PredP, but is not represented in (11) since it does not alter word order. The functionally extended verbal projection is optionally subsumed by a TopP projection.

\[
(11) \quad \text{TopP} \quad \text{Top'} \quad \text{PredP} \quad \text{Pred'} \quad \text{vP} \quad \text{v'} \quad \text{DP} \quad \text{V'} \quad \text{AdvP} \quad \text{az autóját} \quad \text{V} \quad \text{t_j} \quad \text{t_k} \quad \text{t_i} \quad \text{t_j} \quad \text{t_k} \quad \text{Peter} \quad \text{PRT} \quad \text{broke} \quad \text{his car}.
\]

'Peter broke his car.'
PredP cannot be directly combined with focus or negation; first it has to be turned into a V-initial structure (which presumably serves to signal a type-shift of the neutral predicate). The landing site of V-movement is the head position of a so-called Non-Neutral Phrase (a term of Olsvay 2000a). The NN head can be merged with a FocP, and with both a lower NegP, and a higher one, dominating FocP. A focussed constituent occupies the specifier of FocP, and the negative particle occupies the head (or perhaps the specifier) of NegP. A non-neutral sentence can also be extended into a TopP.

The proposed structure also determines scope interpretation: operators adjoined to NNP have scope over their c-command domain. The c-command domain of focus, the so-called presupposition, is destressed. Presupposed material is also destressed in the scope of negation.

\[
\begin{array}{c}
\text{NegP} \\
\text{nem} \\
\text{FocP'} \\
\text{PÉTER} \\
\text{nem} \\
\text{NonNeutP'} \\
\text{NonNeut} \\
\text{PredP} \\
\text{vizsgázott} \\
\text{Pred'} \\
\text{Pred} \\
\text{vP} \\
\text{t_j} \\
\text{t_i} \\
\text{v'} \\
\text{v} \\
\text{VP} \\
\text{t_j} \\
\text{két tárgyból} \\
\text{two subject-from} \\
\text{prv} \\
\text{two subject-from} \\
\end{array}
\]

'\text{It wasn't Peter who didn't pass in two subjects.}'

3. For a more detailed justification of this structure, see É. Kiss (2008a).
4. Destressing is due to the following rule:
   i. Destress Given (Féry – Samek-Lodovici 2006)
      A given phrase is prosodically nonprominent.
Alternative theories of Hungarian sentence structure assume that the V moves up into the lower Neg and Foc heads (see, e.g., Brody 1990, 1995, Puskás 2000, and Surányi 2002); however, Horvath (2000, 2005) provides conclusive evidence against this view. For example, the V-initial section of a focus construction is subject to deletion and coordination, which is evidence of its maximal projection status.

Surányi’s (2002) and Puskás’s (2000) sentence structures only have room for a single NegP projection. Puskás treats the pre-focus negation as constituent negation, which does not explain why it triggers negative concord (see (5)). Surányi extends the verb phrase into a so-called a ZP, a projection with two specifiers, one for a focus, another one for negation. He claims that in the case of a ‘…neg, focus, neg, V…’ string, the first negation is “metalinguistic negation” (cf. Horn 1989). His evidence is prosodic: he claims that it induces an obligatory fall-rise countour. This claim is contrary to fact; for example, (12), involving two negations, is to be pronounced with a falling tone.5

A characteristic feature of Hungarian sentence structure is the free constituent order of the postverbal section. I have argued in É. Kiss (2007; 2008b) that the free linearization of the postverbal string is a PF phenomenon; it does not affect interpretation, and it is conditioned by a PF constraint, Behaghel’s Law of Growing Constituents, requiring that phonologically light constituents precede heavier ones (Behaghel 1932).

4. Theories of quantifier-raising

Se-pronouns, or at least a subset of them, have been analyzed as quantifiers; hence their syntax is determined by how we analyze quantification.6 In generative syntax, quantifiers were traditionally assumed to undergo quantifier-raising. In the nineteen eighties and early nineties, Q-raising was analyzed as adjunction (cf. May 1984), taking place invisibly in LF in most languages, but being part of visible syntax

5. In Surányi’s example the fall-rise contour is induced by the contradictory conjunct beginning with hanem ‘but’:

i. Nem Mari nem jött el, hanem …
   not Mary not came but
   ‘It wasn’t Mary who didn’t come but…’

6. Whereas the analysis of the n-words of the Indo-European languages was modelled on the analysis of wh-operators by Haegeman and Zanuttini (1991), Hungarian approaches have treated se-pronouns analogous to positive universal and existential quantifiers – see, among others, É. Kiss (2002a,b), and Surányi (2002, 2006).
in Hungarian. Q-raising was assumed to be triggered by the Condition on Quantifier Binding (12), and to be subject to the Condition on Proper Binding (13):

(13) **Condition on Quantifier Binding:**
    Every quantified phrase must properly bind a variable.

(14) **Condition on Proper Binding:**
    Every variable in an argument position must be properly bound.

This theory did not seem to fit in with the Minimalist framework (Chomsky 1995), where movement is triggered as a last resort by the requirement that a morphological feature of the moved category and that of a functional head enter into a checking relation in a specifier–head configuration. In the case of Q-raising, there is no functional head in need of feature checking, and – depending on which version of Q-raising we adopt – either the landing site of Q-raising, or Q-raising itself involves optionality. Another problem of traditional Q-raising is its non-differential formulation. Well-known facts of Hungarian (cf. É. Kiss 1987, 1991) have made it clear that different types of quantifiers are targeted by different syntactic operations, and Q-raising should be restricted to monotone increasing distributive quantifiers (Szabolcsi 1994).

Szabolcsi (1997), Beghelli and Stowell (1994, 1997), and Brody and Szabolcsi (2001, 2003) reacted to this situation by elaborating a differential theory of Q-raising, in which different types of quantifiers are attracted to the specifiers of different functional heads in need of feature checking (after Spell-out in English, and in visible syntax in Hungarian). In Szabolcsi’s version of the theory, distributive QPs (such as *mindenki* ‘everybody’, *mindegyik diák* ‘each student’) move to the specifier of a DistP projection, and Counting QPs (such as *kevés diák* ‘few students’, *hatnál több diák* more than six students, *hat diák* ‘six students’ under a non-specific interpretation) land in the specifier of a CountP projection (possibly representing a subtype of FocP). Group-denoting QPs (i.e., definite and specific indefinite noun phrases) land either in Spec,RefP (referred to in the Hungarian literature as Spec,TopP) or in Spec,CountP. Szabolcsi (1997) and Brody and Szabolcsi (2001, 2003) do not discuss negative quantifiers, but according to Beghelli & Stowell (1997), they should land in Spec,NegP. The series of clausal functional projections assumed in the Hungarian sentence by Brody and Szabolcsi (2001, 2003) is represented under (15).
Q-raising is obligatory; QPs in the postverbal section of the Hungarian sentence occupy the same types of specifier positions as they do preverbally. It is assumed that the Ref(P)–Dist(P)–Foc(P) series of functional projections is iterated above the lexical as well as the morphosyntactic projections of the V, i.e., above v(P), AgrO(P), T(P), and AgrS(P). Quantifiers landing in lower series surface postverbally because the V moves across the lower series into the AgrS head. For example:

\[
\text{(16) a. } \left[ \text{Dist} \text{Mindenki} \left[ \text{Count} \text{kevés filmet} \left[ \text{AgrS} \text{látott} \right] \right] \right] \\
\quad \text{everybody} \quad \text{few} \quad \text{film-ACC} \quad \text{saw} \\
\quad \text{`Everybody saw few films.'}
\]

\[
\text{b. } \left[ \text{Count} \text{Kevés filmet} \left[ \text{AgrS} \text{látott} \left[ \text{Dist} \text{mindenki} \right] \right] \right] \\
\quad \text{`Few} \quad \text{films} \quad \text{were seen by everybody.'}
\]

Quantifiers in a higher series take scope over those in a lower series. The possibility of inverse scope is derived from Brody’s Mirror Theory (Brody 1997). Brody claims that the syntactic head–complement relation is the mirror image of the morphological complement–head relation, i.e., whereas a syntactic head precedes its complement, including the quantifiers it takes scope over, a morphological head follows its complement, with which it forms a morphological word. Invisible scope-bearing heads, i.e., Ref, Dist, and Count/Foc, can be analyzed as either syntactic or morphological heads. Quantifiers taking inverse scope are specifiers of a morphological Dist head.\(^7\)

\[\text{\(7.\) Brody and Szabolcsi \(2001, 2003\) derive certain types of inverse scope via reconstruction; however, the data assumed to necessitate reconstruction are nonexistent in my dialect. According to Brody and Szabolcsi, i. is ungrammatical; its meaning can only be expressed by the permutation in ii. – because a legtöbb x‘ the most x’ has a [+ref] feature, which must be checked in Spec,RefP.}
\]

\[\text{i. } *\text{Minden tanár a legtöbb osztályban \text{HATNÁL} több példát adott fel.} \\
\quad \text{every teacher the most class-in six-from more problem gave PRT} \\
\quad \text{`Every teacher gave more than six problems in most classes.'}
\]
Though theoretically appealing, this theory faces a number of empirical problems, as shown by Surányi (2002) and É. Kiss (2007). Thus it leaves unexplained why DistP and RefP are iterable in every series, whereas CountP/FocP is not iterable in the highest series; and why a counting QP must raise to the highest empty Spec,CountP/FocP, whereas a group-denoting QP or a distributive QP can also stop in a lower series, leaving the higher Spec,RefP and Spec,Dist positions empty. Furthermore, the assumption of iterated functional series does not account for all the word order possibilities attested. In (17), for example, the theory predicts a clause-final position for the verbal particle; it is unclear how the particle comes to precede an operator series.

\[
(17) \quad \left[ \text{CountP két diák [AgrSP bukott [? meg [DistP háromszor is [DistP mindkét tárgyból]]]]] subject-from 'It was two students who three times failed in both subjects.' \right]
\]

A problematic aspect of Szabolcsi and Brody's feature-checking theory of Q-raising is that there is no obvious way in which it could be extended to negative quantifiers. In Beghelli and Stowell's version of the theory, a negative quantifier is attracted to the specifier of NegP, the lowest operator projection. In Hungarian focus constructions either the background, or the focus, or simultaneously both of them, can be negated, hence two NegPs must be assumed, confined to the highest series of functional pro-

\[
\text{ii. Minden tanár hatnál több példát adott fel a legtöbb osztályban.} \quad \text{'Every teacher gave more than six problems in most classes.'}
\]

Brody and Szabolcsi derive the reading of ii. under which a legtöbb osztályban ‘in most classes’ has scope over hatnál több példát ‘more than six problems’ by reconstructing hatnál több példát into the Spec,CountP of a lower series. For me, however, i. is fully grammatical. In my dialect, noun phrases involving the determiner legtöbb ‘most’ are ambiguous between a referential and a quantificational reading, and can land either in Spec,RefP, or in Spec,DistP, as happens in i.

Brody and Szabolcsi (2003) also assume reconstruction in the derivation of the inverse scope reading of iii.:

\[
\text{iii. Valamit kölcsön-adott mindenki.} \quad \text{'Something, everybody lent.'}
\]

I assume that valamit under a seemingly narrow-scope reading is a contrastive topic, and it is to be analyzed as discussed in É. Kiss and Gyuris (2003). This paper argues that non-individual-denoting expressions, among them quantifiers, can be made suitable for the topic role if they are individuated by being set into contrast. Individuation by contrast enables non-individual-denoting expressions to be interpreted as semantic objects (properties) which the rest of the sentence predicates a (higher-order) property about. A quantifier functioning as a contrastive topic denotes a property of plural individuals, and its apparent narrow scope arises from the fact that it is considered to be a predicate over a variable inherent in the lexical representation of the verb.
jections. The lower NegP must be located between AgrSP and CountP/FocP, and the higher NegP must be located between CountP/FocP and DistP. For example:

(18) a. \([\text{CountP} \ KI [\text{NegP} \ nem [\text{AgrSP} \ vizsgázott \ le?]]]\)
   \(\text{who \ not \ passed \ PRT}\)
   ‘Who didn’t pass?’

b. \([\text{CountP} \ Csak \ KÉT \ DIÁK \ [\text{NegP} \ nem [\text{AgrSP} \ vizsgázott \ le]]]\)
   \(\text{only \ two \ student \ not \ passed \ PRT}\)
   ‘Only two students didn’t pass.’

c. \([\text{NegP} \ Nem \ [\text{CountP} \ csak \ KÉT \ DIÁK \ [\text{NegP} \ nem [\text{AgrSP} \ vizsgázott \ le]]]\]\)
   \(\text{not \ only \ two \ student \ not \ passed \ PRT}\)
   ‘It wasn’t only two students who didn’t pass.’

In the framework elaborated by Beghelli and Stowell (1997), the negative quantifier occupies the specifier of NegP, whereas the Neg head is taken by the negative particle. Under this assumption and those of Brody and Szabolcsi, a postverbal wide-scope negative quantifier (e.g. those in (19b) and (20b)) is the right-hand side specifier of a morphological Neg head. However nem, a visible morpheme, precedes its complement in (19b) and (20b), behaving as a syntactic head. (19c) is even more problematic: senki, having scope over the whole sentence, follows one half of the complement of Neg, and precedes the other half.

(19) a. \(\text{Senki \ nem \ vizsgázott \ le \ két \ tárgyból.}\)
   \(\text{nobody \ not \ passed \ PRT \ two \ subject-from}\)
   ‘Nobody passed in two subjects.’

b. \(\text{Nem \ vizsgázott \ le \ két \ tárgyból \ senki.}\)
   ‘Nobody passed in two subjects.’

c. \(\text{Nem \ vizsgázott \ le \ senki \ két \ tárgyból.}\)
   ‘Nobody passed in two subjects.’

(20) a. \(\text{Senki \ sem \ KÉT \ TÁRGYBÓL \ vizsgázott \ le.}\)
   ‘For nobody was it two subjects that he passed an exam in.’

b. \(\text{Nem \ KÉT \ TÁRGYBÓL \ vizsgázott \ le \ ‘senki \ sem’.}\)
   ‘For nobody was it two subjects that he passed an exam in.’

The interaction of negation and universal quantification raises a further problem. A postverbal distributive quantifier can have scope over NegP and be in the scope of CountP/FocP – see (21). Since negation is not present in the lower series, the distributive quantifier in (21) must be the right-hand side specifier of a projection intervening between CountP/FocP and negation in the highest operator series – but the model does not allow a DistP between CountP/FocP and AgrSP:
Surprisingly, a universal quantifier can also appear below NegP (in which case it does not participate in negative concord). The quantifier can also stand postverbally, under the same scope reading:

\[(22)\]  
\[a. \text{Nem } \text{mindenki } \text{jött el.}\]  
\[\text{not everybody came}\] 
\[\text{‘Not everybody came.’}\]  
\[b. \text{Nem } \text{jött el mindenki.}\]  

In the framework under discussion, \textit{mindenki} ‘everybody’ ought to be in the specifier of a DistP intervening between AgrSP and NegP – but the theory licenses no DistP under NegP, either. Bernardi and Szabolcsi (2006) analyze \textit{nem mindenki} as a negated constituent, presumably a counting quantifier. This analysis does not predict the following facts:

\[(23)\]  
\[a. \text{Nem } \text{mindenki } \text{szintaxisból } \text{bukott meg.}\]  
\[\text{not everybody syntax-from failed}\] 
\[\text{‘Not everybody failed in syntax.’}\]  
\[b. \ast \text{Nem } \text{mindenki } \text{meg bukott szintaxisból.}\]  

If \textit{nem mindenki} is a counting quantifier, it is not expected to precede a focus, as happens in (23a), as both target the same specifier position. If it is categorized as a distributive quantifier, then its pre-focus position in (23a) is accounted for, but the ungrammaticality of (23b) is inexplicable.

Surányi (2002, 2006) subjected the DistP theory of Q-raising to thorough criticism, pointing out that there is no evidence of either a Dist head and a DistP projection, or of an iterated Ref head and a RefP projection (except for a TopP immediately below CP harboring the logical subject of predication). On the contrary,

---

8. Surányi claims that “identifying the movement of universals to their scope position as driven by feature checking in functional projections appears to go against the robust generalization that these movements are clause bound” (2002: 95). Apparent cases of long Q-raising represent A-bar scrambling into topic position according to him. I disagree with this argument (though I share the view that Q-raising involves no feature checking); in examples of the following type the quantifiers originating in the embedded clause bear the pitch accent assigned to the leftmost constituent of the comment in a topic–comment structure:

\[
i. \text{‘Mindenkit, meiggért, hogy meghív } t.};
\text{everybody-ACC promised-he that invites-he}
\text{‘He promised that he would invite everybody.’}\]
the fact that distributive quantifiers have a great variety of potential landing sites argues for the adjunction analysis of Q-raising. Surányi treats Q-raising as left-adjunction, allowing both overt and covert Q-raising. The stress of wide-scope postverbal quantifiers, e.g., those in (19b,c) and (20b), is claimed to indicate that they undergo Q-raising in LF – although the question how to associate stress with LF-movement in the T-model of grammar, in which there is no direct interaction between PF and LF, i.e., how to differentiate (14b) and (16), is left unanswered.

In É. Kiss (2007), I also argued against the feature-checking analysis of Q-raising. I claimed that the differences between focus movement and Q-raising (the presence of V-movement in the case of the former, and the lack of V-movement in the case of the latter; the fixed landing site of the former and the variable landing site of the latter; as well as the fixed direction of the former, and the free (either left or right) direction of the latter) represent differences between substitution and adjunction. The potential landing sites of quantifier adjunction are the functional projections in the extended verb phrase, i.e., all functional projections but TopP and CP. (The impossibility of quantifier adjunction to TopP must be related to the fact that topics are referential, hence they are outside the scope of any quantifier.) If we adopt the null hypothesis that adjunction can be linearized either as left-adjunction or as right-adjunction, the word order, scope, and stress of pre- and postverbal quantifiers follow – without assuming multiple series of operator projections, covert Q-raising, or reconstruction. Compare the structures assigned to (14a,b) and (16):

(24) a. \[
\text{FocP} \quad \text{Mindenki} \quad \text{FocP} \quad \text{kevés filmet} \quad \text{NNP} \quad \text{látott} \quad \text{[PredP t_V \]}\]

‘Everybody saw few films.’

b. \[
\text{FocP} \quad \text{Kevés filmet} \quad \text{NNP} \quad \text{látott} \quad \text{[PredP mindenki} \quad \text{PredP t_V \]}\]

‘Few films were seen by everybody.’

c. \[
\text{FocP} \quad \text{[FocP} \quad \text{Kevés filmet} \quad \text{NNP} \quad \text{látott} \quad \text{[PredP mindenki} \quad \text{PredP t_V \]}\]

‘Everybody saw few films.’

(24a) and (24c) are different linearizations of the same structure with the same reading: the universal quantifier, adjoined to FocP, has scope over the focussed quantifier. In (24b) the universal quantifier has been Q-raised only as high as PredP. The PredP-

---

ii. ‘Minden kollégámmal, szeretném, ha megismerkednél t.,

each colleague-my-with like-COND-1SG if got-acquainted-you

‘I would like you to get acquainted with each of my colleagues.’

9. In some of my studies, e.g., É. Kiss (2002), I also adopted basic elements of Szabolcsi’s theory, namely, the existence of a DistP projection, and the analysis of Q-raising as substitution into Spec,DistP.
adjoined universal quantifier is c-commanded by the focus; hence it has narrow scope with respect to it, and – as part of the presupposition – it undergoes destressing.

Actually, the adjunction analysis of Q-raising has been claimed to be compatible with the Minimalist framework. Fox (1995), Chomsky (1995), and Reinhart (1995) have argued that optional adjunction should be allowed in case it yields a new interpretation. As Chomsky (1995: 377) put it, certain maximal functional projections (those providing landing sites for Q-raising) have an optional affix feature allowing them to host a [quant] category. This affix feature is regulated by economy considerations; it is licensed if “it makes a difference”. If Q-raising yields a scope reading that is also available without Q-raising, the derivation is rejected as uneconomical. In Hungarian, in fact, Q-raising to an A-bar position takes place invariably, whether or not it derives a new scope reading. If overt Q-raising in Hungarian is the same operation as the covert Q-raising of English, this might suggest that Q-raising is obligatorily triggered – presumably by the Condition on Quantifier Binding, requiring that every quantifier bind a variable. (The Scope Principle, requiring that an operator c-command its scope, can also be satisfied by an operator in situ.)

Adjunction is a spatial operation, creating a c-command relation between a quantifier and its scope. Standard Minimalism (not incorporating the antisymmetry theory of Kayne (1994)) contains no grammatical principle that requires an adjunct to be linearized before – rather than after – its host category, i.e., the null hypothesis is to allow both left adjunction and right adjunction.

5. Negative quantifiers

Se-pronouns have been claimed to be quantifiers confined to negative contexts, but not expressing negation in themselves – cf. Puskás (2000), Surányi (2000), É. Kiss (1998; 2002). They require the presence of a negative particle, and their (multiple) occurrence does not yield multiple negation. On the basis of these criteria, Hungarian has been categorized as a ‘strict negative concord’ language – cf. Giannakidou (2002). Giannakidou argues that n-words across languages, among them se-pronouns, are negative polarity items. They are either universal, or ambiguous between a universal and an existential reading. Negative polarity universals take scope over negation, whereas negative polarity existentials are bound by an existential in the scope of negation. As shown by Surányi (2002; 2006a,b), Hungarian se-pronouns are of the ambiguous type. I will argue that their behavior can be derived from the Hungarian sentence structure presented in Section 3 without any stipulations, adopting only independently motivated assumptions.
5.1 Universal versus existential *se*-pronouns

Examples (1a–j) suggested that both universal and existential pronouns alternate with *se*-pronouns in negative contexts. Positive universal and existential pronouns behave differently in Hungarian syntax. The former undergo overt Q-raising – see (24a–c). Existential pronouns, on the other hand, are not quantifiers to be raised into scope positions. They are Heimian indefinites, i.e., they either act as variables bound by existential closure or by an unselective quantifier, in which case they remain in the vP, or they are understood referentially, in which case they can be topicalized (cf. É. Kiss 2002a: 9–10 (fn 1)). The former options are illustrated in (25a,b), the latter, in (25c).

    John invited somebody

b. *Mindenki meg-hívott valakit.*
   everybody invited somebody

  c. *Valakit mindenki meg-hívott.*
   somebody-acc everybody invited
   ‘Somebody was invited by everybody.’

If both universal and existential quantifiers are replaced by *se*-pronouns in negative contexts, then it is reasonable to expect that *se*-pronouns display a dual syntactic behavior, depending on whether they are universals or existentials.

The assumption that the set of *se*-pronouns comprises both universals and existentials is based on solid empirical evidence. Reacting to a debate on the universal or existential status of negative pronouns (cf. Zanuttini (1991), Haegeman and Zanuttini (1991), Haegeman (1995), Puskás (2000), and Giannakidou (2000) versus Ladusaw (1992, 1994), and Acquaviva (1993, 1997)), Surányi (2006a) tested various occurrences of Hungarian *se*-pronouns for symptoms of universal and existential quantification. He checked i. whether they can be modified by ‘almost’, like universals; ii. whether they can be modified by ‘at all’, like existentials; iii. whether they are necessarily associated with an existential presupposition, like universals; iv. whether they can occur as the designated, necessarily non-specific argument of ‘definiteness effect’ verbs, like existentials; v. whether they allow a split reading with modal verbs (neg > modal > quantifier), like existentials; and vi. whether they are incompatible with collective predicates, like universals. Surányi has found that *se*-pronouns appearing in the canonical positions of left-adjointed universal quantifiers share the properties of universals. Postverbal *se*-pronouns, on the other hand, can be either universal or existential (the former are claimed by him to be Q-raised covertly). A VP-internal existential is bound by existential closure (a default existential operator with scope over the verb phrase, and subsumed
by negation). An existential se-pronoun is shown by Surányi to be able to undergo focus movement.

The account to be proposed in this paper shares some of the basic elements of Surányi's approach, but – since it assumes Q-raising to be linearizable as either left or right adjunction – it does not need covert movement. Se-pronouns with scope over negation, like that in (26a), are analyzed as Q-raised universals, whereas se-pronouns in the scope of negation, like that in (26b), are analyzed as existentially bound indefinites. Se-pronouns in Spec,FocP, e.g., that in (26c), are identified as indefinites focus-moved from inside the verb phrase.

(26) a. \[\text{NegP } \text{Senkit [NegP nem [FocP JÁNOS [NNP hívott [PredP meg]]]]}\]
   ‘Everybody was such that it wasn’t John who invited him.’

b. \[\text{TopP János [NegP nem [NNP hívotti [PredP meg t₁ [VP t₁ senkit]]]]}\]
   ‘John didn’t invite anybody.’

c. \[\text{TopP János [FocP SENKIT [NegP nem [NNP hívotti [PredP meg t₁ [VP t₁ t₁]]]]]}\]
   ‘John didn’t invite ANYBODY.’

A focused se-pronoun – unlike regular foci – cannot be subsumed by negation, which might, at first sight, be regarded as evidence against its focus position.

(27) a. \[\ast\text{NegP Nem [FocP SENKIT [NegP nem [NNP hívtam] \text{not} \text{ nobody-ACC} \text{ not} \text{ invited-I}]} \text{PRT} \]
   ‘It wasn’t anybody who I didn’t invite.’

cf. b. \[\text{NegP Nem [FocP JÁNOST [NegP nem [NNP hívtam] \text{not} \text{ John-ACC} \text{ not} \text{ invited-I}]} \text{PRT} \]
   ‘It wasn’t John who I did not invite.’

In fact, the unacceptability of (27a) must have a semantic reason. In (27a), the two links of the chain senkit…t are each negated by a separate negative particle conveying logical negation, which, apparently, cannot be interpreted. That is, (27a) does not refute the assumption that an existential se-pronoun can undergo focus movement.

5.2 The licensing of universal se-pronouns

The se-pronoun in (26a) is interpreted as a universal quantifier with negation in its scope; i.e., (26a) is a negative equivalent of (28):
It is a generally accepted claim of Hungarian generative grammars (e.g., Puskás 2000, 2002, É. Kiss 1998, 2002a) that *se*-pronouns and *se*-proadverbs are pronominal elements appearing in negative sentences. Indeed, as shown by example (1a) reproduced here as (29a), a *se*-pronoun is ungrammatical if no negative particle is present. At the same time, the presence of a negative particle is not sufficient to license a *se*-pronoun – as shown by examples (1b-g), reproduced here as (29b-g). A preverbal universal is realized as a *se*-pronoun if it is left-adjacent to the negative particle – cf. (29b, c, f, g). It is harder to detect what licences a postverbal universal. The distance of the negative particle and the pronoun is not restricted, as long as they are clause-mates (29d), and what is even more perplexing, the positive and the negative universal pronoun appear to occur in exactly the same context (29d,e).

(29) a. *Senki jelent meg.
   nobody showed up

b. Senki nem jelent meg.
   nobody not showed up
   'Nobody showed up.'

c. *Mindenki nem jelent meg.\(^{10}\)
   everybody not showed up

d. Nem jelent meg senki.
   not showed up nobody
   'Nobody showed up.'

e. Nem jelent meg mindenki.
   not showed up everybody
   'Not everybody showed up.'

f. Nem mindenki jelent meg.
   not everybody showed up
   'Not everybody showed up.'

g. Mindenki csak az első órán nem jelent meg.
   everybody only the first class-on not showed up
   'For everybody it was only the first class where he did not show up.'

---

\(^{10}\) (29c) is grammatical if *mindenki*, instead of being adjoined to NegP, is topicalized. Not being referential, it can only be a contrastive topic, having narrow scope with respect to negation.
To account for these facts, let us assume that a negative universal pronoun is licensed if and only if it is adjoined to NegP in the course of Q-raising. (29c) is ungrammatical because it contains a positive polarity universal adjoined to NegP. (29b) and (29d) represent two possible linearizations of the same hierarchical structure, with the se-pronoun adjoined to NegP.

\[
(30) \quad \text{NegP} \quad \text{Senki} \quad \text{NegP} \quad \text{senki} \\
\quad \text{nem} \quad \text{NonNeutP} \\
\quad \text{NonNeut} \quad \text{PredP} \\
\quad \text{jelent} \quad \text{meg} \quad \text{t}
\]

Whether senki is pronounced left or right, it c-commands NegP, thereby satisfying both the Scope Principle, and the Condition on Quantifier Binding.

In (29e,f), the universal quantifier has been Q-raised to a non-negative functional projection in the scope of NegP, whereas in (29g) it has been Q-raised to a non-negative functional projection above NegP. These contexts can only license a positive polarity universal. (29e) is structurally ambiguous; the universal can be adjoined either to PredP, or to NNP, as shown in (31a,b). In (29f), the universal quantifier is left-adjoined to NNP – see (32a). In (29g), it is adjoined to FocP – see (32b).

\[
(31) \quad \text{a. } \left[ \text{NegP Nem [NNP jelent [PredP meg] mindenki]} \right] \\
\quad \text{not showed up everybody}
\]
\[
\quad \text{b. } \left[ \text{NegP Nem [NNP jelent [PredP meg] mindenki]} \right] \\
\]

\[
(32) \quad \text{a. } \left[ \text{NegP Nem [NNP mindenki [NNP jelent [PredP meg]]]} \right]^{11} \\
\quad \text{b. } \left[ \text{FocP mindenki [FocP csak az első órán [NegP nem everybody only the first class-on not}}
\]
\[
\quad \text{showed up}
\]

A se-pronoun adjoined to the lower NegP can be subsumed by a FocP projection, as in (33). Owing to an independently motivated phonological constraint, the

---

11. Left-adjunction to NNP is blocked if NNP is dominated by FocP – presumably by a phonological constraint, requiring that the (possibly negated) V and the focus constitute one phonological word:

\[
\text{i. } \left[ \text{FocP csak tegnap [NegP nem [NNP mindenki [NNP jelent meg]]]} \right] \\
\quad \text{only yesterday not everybody showed up}
\]
focus and the (negated) V must form one phonological word; consequently, the se-pronoun can only be right-adjoined in such cases. Nevertheless, it takes scope over NegP, and it is in the scope of the focus. As it is part of the presupposition, it is destressed (recall the ‘Destress Given’ rule of Féry and Samek-Lodovici (2006), quoted in fn. 7). Its PF position among the postverbal constituents is free (thus it could precede the verbal particle, but the ‘particle, se-pronoun’ order is preferable because it observes the Law of Growing Constituents).

(33)

\[
\begin{array}{c}
\text{FocP} \\
\text{PÉTER} \\
\text{NegP} \\
\text{NegP} \\
\text{NonNeutP} \\
\text{nem} \\
\text{NonNeut} \\
\text{PredP} \\
\text{hívott} \\
\text{meg} \\
\text{t}
\end{array}
\]

Peter not invited PRN nobody

‘It was Peter who didn’t invite anybody.’

Recall that the Hungarian sentence also contains a higher NegP above FocP. Universals adjoined to the higher NegP, e.g., that in (34), must also be of the negative polarity type.

(34)

\[
\begin{array}{c}
\text{NegP} \\
\text{Senki} \\
\text{NegP} \\
\text{NonNeutP} \\
\text{nem} \\
\text{NonNeut} \\
\text{PredP} \\
\text{buktatottam} \\
\text{meg} \\
\text{t}
\end{array}
\]

nobody not two subject-in failed-I PRN

‘For nobody was it two subjects that I failed him/her in.’

Example (6), reproduced here as (35), contains two NegPs and a right-adjoined se-pronoun. Notice that both negative particles express logical negation; negative
concord only involves the *se*-pronoun. The *se*-pronoun is licensed by the NegP to which it is adjoined. Because of the free PF linearization of the postverbal section of the sentence, the string in (35a) can spell out either the S-structure in (35b), with the pronoun adjoined to the higher NegP, or that in (35c), with the pronoun adjoined to the lower NegP. In the latter case, the *se*-pronoun is part of the presupposition c-commanded by the focus, as a consequence of which it is destressed.

(35) a. *Nem két tárgyból nem vizsgázott le senki.*
not two subject-in not passed prt nobody

b. \[\text{NegP [NegP Nem [FocP két tárgyból [NegP nem [NNP vizsgázott le]]]] } \text{’senki}’\]
’For nobody was it two subjects that he didn’t pass an exam in.’

c. \[\text{NegP Nem [FocP két tárgyból [NegP nem [NNP vizsgázott le]] senki]}\]
’It wasn’t two subjects that nobody passed an exam in.’

5.3 The licensing of existential *se*-pronouns

The interpretation assigned to a ‘universal *se*-pronoun, *nem*’ string is considered to be logically equivalent to the interpretation of a ‘*nem*,…existential *se*-pronoun’ string (∀x, ¬Px versus ¬∃x, Px). In natural language, however, they do have a meaning difference; a universally quantified noun phrase outside the scope of negation is interpreted as specific (denoting members of a discourse-given set), whereas an existentially bound noun phrase in the scope of negation is understood as non-specific – as also predicted by Ladusaw (1994). Corresponding to the formula ¬∃x, Px, an existential *se*-pronoun is licensed if it is in the scope of negation, internal to the verb phrase, as in (2b), reproduced here as (36a). In (2c/36c), the existential is specific (referential), outside the scope of negation, that is why it is not a negative polarity existential.

(36) a. *Nem érkezett senki.*
not arrived nobody
’Nobody arrived.’

cf. b. *Nem érkezett valaki.*
not arrived somebody

c. \[\text{TopP Valaki [NegP nem érkezett meg]}\]
somebody not arrived prt
’somebody did not arrive.’

Certain types of verbs are known to select the specificity feature of their theme argument. Verbs of existence, appearance, and coming into being, called ‘definiteness effect verbs’ in the literature, only allow a non-specific subject in Hungarian.
The reason is (cf. Szabolcsi 1986, Bende-Farkas 1995, Ê. Kiss 1995, Kálmán 1995, Bende-Farkas 2001, Piñón 2006a,b, Peredy 2007, 2008) that these verbs assert the existence or coming into being of the subject, hence their subject cannot be associated with an existential presupposition (unless it is part of the presupposition in a focus construction). Interestingly, most of these verbs also have a particle-verb equivalent in Hungarian, which presupposes the existence of its subject, and asserts the completion of the event of coming into being. Compare:

(37) a. Érkezett egy vendég /két vendég /valahány vendég /valaki
      arrived a guest /two guests /some guests /somebody
      /*a vendég /*minden vendég.
      /*the guest /*every guest
b. Vendég érkezett /vendégek érkeztek.
      Guest arrived /guests arrived
c. Meg-érkezett a vendég /minden vendég /egy vendég /két vendég
      prt arrived the guest /every guest /a guest /two guests
      /valahány vendég /valaki.
      /some guest /somebody
      prt arrived guest /*prt arrived guests

The determiners egy ‘a, one’, két ‘two’, valahány ‘some’, and valaki ‘somebody’ are understood as non-specific in (37a) and as specific in (37c). Se-pronouns display the same behavior (cf. Ê. Kiss 2002b, Surányi 2006a). They can function as the subject of either verb type, however, a se-pronoun complementing a definiteness effect verb is understood as a non-specific existential, whereas a se-pronoun complementing its particle-verb counterpart is understood as a specific universal. This is illustrated in (3a,b) and (38)-(39):

(38) a. Nem érkezett senki a déli vonattal.
      not arrived nobody the noon train-with
      ‘There isn’t anybody who has arrived with the train at noon.’
    b. Senki nem érkezett a déli vonattal.

(39) a. Senki nem érkezett meg a déli vonattal.
      nobody not arrived prt the noon train-with
      ‘Everybody is such that he/she has not arrived with the train at noon.’
    b. Nem érkezett meg a déli vonattal senki.

An existential se-pronoun is not targeted by Q-raising. It is either left in situ in the verb phrase, as in (38a), where it can be freely linearized in PF, or – as shown by
Surányi (2006a,b) – it is focussed, as in (38b). For a detailed discussion of the semantics of focussed existential se-pronouns, see Surányi (2006a,b). The universal se-pronoun in (39a,b) is Q-raised to NegP.

In the case of verbs not determining the specificity feature of their arguments, both an immediately preverbal and a postverbal se-pronoun can be ambiguous, and the two readings derive from structural ambiguity. Thus the se-pronoun adjoined to NegP in (40a) is a universal, whereas the focused se-pronoun in (40b) is an existential:

(40) a. \([\text{NegP } \text{Senki} [\text{NegP nem} [\text{NNP jelent} [\text{PredP meg}]abyrin]]] \)

\(\text{nobody not showed up} \)

‘Nobody showed up.’

b. \([\text{FocP Senki} [\text{NegP nem} [\text{NNP jelent} [\text{PredP meg}]abyrin]]12 \)

Similarly, the se-pronoun right-adjoined to NegP in (41a) is a universal, whereas the se-pronoun bound existentially in situ in (41b) is an existential:

(41) a. \([\text{NegP} [\text{NegP Nem} [\text{NNP jelent} [\text{PredP meg}]abyrin]]] \)

b. \([\text{NegP Nem} [\text{NNP jelent} [\text{PredP meg senki}]]] \)

It is only a pre-focus se-pronoun that can only be interpreted as a universal adjoined to NegP:

(42) \([\text{NegP Senki} [\text{NegP nem} [\text{FocP A feleségével} [\text{NNP jelent} [\text{PredP meg}]abyrin]]] \)

\(\text{nobody not his wife-with showed up} \)

‘Nobody showed up with his wife.’

If se-words are either in situ in the vP, or assume their surface position via focus-movement or Q-raising across NegP, then se-adverbs must originate below NegP: either in the vP, or adjoined to vP, or adjoined to PredP. A sentence adverbial external to the clausal functional projections is predicted to have no se-form. Indeed, whereas the selected se-adverb in (43b) has both an existential and a universal interpretation, its clausal adjunct equivalent in (43a) is uninterpretable:

(43) a. \(*\text{Semmiért nem fogok elkésni.} \)

\(\text{nothing-for not will-I be.late} \)

‘I will not be late for anything.’

b. \(\text{Semmiért nem haragszom.} \)

\(\text{nothing-for not angry.am-I} \)

‘I am not angry for anything.’

\(12.\) Surányi (2006a) claims that (40a,b) are prosodically different; the negative particle in (40) is stressed, and that in (40b) is not.
6. The role of sem

Non-specific noun phrases in the scope of negation supplied with the indefinite article must have the particle sem, a minimizer (cf. Surányi 2006a), cliticized to them. Observe (44), involving a definiteness effect verb with a [−specific] subject:

(44) Nem érkezett egy vendég *(sem).
    not arrived one guest  MIN
    ‘Not even one guest/no guest arrived.’

Specific (partitive) indefinites, which take scope over negation, can also be optionally accompanied by sem. This sem is the negative polarity equivalent of the maximizer is, which turns numerically modified noun phrases into quantifiers targeted by Q-raising. Compare (45a,b), involving the particle verb equivalent of érkezik, requiring a [+specific] subject:

(45) a. [PredP [PredP Meg [vP érkezett]] két vendég (is)]
    PRT arrived two guest  MAX
    ‘(As many as) two (of the) guests have arrived.’

    b. [NegP [NegP Nem [NNP érkezett [PredP meg]]] két vendég (sem)]
    not arrived  PRT two guest  MIN
    ‘Not even two (of the) guests have arrived.’

Sem can also be cliticized to universal and existential se-words. In the former case, it functions as a negative polarity maximizer (equivalent to a minimizer); in the latter case it is a minimizer.

(46) Nem érkezett meg senki (sem) semelyik egyetemről (sem).
    not arrived  PRT nobody (MIN) no university-from (MIN)
    ‘Nobody (at all) arrived from any of the universities (at all).’

Sem can freely occur attached to postverbal se-pronouns and indefinite noun phrases. Preverbally, however, only a single sem is allowed. What is more, in the presence of a preverbal sem, the negative particle nem expected on its right must be absent:

(47) a. Egy vendég sem (*nem) érkezett.
    a guest  MIN not arrived
    ‘No guest arrived.’

    b. Egy vendég sem (*nem) érkezett meg.
    a guest  MIN not arrived  PRT
    ‘None of the guests arrived.’
In the case of multiple preverbal se-pronouns, only the rightmost one can have sem cliticized to it. Compare with (46):

(48) Senki (*sem) semelyik előadáson sem (*nem) jelent meg.
    nobody MIN no talk-at MIN not showed up
    'Nobody showed up at any talk.'

The nem particle of the higher, pre-focus NegP is also dropped after a sem-phrase:

(49) Soha sem (*nem) a professzor órájáról hiányoznak a diákok.
    never MIN not the professor’s class-from are-absent the students
    'It is never the professor’s class that the students are absent from.'

The obligatory absence of nem after an immediately preceding sem, illustrated in (47)-(49), has elicited various explanations in the literature. É. Kiss (1994) and Olsvay (2000b, 2006) attributed it to haplology, a PF process deleting of one of two similar adjacent syllables. According to Surányi (2002), both sem expressions and the negative particle nem carry logical negation, and compete for the same position, the specifier of ZP, where the [+neg] feature of the functional head Z needs to be checked.13 In (47)-(49) the [+neg] feature of Z has been checked by a sem-expression, hence a nem particle would be redundant. Surányi’s explanation assumes a particular framework, that put forth in Surányi (2002), where the head of ZP can be specified for either or both of the features [+neg] and [+foc]. A ZP whose head is specified for both features has two specifiers. Under these assumptions, the grammaticality of (50a) and the ungrammaticality of (50b) fall out, but the grammaticality and the interpretation of (51) does not follow:

(50) a. Senki sem ma jött el.
    nobody not today came PRT
    'Nobody came TODAY.'

    b. *MA senki sem jött el.

(51) Senki sem két tárgyból nem vizsgázott le.
    nobody not two subject-in not passed PRT
    'For nobody was it two subjects that he/she didn’t pass an exam in.'

In (50a) the [+foc] feature of Z is checked by ma in the inner specifier of ZP, and the [+neg] feature of Z is checked by the sem expression in the outer specifier of ZP. In (50b), the sem expression is claimed to check both the [+neg] and [+foc] features simultaneously, i.e., there is no feature left for ma to check; that is why it cannot be focused. In (51), there is double negation, hence sem must carry nega-

---

13. ZP is Surányi’s version of Laka’s (1990) Σ-phrase.
tion; however, the inner specifier of ZP is taken by the negative particle, the outer specifier is taken by a focus, so it is unclear what licences *senki sem*.

If the *sem* expressions in (47)-(49) were carrying logical negation, these sentences would represent ‘non-strict negative concord’ constructions in the sense of Giannakidou (2002); however, they do not share crucial properties of them. In the non-strict negative concord constructions of, e.g., the Romance languages, logical negation is conveyed by the highest *n*-word. Furthermore, a branching nominal, with the *n*-word in determiner or specifier position, cannot function as the carrier of logical negation. The *sem*-expression in (48) is different in both respects: it is not the highest *n*-expression in the sentence, and it is a branching nominal.

Here I will propose a less technical solution, based on the constraint in (52) – stipulated in the present context, but attested in the case of various types of negative polarity items across languages, e.g., *any*-phrases in English.

(52) A minimizer cannot precede the negative particle licensing it.

A *sem* cliticized to a postverbal expression trivially satisfies this requirement, whereas a *sem* left-adjacent to the negative particle avoids violating it by fusing with the negative particle. The *sem* resulting from the fusion of *sem+nem* occupies the position of *nem* under Neg in syntax, and assumes the clitic status of *sem* in phonology. Thus a *sem* particle\(^{14}\) can be licensed in two ways. i. A *sem* cliticized to an expression preceded by the negative particle is a mere minimizer, a negative polarity item. ii. A *sem* not preceded by a negative particle is a minimizer fused with *nem*; it is in the Neg position.

The first *sem* in (48) is ungrammatical because it is not licensed in either way. It cannot be a mere minimizer because it is not preceded by negation, and it cannot be fused either with the lower *nem* because it is not immediately followed by the verb, or with the higher *nem* because no higher *nem* is allowed above a focused *se*-phrase (recall the discussion of (27a)). If both *sem* and *nem* are spelled out in (47a,b), then *sem* is not licensed because it is neither preceded by *nem*, nor fused with it. In (49), (50a), and (51) *sem* is fused with *nem* under the higher Neg. In (50b) *sem* and *nem* are fused under the lower Neg; what is ungrammatical is the focussing of *ma*. If *senki* is a focussed existential, then *ma* cannot be focussed because the focus position has already been taken. If *senki* is a universal left-adjointed to NegP, then it blocks the satisfaction of the requirement that the focus and the (negated) verb form one phonological word.

\(^{14}\) We must distinguish the minimizer *sem*, an enclitic particle, from the proclitic *sem*...*sem*..., a pair of coordinating conjunctions. These observations only apply to the former.
7. Summary

This paper has aimed to derive the properties of Hungarian negative quantifiers from independently motivated assumptions, among them the Hungarian sentence structure represented in (11)-(12), and an adjunction theory of Q-raising allowing both left- and right-adjunction.

Se-pronouns and se-proadverbs have been shown to be negative polarity quantifiers not conveying any negation, licensed by a negative particle heading a NegP. On the basis of this, Hungarian has been identified as a 'strict negative concord language' (cf. Giannakidou 2002).

Based on results of Surányi (2006a,b), it has been assumed that negative pronouns and proadverbs interpreted universally are universal quantifiers, whereas negative pronouns and proadverbs interpreted existentially are Heimian indefinites bound by existential closure. Se-pronouns are ambiguous between the two meanings, but in the case of predicates selecting the specificity feature of their argument (e.g., verbs of existence and coming into being, requiring a non-specific subject), one or the other reading may be suppressed.

Universal and existential se-pronouns have different word order possibilities. The former, targeted by Q-raising, are left- or right-adjoined to NegP (either to the lower NegP, dominating PredP, or to the higher NegP, dominating FocP). Right-adjoined quantifiers participate in the free PF-linearization of postverbal constituents. Existential se-pronouns can be left in situ in the verb phrase, or can be focus-moved into Spec,FocP.

The scope interpretation of se-pronouns is also determined by independent principles. Universal se-pronouns have scope over their c-command domain. Left-adjoined universals not only c-command but also precede their scope. Existential se-pronouns are non-specific, hence internal to the scope of negation.

Prosody is relevant to the disambiguation of sentences involving two NegP projections and a right-adjoined se-pronoun, subject to free linearization. If the se-pronoun is destressed, it is part of the presupposition c-commanded by the focus, i.e., it is adjoined to the lower NegP. If stressed, it is adjoined to the higher NegP.

The particle sem has been analyzed as a negative polarity item, a minimizer to be preceded by nem, or to be fused with it.

References


Polarity particles in Hungarian*

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This paper proposes an account of the distribution and role of a set of particles in Hungarian dubbed ‘polarity particles’, which include igen ‘yes’, nem ‘no’, and de ‘but’. These particles occur at the leftmost edge of a class of assertions uttered as reactions to an immediately preceding assertion or polar question. It is argued that they express two sets of features typical of the class of reactive assertions they occur in, one set encoding the polarity of the asserted sentence, and the other encoding the relation of the asserted sentence to the immediately preceding utterance. The discussion is set against an explicit approach to context structure and to assertive and polar questioning speech acts that draws on a number of pre-existing proposals in the literature.

1. Introduction

This paper aims to make a first step towards an account of the behavior of the particles igen, nem, de igen/nem in Hungarian, illustrated in (1) – (3):

(1) A: Samu elment.
    Sam part.left
    ‘Sam left.’

    B: Igen, elment. / Elment. / Nem, nem ment el.
    yes, part.left / par.left / no, not left part
    ‘Yes, (he) left./No, (he) didn’t leave.’

(2) A: Samu elment?
    Sam part.left
    ‘Did Sam leave?’

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B: *Igen, elment. / Elment. / Nem, nem ment el.*
   yes, part.left / part.left / no, not left part
   ‘Yes, (he) left./No, (he) didn’t leave.’

(3) A: *Samu nem ment el?*
   Sam not left part
   ‘Did Samu not leave?’

B: *De igen, (elment).*
   de yes, part.left
   ‘But yes, he left.’

These particles, and their siblings in other languages, will be referred to as *polarity particles*, and the type of answers B gives here will be called ‘echo assertions’. Such assertions echo a previous sentence either keeping its polarity or reversing it. As the examples above illustrate, echo assertions are used in reactions to assertions or polar questions. In order to make sense of their function and distribution I first provide a brief characterization of these two speech acts against the background of an expanded context structure in Sections 2 and 3. In Section 4 I characterize the type of responses exemplified in B’s utterances above and introduce two sets of features that these particles express. The material in these sections is discussed in more detail in Bruce & Farkas (2008). For data on Romanian polarity particles, see Farkas (to appear). Section 5 turns to the Hungarian data and to an account that relies heavily on the background given in the previous three sections, while Section 6 concludes.

2. **Context structure components**

Note that the polarity particles that interest us here occur in assertions that react to assertions and polar questions. They are inappropriate in ‘out of the blue’ assertions as well as in answers to constituent questions. Thus, the examples in (4) are bad as conversation starters, while in (5) all B’s utterances are bad as answers to A’s question.

(4) *Igen, Samu elment.*
   yes, Sam part.left
   ‘Yes, Samu left.’
   *Nem, Samu nem ment el.*
   no, Sam not left part
   ‘No, Samu did not leave.’
   *De igen, Samu elment.*
   de yes Sam part.left
   ‘But no, Samu left.’
De nem, Samu nem ment el.

de no, Sam not left part
‘But no, Samu did not leave.’

(5) A: Ki ment el?
who left part
‘Who left?’

B: *Igen, Samu elment.
yes Sam part:left
‘Yes, Samu left.’

B: *Nem, Samu nem ment el.
no, Sam not left part
‘No, Samu did not leave.’

B: *De igen, Samu elment.
de yes, Sam part:left
‘But yes, Samu left.’

B: *De nem, Samu nem ment el.
de not, Sam not left part
‘But no, Samu did not leave.’

In order to understand the function and distribution of these particles we therefore have to understand the details of the type of speech acts they occur in reaction to, namely assertions and polar questions. We will do that against the background of a context structure whose components are given briefly in this section.

The context structure I will be working with is exemplified in Figure 1, under the assumption that we have two participants, A and B. At least since Stalnaker (1978), work on discourse has recognized the importance of discourse commitments, propositions that participants in the discourse publicly commit to. A proposition $p$ that is a discourse commitment in a discourse $d$ is taken to be true of the world in which the discourse occurs by at least some participant in $d$. Discourse structures register the discourse commitments of their participants, I assume, in two ways. First, for each participant $X$, there is a list of propositions, $DC_X$, made up of the propositions $X$ has publicly committed to in the course of the current conversation and which have not (yet) become joint commitments. These are represented by $DC_A$ and $DC_B$ in Figure 1.

<table>
<thead>
<tr>
<th>Table</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$DC_A$</td>
<td>$S$</td>
</tr>
<tr>
<td>$DC_B$</td>
<td>Projected Set $ps$</td>
</tr>
</tbody>
</table>

Figure 1.
Those propositions that all participants in a discourse are publicly committed to are represented as a separate component, the common ground ($cg$). The propositions in the $cg$ are the joint public commitments of the participants in the discourse. These propositions get in the $cg$ either by virtue of being publicly accepted during the course of the conversation by all participants, or because they are part of knowledge taken for granted by the conversational community.¹ (Ginzburg calls the items in our $cg$, FACTS.)

Since the propositions in the $cg$ are supposed to be true of the world of the conversation, for the purposes of the conversation, they have to be consistent in a coherent discourse. The total discourse commitments of a participant $X$ are those propositions that are in the union of the propositions in $cg$ and in $DCx$. For $X$ to be a coherent discourse participant, her total discourse commitments have to be consistent. For a discourse to be coherent, the propositions in its $cg$ have to be consistent. Note now that the participants in a discourse may be coherent, and a discourse may be coherent without the union of the discourse commitments of the participants to be itself consistent. Separating the $cg$ from participants’ discourse commitment lists allows us to capture why discourses and participants can be coherent even in the aftermath of an agreement to disagree, for instance.

Following much current work on the pragmatics of discourse, and in particular Büring (2003) and Ginzburg (forthcoming), we assume that there is a special conversational component, the Table, where matters under discussion are entered. These matters are called Q(uestions) U(nder) D(iscussion) in Büring (2003) and Ginzburg (forthcoming). The items on the Table are the syntactic objects representing an utterance as well as its interpretation. We assume that they form a stack whose top item is the immediately previous utterance. The presence of the syntactic object on the Table is useful in accounting for the grammar of cross-turn ellipsis.

The context structure in Figure 1 has a component not found in Büring (2003) or Ginzburg (forthcoming), called the p(rojected) s(et). It is assumed here that any move that enters an item on the Table steers the conversation towards a state reached after the item in question is removed in a canonical way, namely in a way that increases the $cg$. The $ps$ is the conversational space that records where the conversation is headed, and in this sense it is similar to the ‘managed common ground’ in Krifka (2007). To anticipate, assertion acts steer the conversation towards accepting the assertion while questioning acts steer the conversation towards resolving the question.

¹ Work in dynamic semantics at least since Karttunen (1976), Kamp (1981) and Heim (1982) has taught us to go beyond the level of propositions to finer grained entities such as discourse referents but the matters discussed here do not force us to go beyond the propositional level and therefore we will not do so.
The *ps* is made up of a set of possible privileged future common grounds that are reached by changing the current *cg* when the items from the Table are removed in a canonical way. This set is singleton in case all the Table contains is an asserted sentence since in that case there is only one projected future *cg*, namely the current one augmented by the propositional content of the assertion. When a question is on the Table the *ps* contains a set of privileged future common grounds constructed by adding to the current *cg* each contextually possible answer to the question in turn. When the Table is empty the *ps* contains a copy of the current *cg*, a situation that will not be represented separately. The *ps* allows us to capture the proposal nature of speech acts thus leaving room for moves that accept/reject assertions and settle questions, a crucial aspect for understanding the distribution and the function of polarity particles.

3. Assertions and polar questions

3.1 Assertion

We focus here on garden variety assertions, speech acts performed by uttering a declarative sentence with falling intonation. Utterances involving ‘rising declaratives’, i.e., declarative sentences uttered with rising intonation, will not concern us here so we will take all declarative sentences to be pronounced with their default intonation, namely falling. Leaving intonational contour aside, I assume that a declarative sentence, *S[D]*, is made up of a proposition denoting sentence radical *S* and the feature [D] that marks its declarative form.

The effects of a participant, *a* asserting a declarative sentence *S[D]* with propositional content *p* on the input context are given below:
- *p* is added to *DC*$_{a}$.
- The pair < *S[D]*; *p* > is entered on the top of the stack on the Table.
- Acceptance of *p* is proposed by adding *p* to each element of the input *ps*.

Assuming that the input context state is as in Figure 2, the effect of *A* asserting *Sam is home*, with propositional content *p* is given in Figure 3.

Note that assertion projects acceptance but does not affect the input *cg* directly. The asserted proposition is added to the *cg* only after the participants in the conversation have accepted *A*’s assertion.

<table>
<thead>
<tr>
<th>A</th>
<th>Table</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Ground s$_{1}$</strong></td>
<td><strong>Projected Set ps$<em>{1}$ = {s$</em>{1}$}</strong></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. $K_1$
3.2 Assertion confirmation and assertion reversal

Once A has made her assertion, the immediate task of the conversation is to attend to $S[D]$ and eventually remove it from the Table. The canonical way of doing that is to accept $p$ whereby $p$ becomes a joint commitment and the projected change (addition of $p$ to the $cg$) is carried out on the input $cg$. The effect of $B$ accepting $A$’s assertion is to add $p$ to $DC_B$. Assertion confirmation then is a conversational move that requires the presence on the input context Table top of $S[D]$ with propositional content $p$. The effect of the move is to add $p$ to the discourse commitment list of its author.

Assertion acceptance can be signaled by silence, the particles yes, yeah, or ok, sure, right! correct and their equivalents in other languages. Once a proposition is present on the discourse commitment lists of all participants in a conversation, it becomes a joint commitment. In this case an auxiliary operation $M$ applies whose effects are listed below:
- $p$ is added to the $cg$ of the conversation.
- $p$ is removed from the commitment lists of all participants.
- All items containing the sentence radical $S$ are popped off the Table stack.

In our little abstract conversation, $B$’s acceptance triggers $M$, which leads to a context state whose Table is empty and whose $cg$ now contains $p$. Assertion confirmation is an essential move towards reaching the conversational state projected by the initial assertion, namely the addition of the asserted proposition to the $cg$.

A radically different possible reaction to an assertion is reversal or contradiction, whereby the author of the move commits to the complement of what his conversational partner has just asserted.$^2$

\begin{center}
\begin{tabular}{|c|c|c|}
\hline
A & Table & B \\
\hline
$p$ & $< S[D]; p >$ & $\neg p$ \\
\hline
Common Ground $s_i = s_j$ & Projected Set $ps_i = \{s_j \cup \{p\}\}$ & \\
\hline
\end{tabular}
\end{center}

Figure 3. $K_2$: A asserted $Sam$ is home relative to $K_1$

\begin{center}
\begin{tabular}{|c|c|c|}
\hline
A & Table & B \\
\hline
$p$ & $< S[D]; p >$ & $\neg p$ \\
$p$ & $< \neg S[D]; \neg p >$ & \\
\hline
Common Ground $s_i = s_j$ & Projected Set $ps_i = \emptyset$ & \\
\hline
\end{tabular}
\end{center}

Figure 4. $K_4$: Contradiction on the Table

\begin{footnotes}
$^2$ This is a case of flat contradiction or denial. One can, of course, contradict or deny only part of what has been asserted and accept everything else. See van der Sandt & Maier (2003) for insightful discussion.
\end{footnotes}
A discourse move is a total contradiction if the move is made relative to an input context that has S[D] on the top of its Table, where the sentence radical, S, denotes \( p \), and the move commits its author to \( \neg p \). One way of executing a total denial is by asserting the opposite of the sentence that one reacts to. Assuming that B’s reaction to A’s assertion is such a total denial, the resulting context state is as in Figure 4. (See Asher & Lascarides (2003) for insightful discussion of contradictions.)

The conversation is now in crisis because the \( ps \) is the empty set. There is no way of canonically removing both items from the Table while preserving a coherent \( cg \). Contradictions therefore are marked discourse moves. One can resolve the crisis a contradiction creates by either having one of the participants retracting their assertion or by the participants agreeing to disagree. In the latter case, each participant remains committed to the propositional content of their original assertion but neither proposition is added to the \( cg \) of the conversation while both asserted sentences (and their propositional content) are removed from the Table. This removal is not canonical since at the level of the conversation the issue each assertion raised is not settled. Note that in such a case each participant’s discourse commitment set may be consistent and each may be consistent with the current \( cg \), which in itself may be consistent, while the union of the discourse commitments of the participants is \textit{not} consistent.

3.3 Polar questions

The default way of asking a polar question is to utter a polar interrogative, exemplified in (6):

(6) \textit{Is it raining?}

I assume that a polar interrogative sentence is made up of a proposition denoting sentence radical \( S \) and an interrogative feature \([I]\). Assuming that the denotation of \( S \) is \( p \), the denotation of \( S[I] \) is \{\( p, \neg p \)\}.

The polarity of the sentence radical may be positive, as in the example above, or it may be negative, as in (7):

(7) \textit{Is it not raining?}

In English, besides ‘inner’ negation polar interrogatives there are ‘outer’ negation polar interrogatives as well, exemplified in (8):

(8) \textit{Isn’t it raining?}

There is much discussion in the literature concerning the difference between these two types of negative polar interrogatives in English (see van Rooij & Safarova (2003),
Romero & Han (2004) among many others). Here we will be dealing only with ‘inner’ negatives in English and their Hungarian counterpart, exemplified in (9).

(9) \textit{Nem esik?}  
\text{not rains}  
‘Not rains?’

The context changes registered when a participant utters a polar interrogative sentence are the following:
- The pair \( < S[I]; \{p, \neg p\} > \) are entered on the top of the Table.
- A new \( ps \) is formed by adding to each of its elements \( p \) and \( \neg p \) in turn.

The first change registers the fact that an issue has been raised, namely the issue of the status of the proposition denoted by the sentence radical \( S \). The second change registers the privileged futures that the speech act steers the conversation towards. These are futures in which the issue is resolved positively (those elements of the input \( ps \) to which \( p \) is added) or negatively (those elements of the input \( ps \) to which \( \neg p \) is added). The act of asking a polar question then raises an issue and projects positive or negative resolution, while the act of asserting the corresponding declarative sentence raises the same issue but projects acceptance, while at the same time committing the author of the assertion to \( p \).

Let us look at the simplest case, namely the case when a polar question such as \textit{Is Sam home?} is asked against the input context \( K_1 \). The output context state after the question was uttered is as in Figure 5.

<table>
<thead>
<tr>
<th>A</th>
<th>Table</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textit{Is Sam home?} ( [I] ); {p, \neg p} &gt;</td>
<td>\textbf{Common Ground} ( s_1 )</td>
<td>\textbf{Projected Set} ( ps_1 = {s_1 \cup {p}, s_1 \cup {\neg p}} )</td>
</tr>
</tbody>
</table>

Figure 5. \textit{Is Sam home?} was asked against the input context \( K_1 \)

Note that given what was said above, positive and negative polar questions can be differentiated based on the nature of the item they place on the Table, even though their denotations are identical. This is a welcome result.

3.4 Polar question confirmation and reversal

The canonical removal of a question is to propose a resolution to the issue raised and have that resolution accepted by the other participants. The issue raised in the case of a polar question expressed by an interrogative sentence \( S[I] \) whose sentence radical denotes a proposition \( p \) is whether \( p \) is true or not. Parallel to assertion confirmation, we have confirmation reactions to polar questions. Such a move
involves its author committing to $p$. If the other participants accept $p$, the issue is resolved, $p$ is added to the cg and the question and its answer are removed from the Table. The means by which polar question confirmation is signaled in English overlap with assertion confirmation.

(10) A: *Is Sam home?*  
B: *Yes, (he is). /Ah huh.*

One essential difference between assertion confirmation and polar question confirmation is that while the former can be signaled by silence the latter cannot.

Just like in the case of assertions, one can propose a resolution to a polar question by committing to the complement of the denotation of the sentence radical placed on the Table. In the case of assertions, this amounted to contradiction. In the case of polar questions, this is simply proposing a negative resolution. The author of the question can accept the negative resolution without having to retract a previous commitment, and once the negative resolution is accepted by all participants, the conversation reaches a cg that was projected as one privileged future by the original question.

Again, as expected, the means of signaling polar question reversal overlap with those signaling contradiction:

(11) A: *Is Sam home?*  
B: *No, (he isn't). / Oh huh.*

3.5 Assertions vs. polar questions

It is now time to look back to default assertions and polar questions to see what they share and in what they contrast. We will then generalize over the reactive moves discussed above and characterize confirming and reversing moves. To conclude the stage-setting part of the paper we define echo assertions in the next section.

Common to both default assertions and polar questions is that they raise an issue, the issue of the truth of the proposition denoted by their sentence radical. In our terms, this means that they place a proposition denoting sentence radical on the Table and project future common grounds in which that proposition is decided. A proposition is decided in a common ground cg if either $p$ or $\neg p$ is entailed by cg. The immediate task of the conversation now is to settle the issue. Given this essential core similarity between assertions and polar questions, we expect reactions to them to be similar as well.

Next, note that the two speech acts under discussion differ in that assertions commit their author to the proposition in question and project confirmation only. Polar questions on the other hand do not commit the author to the proposition in
question and project both confirmation and reversal. We expect reactions to these two speech acts to be sensitive to this contrast and therefore we expect the overlap between reactions to assertions and to polar questions to be only partial.

Turning now to the reactions to assertions and polar questions discussed above, note first that they are reactive in the sense that they presuppose a particular immediately preceding move, one that places a proposition denoting sentence radical on the Table. In a confirming move, the author commits to this proposition while in a reversing move the author commits to the complement of that proposition. If the confirming move reacts to an assertion, the author of the confirming move and the author of the initial assertion have reached agreement on the proposition at issue. If the confirming move reacts to a polar question, its author proposes a resolution of the issue that awaits acceptance from the interlocutor(s). If a reversing move reacts to an assertion, it places the conversation in a crisis since now the two participants have proposed and committed to opposite resolutions of the issue. A reversing move reacting to a polar question on the other hand does not lead to any crisis since there is no commitment to the relevant proposition and both a positive and a negative resolution are projected by the polar question.3

4. Echo assertions and their features

We can now define echo assertions as reactive assertions involving a sentence radical that is the same as or the opposite of the sentence radical on the Table, up to anaphoric relations and, of course, polarity. Echo assertions are exemplified by B’s contributions in (12) and (13):

(12) A: Mary left. / Did Mary leave?
   B: (Yes), she did. / (no), she didn’t.

(13) A: Mary didn’t leave. / Did Mary not leave?
   B: No, she didn’t. Yes, she did.

The Hungarian equivalents are given in (14) and (15):

(14) A: Mari elment. / Mari elment?
    Mari part.left / Mari part.left?
    ‘Mari left./ Did Mari leave?’

B: Igen. / El. / Elment. / Nem, (nem ment el).
   yes / part / part.left / no, not left part
   ‘Yes. she did./ No she didn’t’

3. Polar questions may express a bias for one or the other resolution in which case the reaction may go with or against this bias.
(15) A: Mari nem ment el. / Mari nem ment el?
Mari not left part / Mari not left part
‘Mari didn’t go away./Did Mari go away?’

B: Nem, nem ment el. / De(igen), elment.
no not left part / de (yes) part.left
‘No she didn’t./Yes, she did.’

Note now that echo assertions can be characterized by two sets of polarity features. The first, called **absolute polarity**, encodes the polarity of the sentence radical asserted by the echo. Echo assertions whose sentence radical is positive have the absolute polarity feature [+], while echo assertions whose sentence radical is negative have the absolute polarity feature [–].

The second set of polarity features, called **relative polarity**, concerns the confirming or reversing nature of the echo assertion. If the echo is confirming it will have the polarity feature [same], while if it is reversing, it will have the polarity feature [reverse]. In (12), B’s first reaction has the features [+ and [same], while the second has the features [–] and [reverse]. In (13), B’s first reaction has the features [–] and [same], while the second reaction has the features [+ and [reverse].

The possible combinations of these two polarity features are given in (16), together with the shorthand to be used, where the absolute polarity of the input assertion is given to the left of the slash and that of the echo assertion to the right.

(16) Feature content of responding assertions

a. +/+: [same, +]
b. –/-: [same, –]c. +/-: [reverse, –]d. –/+: [reverse, +]

The polarity particles that concern us here, exemplified above by yes and no, in English and by igen, nem and de in Hungarian, mark an utterance as being an echo assertion. As we will see, their distribution is connected to the relative and absolute polarity features of echoing assertions.

Before turning to the details of the Hungarian data, we comment on the relative markedness of particular polarity features and their combinations.

With respect to absolute polarity, it is standard to assume the scale in (17):

(17) Absolute polarity markedness scale

[+] < [–]  

(Horn 2001)

Note that just as this scale would lead us to expect, negative sentences are formally marked while positive sentences are not. This expectation is justified by the general tendency of languages to align formal and semantic markedness.
With respect to relative polarity, I suggest the scale in (18):

(18)  **Relative polarity markedness scale**

\[ \text{same} < \text{reverse} \]

As a justification, note that \text{same} moves involve a sentence radical that is identical to that on the input Table, while \text{reverse} moves involve a sentence radical that is the opposite of that found on the input Table. The relation of identity expressed by the former feature is simpler than the relation of opposite, expressed by the latter. Given this scale, we expect \text{reverse} moves to be formally more marked than \text{same} moves assuming the formal and semantic alignment tendency mentioned above. Thus, we would not be surprised to find a language that has a \text{reverse} particle but not a \text{same} particle while the presence of a \text{same} particle in the absence of a \text{reverse} one would be surprising.

Before we turn to combinations of features, note that the two scales above allow us to connect [+\text{ same}] on the one hand and [–\text{ reverse}] on the other. The features in the former group are the unmarked features, the ones in the latter, the marked ones. Given this connection, we expect the connections in (19) (see Pope (1976) for further discussion):

(19)  **Connections between absolute and relative features**

a. Particles encoding [+\text{ same}] may be used to encode [\text{same}].

b. Particles encoding [–\text{ reverse}] may be used to encode [\text{reverse}].

c. Particles encoding [+\text{ same}] may not be used to encode [\text{reverse}].

d. Particles encoding [–\text{ reverse}] may not be used to encode [\text{same}].

When it comes to combinations of polarity features, note that the combination –/+ is special relative to the combination +/–. (See, again Pope (1976), p. 119.) This is so because in the case of the latter, the absolute polarity of the move, namely [–], is aligned with its relative polarity, namely [\text{reverse}]. Given these connections, a particle expressing the absolute polarity of a +/– move can at the same time express its relative polarity. In the case of –/+ moves on the other hand, there is tension between the two polarities. A particle expressing one polarity feature of such moves cannot be used to express the other polarity as well. For [\text{reverse}] moves then we have the scale in (20):

(20)  **Direction of reversal scale**

\[ +/– < –/+ \]

Given this scale then, we expect –/+ moves to be more marked than +/– moves. In particular, it is not surprising to find a language with a special reversal particle marking –/+ moves but no special particle for +/– moves. On the other hand, it would be surprising for a language to have a reversal particle used exclusively for +/– moves.
We find the same tension between absolute and relative polarity in the realm of confirming moves. Here a +/+ move is less marked than a –/– one because in +/+ moves the absolute polarity of the move is aligned with its relative polarity, both being the unmarked members of their respective scales. Here then an absolute positive particle could in principle express both the relative and the absolute polarity features of the move. In –/– moves on the other hand, there is tension between the absolute polarity (the marked [–]) and the relative polarity (the unmarked [same]). In such moves, a negative absolute polarity particle can express the absolute polarity feature of the move but not its relative polarity. We therefore have the confirmation scale in (21):

\[
\text{(21) Direction of confirmation scale} \\
+/- < -/-
\]

We expect the possibility of a language using a special way of marking –/– moves but not +/+ ones and at the same time we expect no language to have a special particle for +/+ but not for –/– moves.

Finally, turning back to reversals, we can distinguish two types depending on whether they reverse an assertion or a polar question. The former type of move is more marked than the latter since it leads to crisis. We thus have the scale in (22), where ‘q-reversal’ stands for polar question reversal and ‘a-reversal’ stands for assertion reversal:

\[
\text{(22) Strength of reversal scale} \\
\text{q-reversal} < \text{a-reversal}
\]

Given this scale we expect [reverse] to be more likely to be overtly expressed in a-reversals than in q-reversals. Thus, no language will mandate the use of a reversal particle in q-reversals but not in a-reversals, while the opposite is possible. We now turn to polarity particles in Hungarian and check the data against the expectations we arrive at given the scales set up above.

5. Hungarian polarity particles

In this section we take a closer look at three polarity particles in Hungarian, namely igen, nem, and de. The particle igen is the affirmative particle in the language, whose main function is that of a polarity particle. The particle nem is a negation marker also used to negate the verb in ordinary negative sentences, and de is also used as an adversative particle. We exemplify the non-polarity particle uses of nem and de in (23):
The connection between the uses exemplified in (23) and those that concern us in this section is non-accidental, as we see below. In the case of *nem*, we can differentiate between what we call here its polarity particle use and its verbal negation use by its position in the sentence. The polarity particle occurs at the leftmost edge of the sentence and may be followed by a negative sentence that has the verbal negation particle *nem* inside it. The polarity particle use of *de* differs from its adversative conjunction use by its occurrence at the leftmost edge of an echo assertion followed by the absolute polarity encoding particle or the main verb of the asserted sentence.

5.1 The data

We now turn to investigating the use of the three Hungarian particles we are interested in in echo assertions, organizing the data by move types according to the features we defined in the previous section.

Starting with the simplest echo assertions, those with the features [same] and [+](+/- reactions in the notation introduced above), we see in (24) and (25) that *igen* is possible but not obligatory both in reactions to assertions and questions. The particles *nem* and *de* are not possible in these assertions.


Mari PART.left
‘Mari left.’

B: Igen./ El. /Elment. / *De (elment). / *Nem, elment.

yes/ PART /PART.left / de (PART.left / *no, PART.left
‘Yes, she did.’

(25) A: *Mari elment?*

Mari PART.left
‘Mari left?’

B: Igen./El./Elment./*De (elment)./*/Nem, (element).
‘Yes, she did.’
As can be seen in these examples, a +/+ echo assertion may be made up by merely repeating the pre-verbal particle of the sentence radical one reacts to. Whether the sentence fragments used in echo assertions are syntactically analyzed as the result of deletion applied to full sentential structures or not is an issue that is too complex to be dealt with in this paper. I will assume here that these sentence fragments are the result of deletion processes, as argued for in Kramer & Rawlins (2008), but nothing crucial in what follows depends on this assumption.

Turning now to echo assertions whose features are \([\text{same}]\) and \([-\text{--}]\), i.e., \(-/-\) assertions in our notation, we see in (26) and (27) that \text{nem} is the only possible particle both in reactions to assertions and reactions to questions.

(26) A: \textit{Mari nem ment el.}
\textit{Mari not left PART}
\textit{`Mari didn’t leave.’}

B: \textit{Nem, (nem ment el) /*De (nem) /*Igen, nem ment el.}
\textit{no not left PART /*de not /*yes, not left PART}
\textit{‘No, she didn’t leave.’}

(27) A: \textit{Mari nem ment el?}
\textit{Mari not left PART}
\textit{‘Didn’t Man leave?/Did Mari not leave?’}

B: \textit{Nem, (nem ment el) /*Nem ment el /*De (nem) /*Igen, nem not not left PART /*not left PART /*de (not) /*yes, not ment el/*Igen. nem ment el.}
\textit{left PART/yes, not left PART}
\textit{‘No. (She didn’t leave.)’}

There is an interesting contrast between +/+ moves and \(-/-\): the polarity particle \textit{igen} is truly optional in +/+ assertions while omitting the polarity particle \textit{nem} in \(-/-\) assertions is somewhat degraded. This is unsurprising given the more marked nature of \([-\text{-}]\) relative to \([+\text{-}]\). As an anonymous referee notes, the particle \textit{nem} is, however, optional in the presence of an ‘n-word’ such as \textit{soha} ‘never’ or \textit{senki} ‘none’:

(28) A: \textit{Anna nem ment el soha?}
\textit{Anna not left PART never}
\textit{‘Did Anna never leave?’}

B: \textit{(Nem), soha.}
\textit{(no) never}
\textit{‘(No), never.’}
Why the use of the polarity particle *nem* becomes optional in the presence of an 'n-word' in echo assertions is a question I have to leave open for now. It is possible that the optionality here is due to the negative concord nature of ‘n-words’ in Hungarian, and therefore to the possibility of such items to express negation.

Note also that *nem* plays a double role: that of a polarity particle in our sense, expressing the absolute feature [–] in a response, in which case it occurs leftmost in the sentence, and that of expressing sentential negation, in which case it occurs immediately before the verb, causing the verbal particle, if present, to occur postverbally. In cases of constituent negation, *nem* marks the negated constituent, which is in focus position.

By contrast, in ordinary affirmative sentences *igen* is used only as a response polarity particle. The only case in which *igen* shows up within the sentence to mark it as positive is in cases of VP ellipsis when everything but the polarity of the VP is elided:

> Anna nem ment el de Pali igen.

‘Anna did not leave but Paul did.’

The facts are similar in other languages, as exemplified by French in (32):

> Anna n’est pas partie mais Paul oui.

‘Anna did not leave but Paul did.’

I am grateful to an anonymous reviewer for bringing these examples to my attention.
Under ellipsis we may find sentential *nem* and *igen* as the lone survivors of a whole sentence embedded under a special group of predicates exemplified in (33):

(33) a. *Anna azt hiszi, hogy nem fog esni de én azt hiszem,*
    Anna that believes that not will rain but I that believe
    *hogy igen /*de igen.*
    that yes /*de yes
    ‘Anna believes that it will not rain but I believe that it will.’

b. *Anna azt hiszi, hogy esni fog, de én azt hiszem,*
    Anna that believes that rain will but I that believe
    *hogy nem /*de nem.*
    that not /*de not
    ‘Anna believes that it will rain but I believe that it will not.’

(Again, whether we have sentential ellipsis here or not is an issue that I leave open.) Interestingly, the above examples illustrate that the polarity particle *de* cannot occur in these environments.

We conclude that *igen* and *nem* may realize the absolute polarity of an echo assertion, in which case they occur at the leftmost edge of the sentence in a node to be introduced shortly. They may also realize the polarity of the sentence itself, in which case they occur sentence internally, in what I will assume is the polarity node \( \Sigma_P \) (see Laka (1990)). The fact that *igen* occurs within the sentence only when the VP is elided may be explained by assuming that positive polarity can be expressed by the verb itself and the extra assumption that one cannot elide all occurrences of the polarity feature of a sentence. In ordinary, non-echo assertions, one must overtly realize the positive or negative polarity feature of the sentence. If the VP is elided, the only way to realize a positive polarity feature is by the presence of the positive polarity particle *igen*. In negative sentences on the other hand, in Hungarian the feature \([–]\) is always realized, either by the verbal negation *nem* or by a preverbal *se* marked constituent or by both *nem* and a post-verbal *se* marked constituent.\(^5\)

Let us now turn to reverse reactions, starting with moves whose features are \([reverse]\) and \([–]\), i.e., +/- moves in our notation. Let us start with a-reversals, exemplified in (34):

(34) A: *Mari elment.*
    Mari \textsc{part.left}
    ‘Mari left.’

---

\(^5\) Since the details of how negation is expressed sentence internally are not crucial to our purposes, we will not go into them here.
B: (?De) nem, (nem ment el).
   de not not left part 'No, she didn’t.’

Here we see that the particle de is possible. Its use is more natural when the reversal is emphatic, as in (35), where our participants are having a protracted dispute:

(35) A: Mari elment.
   Mari part.left
   'Mari left.’

B: Nem, nem igaz. Nem ment el.
   no, not true not left part
   'No, that’s not true. She didn’t leave.’

A: De igen, elment.
   de yes part.left
   'But yes, she left.’

B: De nem, nem ment el.
   de no no left part
   'But no, she didn’t.’

When we turn to +/- reactions to questions, we see that the use of de is not possible:

(36) A: Mari elment?
   Mari part.left
   'Did Mari leave?’

B: Nem. (Nem ment el.) /*De nem (nem ment el).
   no no left part /*de no no left part
   'No. (She didn’t.)’

This then is the first case where reactions to assertions differ from reactions to the corresponding polar questions, and we see an instance where formally, a-reversal is more marked than q-reversal, a fact that does not come as a surprise given that contradictions are more marked than polar question reversals.

6. As Marcel den Dikken notes, igen and nem may occur in reactions such as i. and ii. independently of the form of the sentence they react to:

   i. Igen, igazad van. 'Yes, you are right.’
   ii. Nem, nincs igazad. 'No, you are not right.’
   iii. Nem, tévedez. 'No, you are wrong.’

In the i. and ii. responses igen and nem may be analyzed as marking the absolute polarity of the response. In the case of iii., however, when uttered in reaction to a negative sentence, nem must be seen as expressing [reverse].
Turning now to special reversals, those whose features are \([\text{\textit{reverse}}]\) and \([+]\) (-/+ reversals in our notation), we see in (37) and (38) that \(de\) is obligatory and that the contrast between \(a\)-reversals and \(q\)-reversals has disappeared.

\[(37)\] A: \textit{Mari nem ment el.}  
Mari no left \text{PART}  
‘Mari didn’t leave.’

B: \textit{De (igen). (Elment.) /*Nem. Elment.}  
\textit{de} yes \text{PART:left} /*\textit{no} \text{PART:left}  
‘Yes, she did!’

\[(38)\] A: \textit{Mari nem ment el?}  
Mari no left \text{PART}  
‘Didn’t Mari leave?/Did Mari not leave?’

B: \textit{De (igen). (Elment.) /*Nem, (elment)}  
\textit{de} yes \text{PART.left} /*\textit{no} \text{PART.left}  
‘Yes, she did leave.’

This, again, is as expected given the strength of reversal scale above.

We summarize the data concerning particle occurrence in echo assertions in (39), where parentheses mark a particle as optional:

\[(39)\]

\begin{enumerate}
  \item \(+/- (igen)\)
  \item \(-/- \text{\textit{nem}}\)
  \item \(+/- \text{\textit{nem}} \text{in q-reversals, } (\text{\textit{de}}) \text{\textit{nem}} \text{in a-reversals}\)
  \item \(-/+ \text{\textit{de}} (igen)\)
\end{enumerate}

5.2 Account

The data above suggest that one has to separate polarity particles that encode the polarity features of an echo assertion (or, more generally, a confirming or reversing response) from the expression of polarity within a sentence. I assume that the former polarity particles occur at the leftmost edge of their sentence in the head node \(P\) of a root node, \(PoIP\), that hosts the relative and absolute polarity features of an echo assertion, and whose sister is a \(CP\). Sentence internal polarity is expressed in a \(CP\) internal node, \(\Sigma P\) that occurs in the area above \(VP\) but below the focus position, as schematically given in (40):

\[(40)\] \([PoIP \ P \ [CP \ \cdots \ [\SigmaP \ \cdots \ [VP \ \cdots \ ]]]]\)

The absolute polarity feature of an echo assertion must, by definition, match the polarity of its sister \(CP\), present in \(\Sigma P\). Polarity particles that realize the features in
PolP will be called *response* (polarity) particles. The distribution of response polarity particles is regulated by two sets of rules, a set I call *realization rules*, which connect particular particles to particular polarity features in P and *expression rules*, which specify which polarity features need to be overtly realized.

For Hungarian, the realization rules we need are given in (41):

(41) **Realization rules for Hungarian**
   
   a. *igen*: [+]
   b. *nem*: [–]
   c. *de*: [reverse]

The polarity particle *igen* realizes the absolute feature [+\ ] in Po1P, as well as the absolute positive polarity feature in ΣP in case the verb has been elided. The particle *nem*, when in PolP, realizes the absolute feature [–\ ] of an echo assertion and negative polarity when in ΣP. Finally, the particle *de* realizes the feature [reverse], a feature specific to PolP that does not occur in ΣP, which is why the response polarity particle *de* cannot occur in that node. The two uses of *igen* and *nem* as marking absolute polarity, whether in PolP or ΣP are obviously connected. The fact that [reverse] is realized by the adversative particle in the language is not surprising given that reversal is more marked than confirmation. Recall that a-reversal leads to conversational crisis and thus it is the most unexpected move type.

Note that Hungarian does not appear to have a particle encoding [same]. The fact that a particle realizing [reverse] exists in this language while a special particle realizing [same] does not is in keeping with what our markedness scales lead us to expect.

The expression rules needed to account for the Hungarian data are given in (42), where parentheses are used for optional rules.

(42) **Expression rules for Hungarian**:
   
   a. Express –: The absolute polarity feature [–\ ] must be overtly realized.
   b. (Express +): The absolute polarity feature [+\ ] may be overtly realized
   c. Express Marked Reversal: The feature [reverse\ ] must be overtly realized in marked, –/+\ , reversals.
   d. (Express Strong Reversal): The feature [reverse\ ] may be realized in a- reversals.

The first rule requires the feature [–\ ] in Po1P to be overtly expressed and therefore requires the use of *nem* in echo assertions that have this feature, i.e., in –/– and +/– moves.\(^7\) The realization of the [+\ ] feature, according to the second rule, is optional, which accounts for the optional presence of *igen* in +/+ and –/+ echo assert-

\(^7\) As mentioned already, this is too strong as it stands, given that in the presence of an ‘n-word’ renders the presence of *nem* optional.
tions. The last two rules regulate the expression of the relative feature \textit{[reverse]}, and therefore the distribution of the polarity particle \textit{de}. The feature \textit{[reverse]} has to be expressed when in combination with the feature \textit{[+]}. Recall that this type of reversal is most marked. The last rule requires the optional expression of \textit{[reverse]} when in a contradiction.\footnote{The rules we give here deal only with polarity features in PolP. We need separate realization and expression rules to account for what happens with the polarity features \textit{[+] and \textit{[−]}} in ΣP.}

The two sets of rules just given account for the data we discussed above. In $+/+$ assertions they predict the optional use of the positive particle \textit{igen}, in $−/−$ assertions they predict the obligatory use of the negative particle \textit{nem}, in $+/−$ reversals they predict the obligatory presence of \textit{nem} and the optional presence of \textit{de} in case of $a$-reversal. In $−/+\,$ assertions, they predict the obligatory presence of \textit{de} optionally accompanied by \textit{igen}.

Before turning to some further data, let us note that the details of response polarity particle usage in Hungarian conform to what the markedness scales discussed in the previous section lead us to expect. The \textit{[−]} feature of echo assertions is overtly realized more than the \textit{[+] feature; the feature \textit{[reverse]} has an overt marker while the feature \textit{[same]} does not. The feature \textit{[reverse]} when in combination with \textit{[+] is more marked than when in combination with \textit{[−]}}}, and finally, \textit{a}-reversal is more marked than \textit{q}-reversal, where ‘more marked’ here means ‘overtly marked by a particle’.

In the rest of this section we briefly discuss the complex reversal particle \textit{dehogy}, made up of the reverse particle \textit{de} followed by \textit{hogy} (the wh-word ‘how’).\footnote{The morpheme \textit{hogy} could in principle also be the complementizer ‘that’ but here, I suspect we are dealing with the ‘wh’ word.}

\textit{Dehogy} assertions are used in echoes that have the features \textit{[reverse]} and \textit{[−]}, as exemplified in (43):

\begin{enumerate}
\item[(43)] $+/−$ responses: \textit{dehogy}
\begin{enumerate}
\item A: \textit{Mari elment már}.
\textit{Mari part}left already
‘Mari has left already.’

B: \textit{Dehogy \textit{(ment el)! Itthon van.}}
\textit{dehogy left part home is}
‘She didn’t leave. She is home.’

\item A: \textit{Mari elment már?}
\textit{Mari part}left already
‘Has \textit{Mari left already?’}
\end{enumerate}
\end{enumerate}
B: *Dehogy (ment el)! Itthon van.*  
*dehogy* left  *part* home is
‘She didn’t leave. She is home.’

An important difference between *de* and *dehogy* is that the sister of *dehogy* is not the asserted sentence but rather the sentence at the top of the input Table. *B*’s conversational contributions above commit her to *Mari* not being at home. Note also that unlike in our previous data, the [+ ] feature of the response cannot be expressed: *dehogy igen* is ungrammatical.

In (44) I exemplify *dehogy* echoes reacting to a negative sentence.

(44) –/+ responses: *dehogy nem*

a. A: *Mari nem ment még el.*  
*Mari* not  left  *yet part*  
‘Mari hasn’t yet left.’

B: *Dehogy nem (ment el)! Már rég az iskolában van.*  
*dehogy* not  left  *part* already long the  *school* is  
‘She left. She’s been at school for a long time.’

b. A: *Mari nem ment még el?* ‘Hasn’t *Mari* left already?’

B: *Dehogy nem (ment el)! Már rég az iskolában van.*  
*dehogy* not  left  *part* already long the  *school* is  
‘She left. She’s been at school for a long time.’

In these cases *B* is committed to the positive counterpart of the negative sentence on the top of the input Table.₁₀

*Dehogy* then, just like *de* is a reversal particle, i.e., it is associated with the relative polarity [reverse]. The complement of *dehogy*, however, is not the sentence the author commits to but rather, the anaphoric equivalent of the sentence on the top of the input Table. Thus, *dehogy* responses assert the reverse of the sentence following *dehogy* whereas *de* responses assert the sister of the PolP. The polarity of the complement of *dehogy* must be marked by *nem* when negative and cannot be marked at all when positive, just like in ordinary sentences in Hungarian, which is why *igen* cannot occur with *dehogy*.

A further difference between *de* and *dehogy* reversals involves word order. In *dehogy* responses verbal particles follow rather than precede the verb, as can be seen in (44), where the verbal particle *el* ’away’ is in bold face. This verb - particle order indicates the presence of negation or the presence of an element in focus. The complex *dehogy* particle seems to obey two constraints at once: it occurs at the

₁₀. There is a further variant of *dehogy*, namely *dehogy is*, whose distribution is somewhat different and whose discussion we leave for another occasion.
leftmost edge of the response, just like particles in PoIP, but at the same time it is in immediate preverbal or pre-negation particle position, just like elements that are in focus. Settling the details of the syntax of dehogy responses is left as an open issue for now.

We conclude by noting that the form of an echo assertion is determined by the form of the previous utterance rather than by its intended interpretation. As we see in (45), echo reversing assertions reacting to rhetorical negative questions that presuppose a positive answer have the form we expect if what matters is the form of the question rather than the bias indicated by the speaker, which in this case is positive:

(45) A: Hát nem a legszebb gyerek a világon?
    so not the most.beautiful child the world.on
    ‘Isn’t she the most beautiful child in the world?’

    B: De igen./ Dehogy nem.
        de yes     dehogy not
        ‘Yes, she is. / Of course she is’

Thus, if the form of the echo were determined by the bias A signals we would not expect the presence of de in (45): B’s assertion reverses the form of A’s question and it confirms A’s bias.

6. Conclusion

The Hungarian data we looked at in the last section of the paper supports the view of assertions and polar questions discussed in the previous section, which, in turn, crucially uses the context components discussed in the first section. The Hungarian particles we studied here provide evidence for the existence of absolute and relative polarity features of echo assertions as well as for the markedness scales proposed in Section 4. The question that arises now is whether further cross-linguistic study of polarity particles confirms the predictions our approach makes. With respect to Hungarian specific issues, the syntactic details of the dehogy and dehogy is type reversals have to be looked into in greater detail. These details will shed light on the interaction of [reverse] polarity markers and focus, an interesting issue that awaits further discussion.
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Experimental evidence for recursion in prosody*

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The paper discusses two important issues in linguistic theory: the relation between recursion and linguistic structure, especially the status of prosody in the syntax-prosody interface, and how recursive structures can be related to those found in non-linguistic modalities. The paper reports on production and perception experiments to give evidence to the assumption that (a) speech prosody is recursive and (b) recursive prosodic structure is related to non-linguistic recursion. Based on earlier results (Hunyadi 2006) it shows that inherent grouping, the basis for recursion, is multimodal and is more extensive than previously found. It also shows that the perception of the violation of the principles of tonal embedding and tonal continuity are constrained by syntactic constituency.

1. Introduction

Hauser, Chomsky and Fitch (2002) address one of the central issues in generative grammar: the nature of the faculty of language. In their understanding, this notion is narrowed down to the sole computational mechanism of recursion that underlies the massive generative capacity of human language. They point out that, even though there are further instances of recursion in humans, such as the systems of orientation or numbering, linguistic recursion has come about independently from them. As for language, they assume that recursion is limited to syntax alone. Accordingly, morphology and phonology, although part of linguistic structure, are not to be considered recursive.

One of the strongest arguments Hauser, Chomsky and Fitch develop is that the faculty of language, being restricted to the computational mechanism of

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recursion, is to be strictly distinguished from communication, i.e. it did not evolve for purposes of communication. Furthermore, it is considered uniquely human, and, as such, it cannot be the result of human evolution.

These arguments, whose purpose, admittedly, was to encourage further research into these fundamental issues of the nature, structure and evolution of human language and its relation to other human cognitive systems, as well as comparable faculties in non-humans, has indeed opened way to important and far-reaching discussions and research (cf., among others, Pinker and Jackendoff 2005, Jackendoff and Pinker 2005). Although we are far from seeing the resolution of these fundamental questions, the debates have lead to a better understanding of the form, extent and limitations of recursion in human language (cf. an extensive discussion of the issue in Parker 2006). In what follows we will be limited to examine if and how recursion can be present in prosody.

2. Recursion in prosody?

Hauser, Chomsky and Fitch refer to prosody as one of the levels of human language where recursion is not present. Apparently, it has been long believed that one of the fundamental differences between syntax and prosody is that, whereas syntax has an unlimited depth due to its recursive component, prosody is flatter, due to the lack of recursion (cf. the Strict Layer Hypothesis in Selkirk 1984). Although certain observations have been accounted for as instances of some limited recursion in prosody (cf. the Compound Prosodic Domain in Ladd 1986, 1996; see also Selkirk 1995, Truckenbrodt 1999, 2007, and Clifton, Carlson and Frazier 2002), they did not indicate a system-wide presence of recursion in prosody.

At the same time, however, it has also been shown that two major components of prosody, duration and pitch (F0 movement), show recursive features. In particular, it was shown in Wagner (2005) that variation in duration is a significant prosodic means of representing recursive syntactic embedding. In Hunyadi (2006, forthcoming), on the other hand, prosody is placed in a wider perspective. In this view, both duration and pitch variation show patterns of recursion and correspond to recursion in syntax: With respect to duration, the deeper the embedding, the shorter the boundary between recursively embedded clauses, and as for pitch variation, each successive clause has a pitch level lower than the previous one (called tonal embedding). Furthermore, it is shown that the fundamental principles of prosodic recursion are not unique to language but can be found in grouping across other human modalities.
3. Principles of the expression of recursion in prosody

Hunyadi (2006) was based on three important assumptions: (a) the basis of recursion is grouping such that recursion is applied to groups resulting in a series of embedded groups, (b) groups can be of several kinds, depending on modalities, and (c) there are important underlying properties of grouping that are general enough not to be specific to one or another modality. In order to prove these assumptions, a series of experiments were designed involving different kinds of modalities for grouping. The groupings involved abstract visual and abstract prosodic patterns, as well as real speech prosody. The abstract visual patterns consisted of a series of dots like “•” and subjects were asked to use the computer mouse to click after each occurrence. The interval between clicks for two adjacent dots was measured. The abstract prosodic patterns consisted of a series of letters like “A,” “B,” “C,” and “D,” and subjects were asked to utter the names of the letters in the given pattern. There were two kinds of measurement: the interval between the utterance of two adjacent letters was measured and the intonation of the whole utterance was recorded. In the case of both kinds of experiments with abstract elements (dots and letters, respectively), the patterns varied according to the use of parentheses, such as (••)(••), •(••)• and •(•(••))•, or (AB)(CD), A(BC)D and A(BCD))E, respectively. It was assumed that belonging to the same group (the case of two or more elements included within a pair of parentheses) would result in a temporal representation different from the case when the same elements belonged to two different groups and, furthermore, the tonal representation of abstract prosodic elements would also be (pattern and structure) dependent. It was also assumed that, if grouping was sensitive to structure, then a recursive arrangement of elements would result in their recursive (temporal and/or tonal) representation.

According to these experiments, recursion has the following main principles in prosody:

a. Recursion operates on groups. In order to produce recursive structure, a minimum of two elements should undergo recursive embedding. It was clearly shown by the fact that (a) no temporal difference was found between clicking after a pattern •(•(•))• and one after a pattern •••• (i.e. the presence or lack of parentheses had no effect on the perception/interpretation of the series of four dots) and (b) there was a clear temporal distinction between (••)(••) and ••••, this time due to the presence or lack of parentheses).

b. Grouping is denoted by both duration and pitch. Duration was found to be a significant means of grouping both in the case of abstract visual and abstract

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1. This section is based on data and experiments presented in Hunyadi (2006). For clarity of explication, some of those findings are repeated here.
prosodic patterns. As for duration, pauses between elements inside a group were found to be shorter than between groups. In addition, in the case of abstract prosodic grouping with tonal variation also being relevant, elements within a single group were found to be joined by a single continuous pattern of tonal excursion, whereas elements belonging to two different groups were separated by a boundary tone. Accordingly, in a pattern like (AB)(CD) A and B were produced as a continuous tone (in fact a sequence of fall and rise), whereas B and C in the same pattern were separated by tone (a sequence of rise and fall).

c. In speech prosody, pitch is primary to duration. In the case of the grouping of abstract visual patterns, grouping was denoted by the single available means, i.e. temporal variation (duration). It was found, however, that in the case of abstract prosodic grouping the belonging of elements to one and the same or to different groups is always denoted by pitch (tonal) variation (as described in (b) above), whereas the duration of pauses may not strictly follow the structure denoted by pitch movement. This somewhat unexpected result allowed for the following generalization: in any modality the primary means of grouping is always the one that is specific to the given modality (thus tonal variation in prosody or syntactic hierarchy in syntax); those means that are not modality-specific (such as duration) have a secondary role but cannot contradict primary grouping.

d. Grouping is inherent. It was found in Hunyadi (2006) that subjects had a strong tendency to group a series of elements even if no parentheses were used in the pattern they were to follow. It was already observed in the case of abstract visual patterns such as ••••, where subjects divided this series of four dots into two equal groups using temporal variation. In the case of abstract prosody, a similar effect was observed: a series of letters such as ABCD, with no internal division marked by parentheses, were also uttered as a sequence of two equal groups. As such, we can generalize that an unstructured sequence of four elements of arbitrary form is inherently divided into two equal groups, the primary means of grouping depending on the modality: in the case of abstract visual patterns it is temporal variation, in the case of prosody (involving either abstract prosodic elements or real speech material) by the insertion of a tonal boundary after the second element and, optionally, by a certain pause.

e. The structural embedding of elements is prosodically expressed by tonal embedding (and, optionally, by duration as well). Recursive embedding is expressed by recursive tonal embedding. Studying real speech utterances, it was found that there is a systematic way of denoting syntactic embedding by means of tonal variation: a syntactically embedded clause is uttered at a pitch level lower than the clause immediately above it; the further the embedding the
lower the pitch level of the embedded clause. Observing similar patterns of embedding in the case of abstract prosodic patterns, the principle of tonal embedding was found to be in effect, too. Consequently, it could be concluded that the principle of tonal embedding is not a simple reflection of a given syntactic structure; in fact, this is a principle applying to prosody in general, both involving abstract and real speech patterns. This conclusion is far-reaching since it allows for a view of prosody (especially tonal variation) independent from syntax and, most probably, of language as well.

f. The structural unity of discontinuous elements is denoted by tonal continuity. The principle of tonal continuity is, in a way, complementary to that of tonal embedding. Observing the tonal representation of central embedding in the experiments it was found that (a) embedding followed the principle of tonal embedding and (b) the two halves of the main clause made discontinuous by the intervening embedding formed a virtual single tonal contour overriding the effect of downdrift, as if no embedding had taken place. Importantly, the principle of tonal continuity was found in effect regardless of the distance of the two discontinuous halves. The generalization is that, following the principle of tonal continuity, no matter how far two halves of a larger speech unit are displaced, they form a virtual (discontinuous) tonal unit, something like:

```
(main clause, half 1)   (main clause, half 2)
_______________________ ______________________
(embedded clause)
```

That tonal continuity overrides the effect of downdrift usually observed in declarative utterances is sketched below:

downdrift of a declarative utterance:

```
_______________________ ______________________
```

expected downdrift with the embedded segment removed:

```
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tonal continuity with with the embedded segment removed, without downdrift:

```
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The above general principles are assumed to be part of the system of rules prosody is made of and are expected to be present in actual speech production in general. However, due to the robust nature of language, it is, to some extent, redundant: certain functions are expressed by more than one subsystem which may compete in prominence. Similarly to the fact that, competing for the expression of grouping, pitch movement has, as we saw above, prominence over duration, structural hierarchy in syntax may also have prominence over prosody. Accordingly, we may expect that the fact that in certain cases the proper prosodic marking of grouping is not fulfilled does not lead to a perceived violation of grammaticality.

In what follows, we will present the results of experiments testing the perceptual validity of the last three principles, i.e. those of inherent grouping, tonal embedding and tonal continuity. First, we will see if grouping is also inherent in unstructured groups with other than four elements (the configuration in which inherent grouping was originally identified in Hunyadi 2006). Next, we will test the perceptual relevance of tonal embedding (the actual degree of pitch lowering as well as frequency limits within which tonal embedding is perceived). Finally, we will examine the role of pitch variation in the perception of tonal continuity.

4. Inherent grouping

As was shown in Hunyadi (2006), a sequence of four elements is divided by a pause into two equal rhythmic groups both when such a stimulus is unstructured and when grouping into two is visually marked by bracketing. Two kinds of experiments were carried out: (a) subjects were presented with two series of four dots (•••• and (••) (••)) and asked to represent the given patterns with mouse clicks; (b) subjects were presented with two series of four letters (ABCD and (AB) (CD)) and asked to pronounce the names of these letters following the patterns they observe. The results are shown in Figure 1 and Figure 2.

As the figures above demonstrate, a clear temporal grouping was performed by the subjects in the case of patterns with visually marked grouping (cf. patterns (2) and (4)). However, even if to a lesser degree, such a temporal grouping was also performed when no such grouping was visually marked in the stimulus (cf. patterns (1) and (3)). Furthermore, comparing the temporal representation of abstract visual and abstract prosodic patterns in general (whether grouping is visually marked or not), we find that temporal grouping is more noticeable in the case of abstract visual patterns (patterns (1) and (2)). It indicates that, in the case of prosodic patterns where, in addition to temporal variation pitch variation is also an available means of grouping, temporal variation is secondary to pitch variation.
Figure 1.

Figure 2.
In what follows, we will demonstrate the results of an experiment in which we wished to find out if inherent grouping could also be observed in sets with other than four randomly presented elements. Subjects were asked to use mouse clicks to represent each of the dots in sets of three to nine dots. No grouping was visually marked. We found that there was a systematic internal grouping within each of the patterns:

- 3 dots: 2 + 1
- 4 dots: 2 + 2
- 5 dots: 2 + 2 + 1
- 6 dots: 3 + 2 + 1
- 7 dots: 3 + 3 + 1
- 8 dots: 3 + 3 + 2
- 9 dots: 4 + 3 + 2

The following charts indicate the rhythmic grouping within the given patterns based on the average duration of pauses between two adjacent dots (accordingly, the number of columns for each pattern is one column less than the number of dots in the given pattern). Using the paired one-tail t-test, responses across pattern types were all significant at $p < 0.5$ or better.

The charts below graphically demonstrate a clear inherent grouping of elements in patterns with no visually marked grouping at all. Each column represents the elapsed time between two mouse clicks performed for each of two adjacent dots (legends under each column indicate the difference between two adjacent dots from left to right, A being the leftmost dot in a pattern); cf. Figure 3 through Figure 9.

![Figure 3](image1.png)

![Figure 4](image2.png)
As the charts show, grouping is present in all patterns, i.e., instead of equal spacing (as the lack of any structural marking would intuitively suggest) the dots are represented in a fairly regular rhythm. From 5 dots onwards there are three groups in
each pattern, with the first group tending to have the greatest number of elements. It can also be noticed that the first group in each pattern has close to half of the total number of elements. Accordingly, in larger patterns we notice a recursive grouping: the first group represents approximately half of the elements and the second half is again nearly halved into two groups, again the first group being slightly more numerous than the following one. (As a matter of fact, this continuously decreasing number of elements in consecutive groups is akin to the continuous shortening of pauses between recursively embedded elements, observed in embedded sentence clauses as well. This obvious similarity between seemingly non-related objects – dots and clauses – in similar (recursively embedding) structures can serve as the indication of a general, universal property of recursion across modalities.)

5. **Tonal patterns of grouping: Embedding and tonal continuity**

It was shown in Hunyadi (2006) that boundaries between groups consisting of abstract prosodic elements such as A, B, C, D are denoted by tonal grouping: the tones separating two groups have an opposite direction (rise vs. fall) or opposite level (high vs. low). Accordingly, the pattern (AB) (CD) is of the form:

\[(5) \quad (AB) \quad (CD) \]
\[(\text{fall + rise}) \quad (\text{fall + fall}) \text{ or} \]
\[(\text{high level + high level}) \quad (+ \text{low level + low level})\]

It was also shown that syntactic embedding has its prosodic counterpart as well: an embedded segment (such as a clause) receives a lower tonal contour following the principle of tonal embedding.

It was also shown that there exists a special tonal relation between discontinuous segments separated by an embedding (as well as insertion), that of tonal continuity. According to the principle of tonal continuity, the two discontinuous segments form a virtual tonal unit, despite the usual effect of downdrift in speech. Cf. (6):

\[(6) \quad \text{A macska, amit a kutya, ami megveszett, megharapott, elszaladt.} \]
\[\quad \text{‘The cat that the dog that was rabied, bit, ran away.’}\]

The tonal contour of this sentence with multiple embedding is shown in Figure 10. The pitch contour in Figure 10 demonstrates that tonal embedding is in effect.
Looking at this contour more closely, the effect of tonal continuity becomes even more apparent. Namely, removing the innermost embedding (cf. (6a)) demonstrates that the edges of the two discontinuous segments now joined have the same F0-level. See arrow in Figure 11.

(6) a. A macska, amit a kutya […] megharapott, elszaladt.
   ‘The cat that the dog […] bit, ran away.’
As the arrow at the location of the removal of the embedding shows, the pitch of the originally discontinuous, now joined two segments remains the same with no effect of downdrift.

Removing yet another embedding, (cf. 6b)) demonstrates that tonal continuity operates over longer distances as well; cf. Figure 12.

(6) b. A macska [...] [...] elszaladt.
   ‘The cat [...] [...] ran away.’

The principle of tonal continuity for discontinuous segments can also be observed in the case of insertion. Namely, even though the clause in question is not syntactically embedded (no proper syntactic operation of embedding is at place), the two discontinuous segments are related by tonal continuity, similarly to the case of syntactic embedding as shown in Figure 13 and Figure 14. Cf. (7).

(7) Meg tudnád mondani, hogy – az én órám megállt – hány óra van?
   ‘Could you tell me – my watch has stopped – what time it is?’

Removing the inserted clause we get (7a), with tonal continuity shown in Figure 14.

(7) a. Meg tudnád mondani, hogy [...] hány óra van?
   ‘Could you tell me [...] what time it is?’

Tonal embedding as well as tonal continuity were observed in the recording of a number of utterances across languages other than Hungarian as well (including English, Finnish and Swedish; cf. Hunyadi 2006) thus suggesting that these
principles are in effect in actual speech production in general. However, due to the fact that embedding and insertion are essentially syntactic by nature with their syntactic means of expression, one may ask how redundant their tonal counterparts can be. Accordingly, we can ask the question to what extent the violation in production of these prosodic principles can also be perceived as a rule violation in perception. In what follows, we will present the results of three experiments to address this issue.

Figure 13.

Figure 14.
6. Perception experiment 1: The violation of the principles determining the underlying properties of tone in the expression of prosodic grouping and its perception

20 university students were presented with the recordings of three sentences having an embedded clause. In addition to the original recordings, they were presented with such versions in which, following the main clause (denoted as “a”) either the embedded clause (denoted as “b”) or the second, discontinuous part of the main clause (denoted as “c”) had its tone modified (lowered or raised). In order to determine the extent of manipulation (raising or lowering of the tone of the embedded clause) we carried out initial pilot experiments. It was found that the raising or lowering of the tone by 10–20–30 Hz hardly had any perceptual effect. (This was, to some extent, surprising, since even a difference of 10 Hz in F0 is normally expected to be perceived. Following our observations involving the grouping of abstract visual and prosodic elements where we concluded that the main means of grouping is always the one that is modality specific, we accounted for this result by assuming that, in the case of syntactic embedding, it is syntactic hierarchy that plays the primary role in grouping. As a consequence, grouping by pitch variation is secondary. Apparently this is the case with the perception of 10–20–30 Hz F0-manipulation as well: this amount of manipulation is too small to override the effect of the primary means of grouping, i.e. that of the syntactic hierarchy.)

Following these perceptual results of the pilot experiment and in order to override the primary effect of syntactic constituency, we decided that the steps of modification would be fairly large, 50, 100 or even 150 Hz. These were the steps an entire segment (either “b” or “c”) was lowered or raised. The sentences involved were as follows:

(8) A tanuló, aki kimerült, mérges volt.
   “a” “b” “c”
   ‘The student that was exhausted, was angry.’

(9) A tanárnő, aki fellépett, kicsi volt.
   “a” “b” “c”
   ‘The teacher who made her appearance, was small.’

(10) A kisgyerek, aki visszament, komoly volt.
     “a” “b” “c”
     The little child who returned was serious.

In order to ensure that listeners would consider the sequences of clauses with the second one as a case of embedding rather than conjunction, the sentences were
chosen so that there would essentially be no obvious semantic or pragmatic relation between the constituting clauses.

The tonal variations for the stimuli were produced using the computer program Praat and the experiment was administered using the Macintosh program PsyScope. The following 33 patterns were included in the experiment (the numbering of the above sentences (8), (9) and (10) corresponds to (1), (2) and (3) in the experiment and in our examples below, respectively (numeric values in pattern type correspond to Hz):

<table>
<thead>
<tr>
<th>pattern #</th>
<th>pattern type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:</td>
<td>1 (no manipulation)</td>
</tr>
<tr>
<td>2:</td>
<td>2 (no manipulation)</td>
</tr>
<tr>
<td>3:</td>
<td>3 (no manipulation)</td>
</tr>
<tr>
<td>4:</td>
<td>1.c.lowered-50</td>
</tr>
<tr>
<td>5:</td>
<td>2.c.lowered-50</td>
</tr>
<tr>
<td>6:</td>
<td>3.c.lowered-50</td>
</tr>
<tr>
<td>7:</td>
<td>1.c.raised+150</td>
</tr>
<tr>
<td>8:</td>
<td>2.c.raised+150</td>
</tr>
<tr>
<td>9:</td>
<td>3.c.raised+150</td>
</tr>
<tr>
<td>10:</td>
<td>1.c.lowered-100</td>
</tr>
<tr>
<td>11:</td>
<td>2.c.lowered-100</td>
</tr>
<tr>
<td>12:</td>
<td>3.c.lowered-100</td>
</tr>
<tr>
<td>13:</td>
<td>1.c.raised+50</td>
</tr>
<tr>
<td>14:</td>
<td>2.c.raised+50</td>
</tr>
<tr>
<td>15:</td>
<td>3.c.raised+50</td>
</tr>
<tr>
<td>16:</td>
<td>1.c.raised+100</td>
</tr>
<tr>
<td>17:</td>
<td>2.c.raised+100</td>
</tr>
<tr>
<td>18:</td>
<td>3.c.raised+100</td>
</tr>
<tr>
<td>19:</td>
<td>1.b.lowered-50</td>
</tr>
<tr>
<td>20:</td>
<td>2.b.lowered-50</td>
</tr>
<tr>
<td>21:</td>
<td>3.b.lowered-50</td>
</tr>
<tr>
<td>22:</td>
<td>1.b.lowered-100</td>
</tr>
<tr>
<td>23:</td>
<td>2.b.lowered-100</td>
</tr>
<tr>
<td>24:</td>
<td>2.b.lowered-100</td>
</tr>
<tr>
<td>25:</td>
<td>1.b.raised+50</td>
</tr>
<tr>
<td>26:</td>
<td>2.b.raised+50</td>
</tr>
<tr>
<td>27:</td>
<td>3.b.raised+50</td>
</tr>
<tr>
<td>28:</td>
<td>1.b.raised+100</td>
</tr>
<tr>
<td>29:</td>
<td>2.b.raised+100</td>
</tr>
<tr>
<td>30:</td>
<td>3.b.raised+100</td>
</tr>
</tbody>
</table>
Subjects were asked to give a goodness judgement of each of the tonal variations on a 6-value scale by pressing the corresponding button (6 = most accepted, 1 = least accepted).

Based on the calculated average values, we got the results shown in Figure 15. Using the paired one-tail t-test, responses across pattern types were all significant at p < 0.5 or better. The responses clearly made a distinction between the patterns depending on which segment was manipulated. The least unacceptable were those patterns where segment “c”, i.e. the one following embedding was manipulated. On the other hand, if the embedded segment “b” was manipulated, starting from pattern 19, the results were less favorable. But even in this latter respect there were differences: further lowering segment “b” was considered less as a violation than raising it. As probably intuitively expected, the extent of lowering or raising “b” (by 50 or 100 Hz) was also a factor in accepting/rejecting the given pattern.

Since both tonal embedding (observed as the tonal lowering of segment “b”) and tonal continuity (observed as a relation between the remotely (virtually) adjacent edges of segment “a” and segment “c”) are considered basic principles of prosodic grouping, we need to account for the fact that manipulating segment “c” (i.e. violating tonal continuity) received better goodness judgements than manipulating segment “b” (i.e. violating tonal embedding). As for tonal embedding, we see that raising segment “b” as considered has a perceptually more significant effect than lowering it. This observation directly follows from the nature of tonal embedding: further lowering the tone of “b” may be perceived as stylistically marked, but the rule itself is not violated: the tone of the embedded clause is lower than that of “a”. On the other hand, if “b” is raised, in addition to the sense of an obvious stylistic markedness a clear violation of the tonal rule of embedding is also observed (“b” is raised instead of the expected lowering). This change of the relative level of tone in the opposite direction thus justifies the lesser acceptance of these patterns. As for tonal continuity, the manipulation of segment “c” is less sensitive to goodness judgements for the following reason: if the principle of tonal continuity is not observed, the boundary between segment “b” and segment “c” is still denoted by two additional prosodic means: the right edge of “b” having a rising tone (thus denoting a right group boundary) – an obligatory prosodic marking – and the pause following it (optionally denoting the same right group boundary). As a result, the manipulation of the pitch of “c”, whether lowered or raised, does not leave the sequence of clauses at clause boundary without prosodic marking, and its manipulation can freely be used (and is indeed used) for stylistic purposes.
Along with this broad picture of the relation between syntactic structure and prosodic (tonal) variation we note here two additional observations. First, the statistical values representing the standard deviation of the responses are pattern dependent: they are in a fairly close relation with the degree of goodness. The lower the degree of goodness, the higher the corresponding values of standard deviation. In all, however, it was only patterns with segment “b” manipulated that were clearly rejected (below score 3, i.e. below 50% of the maximum score). This fact can be considered as a strong support for tonal embedding as a basic principle of prosodic grouping. Second, we can observe a difference between the goodness judgements of the three sample sentences, consistent across similar patterns: in virtually all cases variants of sentence (1) received lower scores than variants of sentence (2) and the highest scores were received by variants of sentence (3). Accordingly, it can also be suggested that factors outside prosody (including semantics) also play a role in the degree of acceptance.

7. Perception experiment 2: The role of the tonal manipulation of the accented syllable in the expression of prosodic grouping – goodness judgements

In the previous experiment the tone of segments “b” or “c” was lowered or raised in their entirety. It had the effect that, in certain cases, the final pitch of a segment, that would normally be at least close to the baseline, was also raised, thus producing a less natural sounding already by itself. Therefore, we designed an additional experiment in which only the accented syllable of the given segments (the actual starting point and principal marker of tonal movement, including embedding) was manipulated. Based on the results of the previous experiment showing that
the further lowering of the tone of an embedded clause is less of a sign of rule violation, we were interested in whether raising the corresponding accented syllables has an effect on goodness judgements. We included three sentence patterns, each with recursive embedding:

(11) A levél, amit Kati, aki boldog volt, feladott, elveszett.
    “a” “b” “c” “d” “e”
    ‘The letter, that Kate, who was happy, posted, got lost.’

(12) A macska, amit a kutya, a mi megveszett, megharapott, elszaladt.
    “a” “b” “c” “d” “e”
    ‘The cat, that the dog, that was rabid, bit, ran away.’

(13) A madár, amit a vadász, aki ittas volt, megcélzott, elrepült.
    “a” “b” “c” “d” “e”
    ‘The bird, that the hunter, that was drunk, aimed at, flew away.’

The subjects involved in the experiment were 25 university students who were asked to give a goodness judgement of each of the tonal variations of the above sample sentences – 15 in all – on a 6-value scale by pressing the corresponding button (6 = most accepted, 1 = least accepted).

Again, the tonal variations were produced using the computer program Praat and the experiment was administered using the Macintosh program PsyScope. The following patterns were involved (the above numbering of sentences (11), (12) and (13) corresponds to (1), (2) and (3), respectively, in the experiment, all affecting the embedded segments “b” and “c”:

<table>
<thead>
<tr>
<th>pattern#</th>
<th>pattern type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11. no manipulation</td>
</tr>
<tr>
<td>2</td>
<td>11.b raised to a</td>
</tr>
<tr>
<td>3</td>
<td>11.b raised to a and c raised to a</td>
</tr>
<tr>
<td>4</td>
<td>11.c raised to a</td>
</tr>
<tr>
<td>5</td>
<td>11.c raised to b</td>
</tr>
<tr>
<td>6</td>
<td>12. no manipulation</td>
</tr>
<tr>
<td>7</td>
<td>12.b raised to a</td>
</tr>
<tr>
<td>8</td>
<td>12.b raised to a and c raised to a</td>
</tr>
<tr>
<td>9</td>
<td>12.c raised to b</td>
</tr>
<tr>
<td>10</td>
<td>12.c raised to a</td>
</tr>
<tr>
<td>11</td>
<td>13 no manipulation</td>
</tr>
<tr>
<td>12</td>
<td>13.b raised to a</td>
</tr>
<tr>
<td>13</td>
<td>13.b raised to a and c raised to a</td>
</tr>
<tr>
<td>14</td>
<td>13.c raised to a</td>
</tr>
<tr>
<td>15</td>
<td>13.c raised to b</td>
</tr>
</tbody>
</table>
As shown in the list, each sentence was represented by four variants: one was left without manipulation, another had segment “b” raised to the high pitch of “a”, a third had segment “c” raised to the high pitch of “a” while segment “b” was left unmodified (and, following tonal embedding, its tone was lower than that of “a”), and a fourth one had both segment “b” and segment “c” raised to the high pitch of “a”.

Using the paired one-tail t-test, responses across pattern types were all significant at p < 0.5 or better. Based on the calculated average values, we got the following results shown in Figure 16.

Compared to the results of the previous experiment, we can notice two apparent differences: in this new experiment almost all judgements are positive (above the average score 3) and, as the corresponding values of standard deviation show, there is a significant variation of scores within each pattern. For some reason, even the unmanipulated patterns did not receive a high value (the maximum was around 4 at most, but far from reaching at least a more preferable 5 out of 6). Two patterns stand somewhat out as the most preferred ones: (11) with no manipulation and (7) with the accented syllable of “b” raised to the high pitch of “a”. Even (3), (8) and (13) with no tonal embedding of the respective embedded clause are not rejected. It is this relative uniformity of vacillation between acceptance and rejection that the high values of standard deviation are based upon.

However, this relative uniformity of judgements suggests something important: since none of the manipulations affected the baseline of the given segments, at least from this point of view the patterns were perceived as relatively natural. Accordingly, the violation of tonal embedding at the left edge of a segment to be
manipulated (i.e. where tonal embedding should be initiated) is successfully counterbalanced by the proper placement of the right edge of the same segment on the baseline. This experiment shows, as a consequence, that what matters in tonal embedding is the narrowing of the tonal space by lowering the starting pitch only and leaving the baseline at its original value, rather than the lowering of the tonal contour of the whole embedded segment (the latter is the reason why certain patterns were clearly rejected in the previous, first experiment.

Even though the goodness judgements showed a certain degree of vacillation, still, the analysis of these patterns offered an indirect support for the status of tonal embedding as a valid prosodic principle. Namely, when presented with a sentence of the pattern type (13) with the accented syllable of both embedded segments “b” and “c” raised to the high pitch of “a” subjects were asked to determine which of these peaks is the highest (actually all the three were at the same level), there was a uniform answer: all subjects perceived “c” as the highest with “b” the next highest and “a” the lowest. However surprising the answers may be, there is a straightforward account for this judgement. Since the embedding of “b” within “a”, and the embedding of “c” within “b” are syntactically denoted, the listener expects (and predicts) that there will be a corresponding tonal embedding as well. Since it is the case of recursive embedding, the pitch of “c” that is in fact equal to that of “b” is perceived as “higher” than that of “b”. Also, since “b” is syntactically embedded within “a”, “b” is expected to be tonally embedded within “a” as well. Since it does not happen, the pitch of “b” that is in fact equal to that of “a” is perceived as higher than “a”. This striking perception of equal pitches as non-equal is an apparent proof of recursive tonal embedding in prosody.

8. Perception experiment 3: The role of the tonal manipulation of the accented syllable in the expression of prosodic grouping - same vs. different

Finally, we wished to have yet another look at the same sentence patterns but using them in a same vs. different experiment. The justification for such an experiment is that the question the subjects have to decide is much simpler: without having to judge the perception of the stimulus on a 6-value scale, it allows for determining if a certain rule or principle (such as that of tonal embedding) is a valid one.

There were 23 university students who were asked to determine if, within a pair of utterances, the two recordings were the same or very different. The same patterns were used as in the previous experiment so that, within each of the pairs, one of the recordings was unmanipulated and the other was manipulated. It was expected that same/different judgements would lead to checking the validity of the principle of tonal embedding.
Experimental evidence for recursion in prosody

Figure 17.

The 12 pairs of patterns were as follows:

<table>
<thead>
<tr>
<th>pattern#</th>
<th>pattern type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:</td>
<td>11. no manipulation vs. 11.b raised to a</td>
</tr>
<tr>
<td>2:</td>
<td>11. no manipulation vs. 11.b raised to a and c raised to a</td>
</tr>
<tr>
<td>3:</td>
<td>11. no manipulation vs. 11.c raised to a</td>
</tr>
<tr>
<td>4:</td>
<td>11. no manipulation vs. 11.c raised to b</td>
</tr>
<tr>
<td>5:</td>
<td>12. no manipulation vs. 12.b raised to a</td>
</tr>
<tr>
<td>6:</td>
<td>12. no manipulation vs. 12.b raised to a and c raised to a</td>
</tr>
<tr>
<td>7:</td>
<td>12. no manipulation vs. 12.c raised to a</td>
</tr>
<tr>
<td>8:</td>
<td>12. no manipulation vs. 12.c raised to b</td>
</tr>
<tr>
<td>9:</td>
<td>13. no manipulation vs. 13.b raised to a</td>
</tr>
<tr>
<td>10:</td>
<td>13. no manipulation vs. 13.b raised to a and c raised to a</td>
</tr>
<tr>
<td>11:</td>
<td>13. no manipulation vs. 13.c raised to a</td>
</tr>
<tr>
<td>12:</td>
<td>13. no manipulation vs. 13.c raised to b</td>
</tr>
</tbody>
</table>

Based on the calculated average values, we got the results reported in Figure 17.

Using the paired one-tail t-test, responses across pattern types were all significant at $p < 0.5$ or better. As a matter of fact, each pair consisted of an unmanipulated and a manipulated pattern. From the chart we can see that the most apparent difference within the pairs was observed when the manipulated pattern was either manipulated both in “b” and “c” (both raised to the high pitch of “a”, as in (2) and (6) – but not in the similar pattern (10), or when “c” alone was raised to the high pitch of “a”, as in (3), (7), but not in (11). The smallest difference was found when “b” was raised to the high pitch of “a”. Similarly to the conclusion based on
Experiment 2, we can conclude from these data that based on syntactic constituency as the primary means of grouping, one anticipates (and virtually “perceives” whether phonetically properly marked or not) tonal embedding where syntactic embedding occurs, and one perceives the violation of tonal embedding when it is already too obvious not to notice. Accordingly, if the recursively embedded “c” is raised to the high pitch of “a”, it strongly violates tonal embedding: instead of being at a pitch level lower than “b” it is embedded within, it is higher than that, at the pitch level of “a”. Alternatively, when “c” is at its expected F0-level but “b” is raised to the level of “a”, tonal embedding is not observed for “b” (but at least it does not take an opposite direction), whereas it is for “c”. At the same time, seeing that the tonal patterns of sentence (13) are somewhat different from the two other sentences, it is suggested, yet again, that non-prosodic (among others semantic) criteria also influence judgement.

8. Summary

In this paper we re-examined the results of experiments presented in Hunyadi (2006, forthcoming) from the point of view of the validity of important principles of prosodic grouping and recursion. Results of a production experiment confirmed and extended the validity of the principle of inherent grouping: it was shown that grouping is inherent beyond an unstructured set of four elements. Accordingly, in larger sets one tends to apply inherent grouping recursively: the first boundary is around the half of the pattern and the remaining half is again halved. As an important property it was also found that this recursive inherent grouping follows the same principle as recursive embedding: the durational boundaries within recursively embedded segments tend to be recursively shorter than the immediately higher ones. Furthermore, experiments were carried out to test the perceptual validity of the principles of tonal embedding and tonal continuity, both associated with embedding and recursion. It was found that, whereas these principles appear to be present in speech production across speakers and languages, their violation may, under certain conditions, be left unnoticed in perception. The main reason is that for the proper interpretation of structure in the process of speech perception we essentially rely on data from syntax (namely, hierarchical syntactic constituency) and make predictions about the corresponding prosodic realization. It is only the greater degrees of violation that will show up in perception as confronting our anticipation and predictions. Thus, the perception of violations also becomes a strong indication of the existence of these fundamental prosodic principles. Finally, the fact that we found the principle of recursion in effect in the prosodic representation of non-linguistic, abstract visual and abstract
Experimental evidence for recursion in prosody

prosodic patterns as well allows us to add additional, direct and indirect support to the assumption that prosody is, by itself, inherently recursive. This then sheds an important, new light on the relation between prosody and other components of language and, ultimately, on recursion in human language in general.

References

Parker, Anna R. 2006. Evolution as a Constraint on Theories of Syntax: The Case against Minimalism. PhD Dissertation, University of Edinburgh
Trochaic proper government, loose CV, and vowel ~ zero alternation in Hungarian

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University of Szeged

In this article, I analyze Hungarian vowel ~ zero alternation in a loose CV framework, employing left-to-right proper government, building on previous work (Polgárdi 1998, 2002, 2003), combining Government Phonology (GP) with Optimality Theory. I propose a syncope analysis, where alternating vowels are not empty underlyingly (as is customary in GP), but they are marked in the lexicon as properly governable. This approach is supported by an analysis of Turkish, where high vowels alternate with zero, which are traditionally regarded as segmentally empty. Yet they need to be marked lexically, because only some of them alternate, within a closed class of stems.

1. Introduction*

Hungarian phonotactics provides strong arguments for analyzing words in this language as sequences of strictly alternating consonantal and vocalic positions (following the general proposal of Lowenstamm 1996), and for utilizing trochaic (left-to-right) proper government instead of the more customary right-to-left type (as proposed by Rowicka 1999a,b). In addition, the behavior of the end of the word supports loosening the strict CV idea at word edges and allowing words to end in a consonantal position instead of an empty nucleus (Polgárdi 1998).

In an approach like this, vowel ~ zero alternation, as in bokor ~ bokrok 'bush sg ~ pl', cannot be analyzed as the phonetic interpretation of an underlying empty nucleus, as it is usually done in Government Phonology (GP). This is so, because in a loose CV analysis, words containing a stable word-final cluster (e.g. park 'park') cannot be distinguished from words containing an alternating vowel

* I would like to thank the participants of ICSH8, and the two anonymous reviewers for their comments, and Harry van der Hulst and Grażyna Rowicka for fruitful discussions at the time when I started developing the loose CV ideas on Hungarian. I also gratefully acknowledge the travel support of the University of Szeged.
(e.g. *torgk ‘throat’), as both have the same representation of the final sequence: –CvC (where a lower case letter indicates an empty position, viz. a skeletal slot which is lexically not associated with melodic material). In this article I propose a syncope analysis instead, where alternating vowels only differ from all other vowels in that the former are marked in the lexicon as properly governable (but they are not underlyingly empty). In addition, I provide further support for the use of trochaic proper government.

The article is built up as follows. In Section 2, I summarize the main arguments supporting a strict CV analysis of Hungarian. In Section 3, I argue for replacing iambic proper government by a trochaic type on the basis of the behavior of long vowels. In Section 4, the existence of final so-called superheavy syllables in Hungarian is accounted for in a loose CV approach. In Section 5, I discuss the traditional Government Phonological analysis of vowel ~ zero alternation and its inadequacies. Section 6 presents the new analysis in terms of syncope. To support this analysis, I also discuss vowel ~ zero alternation in Turkish, where high vowels alternate with zero, those that are traditionally regarded as segmentally empty. However, they still need to be marked lexically, because not all of them alternate. In Section 7, I examine the exact position of the alternation, more precisely why it never takes place in the final syllable of the word. Section 8 summarizes the results.

Let me start the discussion by presenting evidence that justifies analyzing Hungarian in terms of strict CV.

2. Hungarian as strict CV

A CV analysis of Hungarian is supported by two main arguments (Polgárdi 2003). The first is that there are hardly any phonotactic restrictions between members of word internal consonant clusters. (One of these restrictions prohibits clusters with identical place of articulation, unless the consonants are alveolar or they form a (partial) geminate. The other forbids clusters that should undergo an obligatory assimilation process (e.g. *nb, *dj etc.).) Thus in general if a given order is well-formed in Hungarian, then its mirror image is also grammatical. This is illustrated in (1). (These data come from Törkenczy 1994: 361.)

<table>
<thead>
<tr>
<th>Spelling</th>
<th>IPA</th>
</tr>
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<tbody>
<tr>
<td>ty</td>
<td>c</td>
</tr>
<tr>
<td>gy</td>
<td>j</td>
</tr>
<tr>
<td>ny</td>
<td>n</td>
</tr>
<tr>
<td>lya=j</td>
<td>j</td>
</tr>
</tbody>
</table>

1. Spelling conventions: acute accents on vowels denote length (á, é, i, ó, ú; ô, ü)
Vowel ~ zero alternation in loose CV

(1) word-internal consonant clusters  
(Törkenczy 1994)

(a) **Coda-Onset**  
lp alpári ‘vulgar’  
rd erdő ‘forest’  
jb lajbi ‘waistcoat’

(b) **Complex Onset**  
pl paplan ‘quilt’  
dr nadrág ‘trousers’  
bj gereblye ‘rake’

(c) **Onset-Onset**  
lp alpári ‘vulgar’  
rd erdő ‘forest’  
jb lajbi ‘waistcoat’

The table in (1) contains two main columns, where the internal clusters on the left 
(C1C2) are the mirror images of the internal clusters on the right (C2C1). Examples 
under (1a-b-c) could in principle be analyzed as given in (2a-b-c) respectively. However, I think that all three types should be represented as (2c).

(2) (a) **Coda-Onset** (b) **Complex Onset** (c) **Onset-Onset:**

<table>
<thead>
<tr>
<th>R</th>
<th>O</th>
<th>O</th>
<th>R</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V C1 C2</td>
<td>C1 C2</td>
<td>C1</td>
<td>V</td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e r dő</td>
<td>n a d r á g</td>
<td>b o d</td>
<td>n á r</td>
<td></td>
</tr>
</tbody>
</table>

Analyzing the examples in (1) in terms of the structures in (2) is based on the behavior of the different types of clusters in different languages as far as stress assignment, phonotactics and determination of the domains of segmental processes are concerned (see Harris 1994, for example). The structures posited in this way in (2a) and (2b) are characterized by the fact that only certain types of clusters can occur in them. In coda-onset clusters (2a) C1 must be more sonorous than C2, while in complex onsets (2b) C1 can only be filled by a stop or a fricative and C2 by a liquid or a glide. In Government Phonology, two consonants (or two positions of any type) can only show phonotactic restrictions, if the given positions are adjacent to each other. The structure in (2c), however, differs from those in (2a) and (2b) in that in this case no restrictions hold between the consonants. Therefore, C1 and C2 are not adjacent in (2c), instead they form a “bogus cluster”, where the consonants are separated from each other by an inaudible nucleus.

The analysis in (2) posits three types of consonant clusters in Hungarian: coda-onset clusters, complex onsets and bogus clusters. However, already in early versions of Government Phonology, if in a language members of apparent clusters do
not show phonotactic restrictions, then all clusters in that language are analyzed as bogus, that is, as given in (2c) (cf. Kaye, Lowenstamm & Vergnaud 1990).

The second argument for a CV (or bogus cluster only) analysis of Hungarian comes from the behavior of long vowels, namely, that – with the exception of á and é – they are prohibited from preceding consonant clusters, regardless of which consonants constitute these clusters.2 (There are about a dozen counter examples, mostly containing the vowel ó.) The unrestricted occurrence of á and é before any type of clusters is illustrated in (3).

(3) only á and é preceding internal consonant clusters
   (a) Coda-Onset        (b) Complex Onset
     lk nélkül ‘without’ kl cékla ‘beetroot’
     rf férfi ‘man’     fr páfrány ‘fern’
     rt pártta ‘head-dress’ tr nátrium ‘sodium’
   (a) Coda-Onset        (c) Onset-Onset
     mzs kázmza ‘cowl’ zsm pézsma ‘musk’
     lm Kálmán (name) ml sámli ‘footstool’
     ng csángó ‘Hungarian native in Moldavia’ gn Ágnes (name)

The restriction involving long vowels other than á and é could perhaps be analyzed as a case of closed syllable shortening in (3a). Then, however, it remains unexplained why this process also applies in (3b) and (3c), where there are no closed syllables. We are only able to account for this restriction in a uniform way, if all clusters in Hungarian are broken up by an empty nucleus, and they are thus all analyzed by a bogus cluster, as in (2c). In such an analysis the restriction states that long vowels cannot be followed by an empty nucleus. Let us see why this should be the case.3

2. Note that this statement is only true of monomorphemic forms. If a suffix starting with a cluster is added to a stem, the stem-final long vowel does not shorten, even if the suffix otherwise behaves as synthetic (i.e. as forming one unanalyzable phonological domain with the stem): e.g. hajó ~ hajónként ~ hajóstul ‘ship nom ~ distr ~ assoc’. The generalization thus only applies to the most basic lexicon of Hungarian.

3. I will not discuss the behavior of á and é further in this article. Apart from the fact that these vowels can occur before internal consonant clusters, in a closed class of stems they take part in a length alternation process which might be called “open syllable shortening”: e.g. nyár ~ nyarak ‘summer sg ~ pl’; kéz ~ kezek ‘hand sg ~ pl’. For an analysis of these issues see Polgárdi (2003), where I propose to represent á and é as sequences of short vowels phonologically, whereas all other long vowels have their usual representation, as in (4a).
3. The behavior of long vowels in a strict CV analysis

In a strict CV approach to syllable structure, words are uniformly made up of CV-units (Lowenstamm 1996). This means that both consonant clusters and long vowels constitute two CV-units, with certain positions in the structure remaining empty. The \textit{kt} cluster in (4b) illustrates the first point, involving an empty nucleus, while the long \textit{ő} in (4a-b) illustrates the second point, with an intervening empty onset.

\[(4) \textit{strict CV} \text{ (Lowenstamm 1996)} \text{ and } \textit{trochaic proper government} \text{ (Rowicka 1999a,b)}\]

\text{(a) \textit{ro:ka} ‘fox’} \hspace{1cm} \text{(b) \textit{*ro:kta}}

To find a rationale for the restriction on long vowels, I follow Rowicka (1999a, b) who proposes to employ trochaic (left-to-right) proper government (5) (indicated by an arrow in (4)) instead of the more usual iambic one.

\[(5) \textit{Trochaic Proper Government} \text{ (Kaye 1990, as modified by Rowicka 1999a,b)}\]

A nuclear position \textit{A} properly governs a nuclear position \textit{B} iff

\begin{itemize}
  \item[i.] \textit{A} governs \textit{B} (adjacent on its projection) \textit{from left to right}
  \item[ii.] \textit{A} is not properly governed
\end{itemize}

In this analysis, the relationship between the two halves of a long vowel is one of proper government. Since the C-position between \textit{V$_1$} and \textit{V$_2$} is unfilled, this governing relationship is manifested by spreading the melodic content of \textit{V$_1$} into \textit{V$_2$} (4a). (In those cases where the intervening C-position is filled, there is of course no possibility for spreading: e.g. \textit{kamra} ‘pantry’ CVCvCV, or \textit{lap} ‘sheet’ CVCv.)

When the nucleus following the long vowel is also empty, as \textit{V$_3$} in (4b), this results in an ill-formed representation (indicated by an asterisk), because \textit{V$_2$} – being itself governed – cannot properly govern \textit{V$_3$}. As Rowicka argues, sequences of such weak empty nuclei produce a lapse similar to stress lapses in metrical systems, consisting of sequences of unstressed syllables. Such lapses are avoided, as also evidenced by patterns of vowel ~ zero alternation to be discussed below, just like metrical lapses are avoided by turning some of the nuclei into prosodic heads. Rowicka (1999b) formulates this prohibition on lapses as the principle given in (6).
(6) **No Lapse**  
(Rowicka 1999b:106)
Sequences of non-governor empty nuclei are prohibited.

In (4b), however, we cannot turn \( V_{3} \) into a governor, because then it should be phonetically realized (and anyway there is nothing on its right to properly govern). It is for these reasons that a long vowel cannot be followed by an inaudible nucleus.

However, a problem arises word-finally, where such so-called “superheavy syllables”, involving a long vowel followed by a “coda” consonant, are in fact well-formed in Hungarian: e.g. \( hús \ [hu:ʃ] \) ‘meat’ in (7a); and we also find examples like \( film \) ‘id.’ involving a short vowel followed by two “coda” consonants, as in (7b). Why is a No Lapse violation tolerated here?

(7) word-final “superheavy syllables”

\( \begin{array}{c|c|c|c|c}
\text{a)} & \text{CVcvCv} & \text{b)} & \text{CVCvCv} \\
\hline
V & V & V & V \\
\hline
\text{C} & \text{V}_1 & \text{C} & \text{V}_2 & \text{C} & \text{V}_3 \\
\hline
\text{h} & \text{u} & \text{i} & \text{f} & \text{i} & \text{l} & \text{m} \\
\hline
\text{huːʃ} \quad \text{‘meat’} & \text{film} \\
\end{array} \)

To solve this problem and to save the principle of No Lapse from violation, I propose a loose CV analysis, where always inaudible final empty nuclei are dispensed with and words can end in a C-position instead.

4. **Loose CV**

Domain final empty nuclei present some further serious problems, as discussed in Polgárdi (1998). One of these problems is illustrated in (8). In languages like Turkish, the phonologically empty vowel \([i]\) can appear in domain final position (8a), but consonant final words also exist (8b).

(8) **Turkish**  
(Lees 1961, Lewis 1967)

\( \begin{array}{c|c|c|c|c|c}
\text{a)} & \text{[i] in domain final position} & \text{b)} & \text{consonant final words} \\
\hline
\text{kapi} \quad \text{‘door NOM SG’} & \text{kap} \quad \text{‘mantle NOM SG’} \\
\text{aci} \quad \text{‘grief NOM SG’} & \text{qarin} \quad \text{‘belly NOM SG’} \\
\end{array} \)
If consonant final words phonologically also end in an empty nucleus, then it is not clear how we can account for the difference between final empty nuclei that always remain silent (9a) and final empty nuclei that are always pronounced (9b), since both types of words end in a -Cv sequence. The question is thus why V₂ is not licensed in (9b).

(9) strict CV: word-final empty nuclei

(a) always silent (b) always pronounced

V–>–V V
| | | ?
C V₁ C V₂ C V₁ C V₂
| | | | | |
k a p k a p i

Another problem is revealed when we examine these words during suffixation.
(10) presents examples with a consonant initial suffix (GEN) and with a vowel initial suffix (1SGPOSS), in addition to the unsuffixed forms (NOM).

(10) Turkish: suffix alternations

(a) non-high V # (b) high V # (c) C #

<table>
<thead>
<tr>
<th>tarla</th>
<th>kapı</th>
<th>kap</th>
<th>NOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>V&lt; &gt;</td>
<td>kapı</td>
<td>kap</td>
<td>GEN</td>
</tr>
<tr>
<td></td>
<td>kapı</td>
<td>kapı</td>
<td>1SGPOSS</td>
</tr>
<tr>
<td></td>
<td>kapı</td>
<td>kapı</td>
<td>1SGPOSS</td>
</tr>
<tr>
<td>‘field’</td>
<td>‘door’</td>
<td>‘mantle’</td>
<td></td>
</tr>
</tbody>
</table>

As (10a-b) show, vowel final stems behave alike, irrespectively of the quality of the final vowel. When we compare their behavior to that of consonant final stems (10c), we find that the initial consonant of a suffix is deleted after consonant final stems (kap<n>in ‘mantle GEN’), while the same thing happens to the initial vowel of a suffix after vowel final stems (tarla<i>m ‘field 1SGPOSS’ and cap<i>m ‘door 1SGPOSS’). The alternating segments are indicated by underlining in (10).

In a strict CV approach it is difficult to make sense of these alternations. This can be seen in (11).

(11) strict CV: Turkish suffix alternations

(a) consonant-deletion

V–>–V V–>–V V V–>–V
| | | | | | | | |
C V₁ C V₂ C V₃ C V₄ C V₁ C V₃ C V₄
| | | | | | | | |
k a p n i n k a p i n

kap<n>in ‘mantle GEN’
(b) vowel-deletion

\[
\begin{array}{cccc}
V & V & V\rightarrow-V & V & V\rightarrow-V \\
| & | & | & | & |
\end{array}
\]

\[
\begin{array}{cccc}
C & V_1 & C & V_2 <C_3 V_3> C & V_4 \\
| & | & | & | & |
\end{array}
\rightarrow
\begin{array}{cccc}
C & V_1 & C & V_2 & C & V_4 \\
| & | & | & | & | & | \\
k & a & p & i & m & k & a & p & i & m
\end{array}
\]

\textit{kapi}<i>m\ 'door 1SGPOSS'

(c) reduction

\[
\begin{array}{cccc}
V\rightarrow-V & V\rightarrow-V & V & V\rightarrow-V \\
| & | & | & | & |
\end{array}
\]

\[
\begin{array}{cccc}
C & V_1 & C & <V_2 C_3> V_3 C & V_4 \\
| & | & | & | & |
\end{array}
\rightarrow
\begin{array}{cccc}
C & V_1 & C & V_3 & C & V_4 \\
| & | & | & | & | & | \\
k & a & p & i & m & k & a & p & i & n
\end{array}
\]

\textit{kapim} 'mantle 1SGPOSS'

In (11a) it is unclear why a representation looking perfectly well-formed needs to be changed by deleting the $V_2C_3$ sequence, shown by angle brackets. The same question can be posed about deletion of the $C_3V_3$ sequence in (11b). There seem to be a lot of empty positions next to one another here, however, only $C_3$ is crucially empty, since the /i/s could be replaced by any contentful vowel in Turkish. Finally, in examples like (11c), the empty sequence $V_2C_3$ is customarily deleted in Government Phonology, referred to as Reduction by Gussmann & Kaye (1993).

Apart from a lack of good motivation for these changes, in each case in (11) a proper governing relation disappears together with the deleted positions, in violation of the Projection Principle, given in (12).

(12) \textit{Projection Principle} (Kaye, Lowenstamm & Vergnaud 1990: 221)

Governing relations are defined at the level of lexical representation and remain constant throughout a phonological derivation.

To solve these problems I propose to loosen the strict CV idea at word edges, and to allow a final “bachelor” C in languages where words can end in a consonant on the phonetic surface (and an initial lonely V in languages that possess phonetically vowel initial words). Word medially, however, a strict alternation of C and V positions is still required. To achieve this, we need two (independently motivated) violable constraints in an Optimality Theoretic sense: Onset and Nucleus. Onset requires every nucleus to be preceded by an onset, while Nucleus demands that every onset be followed by a nucleus. These constraints then can be violated at the edges under the pressure of other constraints, while their violation medially, within an analytic domain, will be prevented by an inviolable principle
prohibiting sequences of consecutive positions of the same type. For the specifics of this analysis, see Polgárdi (1998).

This proposal, in fact, is part of a larger research project, reported on in Polgárdi (1998), where parameters of standard Government Phonology are replaced by violable constraints. A further example will be provided below. And violability is needed anyway for situations where what have been regarded as inviolable principles in the GP literature turn out to conflict, and a language-specific priority ranking needs to be established between them. The principles-and-parameters approach then is turned into a principles-and-constraints approach, where not only the parameters, but also some of the previous principles are turned into violable constraints.

In this approach, dubbed “loose CV”, we can dispense with those problematic final empty nuclei that are always inaudible. The contrast between (8a) and (8b) can now be expressed as shown in (13).

(13) loose CV: word-final empty nuclei

(a) always silent  
C V₁ C  
|   |   |
kap  

(b) always pronounced  
C V₁ C V₂  
|   |   |   |
kap in 'mantle GEN'

Words such as those in (13a) now indeed end in a C position (thereby incurring a violation of the Nucleus constraint). If a domain ends in an empty nucleus, this nucleus must receive phonetic interpretation (13b), unless it is properly governed. But, interestingly, proper government of the last vowel of a domain is often disallowed in languages that have proper government (manifested by vowel ~ zero alternation). See more on this below.

The examples in (11) can now be analyzed as given in (14).

(14) loose CV: Turkish suffix alternations

(a) consonant-deletion  
C V₁ C <C₂> V₂ C  \[\rightarrow\]  C V₁ C V₂ C  
|   |   |   |   |   |   |   |
kap n  

4. In an approach with iambic proper government, inaudible domain final empty nuclei as in (9a) are licensed to remain silent by means of a parameter, as they cannot be properly governed (Harris 1992: 381). The violable constraint Nucleus replaces this parameter.

5. Under the iambic view of proper government, this position can never be governed. If we dispense with the controversial idea of domain final parametric licensing of empty nuclei, then such nuclei will always have to be interpreted phonetically. With trochaic government, some further provisions have to be made.
(b) vowel-deletion
\[
\begin{array}{c|c|c|c|c}
C & V_1 & C & V_2 & <V_3> \\
\hline
k & a & p & i & m \\
\end{array}
\rightarrow
\begin{array}{c|c|c|c|c}
C & V_1 & C & V_2 & C \\
\hline
k & a & p & i & m \\
\end{array}
\]
\[kapi_{<i>m} \text{ `door 1SGPOSS'}\]

(c) no reduction
\[
\begin{array}{c|c|c|c|c}
C & V_1 & C & V_2 & C \\
\hline
k & a & p & i & m \\
\end{array}
\]
\[kapim \text{ `mantle 1SGPOSS'}\]

In a loose CV approach, it is clear why the suffix initial C₃ needs to be deleted after a consonant final stem in (14a): medially, within a single analytic domain, a strict alternation of C and V positions is required. This also explains deletion of suffix initial V₃ after a vowel final stem in (14b). In (14c), however, no reduction is necessary, as a consonant final stem and a vowel initial suffix can simply be concatenated. Note also that no governing relationships have been deleted in this analysis.

Returning to the issue of final “superheavy syllables” in Hungarian, in a loose CV approach they can be analyzed as (15a-b).

(15) *trochaic government and loose CV*: word-final “superheavy syllables”

(a) CVcvC
\[
\begin{array}{c|c|c|c|c}
V & \rightarrow & -- & V \\
\hline
C & V_1 & C & V_2 & C \\
\hline
h & u & f & i & l & m \\
\end{array}
\]

(b) CVCvC
\[
\begin{array}{c|c|c|c|c}
V & \rightarrow & -- & V \\
\hline
C & V_1 & C & V_2 & C \\
\hline
f & i & l & m \\
\end{array}
\]

These representations are well-formed, because V₂ is not followed by an empty nucleus that would be in need of licensing, and no lapse is created (in contrast to (4b) and (7)).

At this point I need to discuss Turkish again, which behaves exactly like Hungarian word-internally, but which in addition also rules out superheavy syllables word-finally (i.e. there are no examples like (15) in this language, except for a number of stems containing final liquid/nasal plus voiceless stop clusters). In Polgárdi (2002) I proposed to analyze this contrast by the help of a parameter (to be turned into a violable constraint below) which prohibits the last vowel of a domain from being a licensed empty nucleus. This parameter is switched off in Hungarian, whereas it is active in Turkish, rendering forms like (15a-b) ill-formed in the latter, as shown in (16a-b).
(16) Turkish (Polgárdi 2002)

*parameter*: the last V of a domain cannot be a licensed empty nucleus

(a) vowel shortening   (b) no final clusters

<table>
<thead>
<tr>
<th>V</th>
<th>*</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>V₁</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m</td>
<td>e</td>
<td>r</td>
</tr>
</tbody>
</table>

merak ‘curiosity nom’ (cf. mera:ki ‘curiosity poss’)

Since spreading is not possible without licensing V₃ via proper government, the offending empty CV-unit is removed from the representation (shown by angle brackets), and the long vowel shortens in (16a). It is the same parameter that ensures that the last vowel of kapı ‘door nom sg’ in (13b) surfaces in Turkish, not being allowed to be licensed (see also the discussion of vowel ~ zero alternation in Turkish below).

In fact, this parameter makes a further valid prediction, namely, that word-final long vowels are licit in Hungarian (e.g. só [ʃo:] ‘salt’ (CV_cv)), while they are out in Turkish, as shown in (17).

(17) word-final long vowels

(a) Hungarian: yes   (b) Turkish: no (Lewis 1967)

<table>
<thead>
<tr>
<th>V</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>V₁</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>ʃ o</td>
<td>ʃ o</td>
</tr>
</tbody>
</table>

ʃo: ‘salt’ *ʃo:

This prediction is true to the facts, but it cannot be explained in the traditional strict CV approach, because long vowels do occur in Turkish word medially, and

---

6. The absence of word final long vowels in Turkish might be an accident, since long vowels only occur in loanwords in this language. However, it is not only Turkish that exhibits this type of behavior. Yawelmani (discussed together with Turkish by Kaye 1990 and Rowicka 1999a,b when analyzing “closed syllable shortening”), which possesses native long vowels, shows the same pattern (see Archangeli 1983, 1991, on the basis of Newman 1944). This language allows no consonant clusters at word edges and no more than two adjacent consonants word medially. When illicit clusters arise, these are broken up by epenthesis. Underlying long vowels are shortened whenever followed by two consonants or by a single consonant at the end of the word. In addition, there is an interesting surface gap: underlying long vowels are never allowed to surface as such when they occur in word final position. In this case they shorten and a glottal stop ap-
consonant final words like *kap* ‘mantle’ are also well-formed (8b), which means that such an analysis cannot prohibit licensed domain final empty nuclei in general in this language. (In a trochaic analysis $V_2$ would be properly governed by $V_1$, as in (9a), while in an iambic approach it would be licensed parametrically in domain final position.) The loose CV approach is thus superior to a strict CV analysis on this count.

5. Vowel ~ zero alternation

With this background, let us turn to vowel ~ zero alternation (for previous analyses, see for example Törkenczy 1992, Nádasdy & Siptár 1994, Rebrus 2000, Siptár & Törkenczy 2000). This process affects a closed class of stems in Hungarian, including more than a hundred nominal and verbal stems (apart from forms involving the noun-forming derivational suffixes *-alom/-elem* and *-adalom/-edelem*). The last vowel of the stem (marked by underlining) is silent before vowel-initial synthetic suffixes (18b), whereas it is pronounced before any other suffix (18c), or in the unsuffixed form (18a).

\[(18)\] vowel ~ zero alternation

<table>
<thead>
<tr>
<th></th>
<th>unsuffixed</th>
<th>(V)-initial synth.</th>
<th>other suffixes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>suffix (e.g. pl.)</td>
<td>(e.g. ill)</td>
<td></td>
</tr>
<tr>
<td>o törkők</td>
<td>törkők</td>
<td>törkőkbé</td>
<td>‘throat’</td>
</tr>
<tr>
<td>ö öklők</td>
<td>öklők</td>
<td>öklőkbé</td>
<td>‘fist’</td>
</tr>
<tr>
<td>e selyém</td>
<td>selyémbé</td>
<td>selyémbé</td>
<td>‘silk’</td>
</tr>
</tbody>
</table>

pears after them. This gap is mysterious in a strict CV account, but under loose CV it is precisely what we expect (although the exact formulation of the alternation is not entirely clear).

7. Synthetic affixes form a single phonological domain with the stem (other examples in Hungarian include the accusative *torkot*, the superessive *torkon*, the possessive, e.g. 1sg *torkom* etc.). Forms derived in this way are typically indistinguishable from monomorphemic forms as far as phonotactic restrictions are concerned (although see footnote 2.). In contrast, the morphological complexity of analytically derived forms is also manifested in their phonological behavior (Kaye 1995). Further examples of analytic suffixes can be seen in the terminative *torgókig*, delative *torgókról*, essive *torgókként* etc. forms.

8. In proper names vowel ~ zero alternation does not apply: e.g. *Bokort* ‘name acc’ vs. *bokrot* ‘bush acc’. Certain stems show vacillation: e.g. *bajszom* ‘moustache 1sg poss’ vs. *bajuszt* ‘moustache acc’, and *bajszos* ~ *bajuszos* ‘moustache DENOM adj-forming’. In addition, in three stems, apart from vowel ~ zero alternation, metathesis of the last two consonants of the stem also takes place: *kehely ~ kelyhek* ‘chalice sg ~ pl’, *pehely ~ pelyhek* ‘down sg ~ pl’, *teher ~ terhek* ‘burden sg ~ pl’. I will not deal with these cases further here.
As illustrated in (18), the quality of the alternating vowel is usually mid (a, ō or e, depending on vowel harmony).

The standard approach to vowel ~ zero alternation in Government Phonology is to represent the alternating vowel as underlyingly empty (see Kaye, Lowenstamm & Vergnaud 1990, and for Hungarian Törkenczy 1992, and Ritter 1995). Adapting this analysis to loose CV and trochaic proper government, we get the representations in (19).

(19) standard approach in GP: alternating V is an empty nucleus

(a) V V (b) V→−V V (c) V V→−V V

C V₁ C V₂ C C V₁ C V₂ C V₃ C C V₁ C V₂ C V₃ C V₄

t o r k t o r k o k t o r k b a

torok
torkok

torokba

In (19b) V₂ remains silent, because it is properly governed by V₁. In (19c), however, V₂ cannot be properly governed, because that would create an ill-formed structure like (4b), with no licenser for the V₃-position, and with a lapse of non-governor empty nuclei. In addition to No Lapse, introduced in (6), Rowicka (1999a) proposes the principle in (20) to account for situations like (19c).

(20) The Revised Empty Category Principle (Rowicka 1999a)

An empty nucleus must be phonetically realized if it properly governs another empty nucleus.

To satisfy these principles, V₂ in (19c) cannot be properly governed. Instead it properly governs V₃ and is therefore phonetically realized (in Hungarian, as a mid vowel, following the rules of harmony). Note that at this point we do not understand why in (19a) V₁ does not properly govern V₂. I will come back to this question shortly.

However, this analysis is problematic in several respects. One problem is that the alternating vowel is not always mid (21a), and even if it is mid, it does not always harmonize (21b).

(21) (a) non-mid alternating vowel

bajusζ ~ bajszok ‘moustache sg ~ pl’
ajak ~ aijak ‘lip sg ~ pl’

(b) disharmonic alternating vowel
	titok ~ titkok ‘secret sg ~ pl’ (vs. iker ~ ikrek
szirom ~ szirmok ‘petal sg ~ pl’ ‘twin sg ~ pl’)
In these cases, if the alternating vowel is underlyingly empty, it cannot be predicted what quality it will acquire on the surface.

Another problem is illustrated in (22), showing that Hungarian distinguishes three types of word-final clusters.

(22) three types of word-final clusters

<table>
<thead>
<tr>
<th>(a) alternating V</th>
<th>(b) stable V</th>
<th>(c) stable C-cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>standard GP:</td>
<td>– CVCv #</td>
<td>– CVCv #</td>
</tr>
<tr>
<td>török ~ torkok</td>
<td>törökök ~ törökök</td>
<td>park ~ parkok</td>
</tr>
<tr>
<td>‘throat sg ~ pl’</td>
<td>‘Turkish sg ~ pl’</td>
<td>‘park sg ~ pl’</td>
</tr>
<tr>
<td>loose CV:</td>
<td>– CVC #</td>
<td>– CVC #</td>
</tr>
</tbody>
</table>

In (22a) the vowel inside the cluster alternates with zero, in (22b) the vowel is always present, and in (22c) it is never there, even though the quality of the cluster is the same in all three cases. In standard Government Phonology, each type has a unique representation. In loose CV, however, (22a) and (22c) cannot be kept apart, if the alternating vowel is represented as underlyingly empty (as is generally done in Government Phonology). In the next section I present an analysis that solves these problems.

6. Vowel ~ zero alternation as syncope

In this article I propose to analyze vowel ~ zero alternation in Hungarian as syncope. That is, in my view, the alternating vowels are not empty phonologically. Instead, they are marked in the lexicon as properly governable (to distinguish them from the non-alternating vowels in (22b)). The resulting representations are given in (23).

(23) (a) V V (b) V–>–V V (c) V V–>–V V

| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| C V₁ C V₂ | C V₁ C V₂ | C V₁ C V₂ | C V₃ C V₄ |
| | | | | | | | | | | | | | |
| toro k | tor <|o> k o k | tor o k b a |
| tork | torok | torokba |

In (23b) V₂ is properly governed by V₁ and therefore its melody is unparsed (indicated by angle brackets). In (23c), however, V₂ cannot be properly governed, because it itself must properly govern the empty V₃, otherwise the representation would be ill-formed (containing a sequence of non-governor, silent nuclei, *torkba (CVCvCvCv)). The lack of proper government in (23a) cannot yet be explained at this point.
Lexical marking of the alternating vowels is not an elegant solution, but it has several advantages. For one thing, alternating stems form a closed class in Hungarian, therefore lexical marking is technically feasible. In addition, this solution solves the problem of non-mid and disharmonic alternating vowels in (21). In what follows, I discuss vowel ~ zero alternation in Turkish, where lexical marking seems unavoidable, even for an analysis employing empty nuclei.

In Turkish, vowel ~ zero alternation works in the same way as in Hungarian, except that in this language it is the high vowel /i/ and its harmonic counterparts that alternate with zero. (The data come from Lees 1961, Lewis 1967, Kardestuncer 1982.) /i/ is the vowel that is traditionally regarded as lacking any distinctive features (or elements). However, it does not (always) behave as a completely empty nucleus. The Turkish vowel system and its analysis in terms of Government Phonological elements can be seen in (24) (for arguments supporting this analysis, see Polgárdi 1998).

(24) **Turkish vowel system**

\[
i \quad \text{I} \quad \text{I}U \quad \text{Ø} \quad \text{U} \\
e \quad \text{AI} \quad \text{AIU} \quad \text{A} \quad \text{AU}
\]

The data in (25) show an alternation similar to the one in (18). The only difference is that here the alternating vowels are high, instead of mid. Because in Turkish high vowels are segmentally empty, and they only become filled by the elements for frontness (I) and rounding (U) via vowel harmony, we expect them to alternate with zero under the appropriate circumstances. This, however, does not always happen, as shown by the examples in (26).

(25) **Turkish vowel ~ zero alternation** (cf. (18), (22a))

\[
\text{ömür} \sim \text{ömrü} \quad \text{‘life NOM ~ ACC’} \\
\text{fikir} \sim \text{fikri} \quad \text{‘thought NOM ~ ACC’} \\
\text{köyün} \sim \text{koynu} \quad \text{‘chest NOM ~ ACC’} \quad \text{(cf. köyün ~ köyunu ‘sheep’)} \\
\text{kışı} \sim \text{kismi} \quad \text{‘part NOM ~ ACC’}
\]

The data in (25) show an alternation similar to the one in (18). The only difference is that here the alternating vowels are high, instead of mid. Because in Turkish high vowels are segmentally empty, and they only become filled by the elements for frontness (I) and rounding (U) via vowel harmony, we expect them to alternate with zero under the appropriate circumstances. This, however, does not always happen, as shown by the examples in (26).

(26) **non-alternating high vowels** (cf. (22b))

\[
\text{sinif} \sim \text{sinifi} \quad \text{‘class NOM ~ ACC’} \\
\text{kadin} \sim \text{kadini} \quad \text{‘woman NOM ~ ACC’}
\]

Here the underlined /i/ is realized in the accusative, even though the context is the same as in (25). Thus (25) in Turkish corresponds to (22a) in Hungarian, while (26) corresponds to (22b). And we can even find minimal pairs like köyün ~ koynu ‘chest NOM ~ ACC’ vs. köyün ~ köyunu ‘sheep NOM ~ ACC’, given in (25).
In addition, although the alternating vowel is usually harmonic, there are some exceptions, as shown in (27). In these cases, the quality of these vowels cannot be predicted, if they are underlyingly empty.

(27) disharmonic alternating vowel (cf. (21b))
vakı̇t ~ vakti ‘time NOM ~ ACC’
zulüm ~ zulmü ‘oppression NOM ~ ACC’

Finally, as we have seen in (8) and (10) above, high vowels can also occur domain-finally, and during suffixation they behave like any other vowel.

There are thus two types of segmentally empty nuclei in Turkish: those that alternate with zero (25), and those that behave like any other full vowel (26), and (10). In other words, the only difference between high vowels and all other vowels in Turkish is that some of the high vowels can be properly governed. The alternating ones, however, need to be marked in the lexicon as properly governable. The unmarked high vowels, in contrast, must always be phonetically interpreted, even though they are just as empty segmentally.\(^9\)

In an analysis where a segmentally empty vowel is always properly governable, stems in (26) need to be marked that the empty nucleus they contain is not governable. This implies that stems in (25) represent the “normal” case, whereas stems in (26) are in some sense exceptional. This, however, is not the case. In Turkish, just like in Hungarian, alternating stems form a closed class (of mainly nouns denoting body parts, or loanwords), while the non-alternating class is productive. As in Turkish one group of empty nuclei needs to be marked in any case, this language provides strong arguments for an analysis where it is the alternating vowel that is lexically marked.

The only difference between the Turkish and the Hungarian pattern is that in Hungarian it is the mid vowels that alternate with zero. On the basis of the parallelism above, I propose that in Hungarian vowels alternating with zero are segmentally filled, but they are lexically marked for being properly governable.\(^{10}\)

\(9\). In fact, some of the lexically marked segmentally empty nuclei do not show alternation, but are always silent. This is the case with a nucleus inside an intervocalic cluster, like in the stem tarla ‘field’ in (10). Such nuclei are never forced to surface, because they are always preceded and followed by a full vowel. A domain-final empty nucleus like in (13b), in contrast, could never remain silent, even if it was lexically marked, because the parameter in (16) prohibits its proper government.

\(10\). Scheer (2004) proposes a similar account of vowel ~ zero alternation, which is not as clearly diacritical as the present one. In his analysis, alternating vowels differ from non-alternating ones in that their melody is lexically floating, and it is only associated, if its skeletal position is not properly governed. This proposal could be applied to Hungarian, but it would not solve the problem in Turkish, where there is no melody to be left floating or associated. Both alternating and non-alternating high vowels are lexically empty.
The two parameters thus seem to be independent of one another whether in a given language the segmentally empty nucleus can receive phonetic interpretation and whether there are vowels alternating with zero in the same language. The two may coincide, as in Turkish, but this is not necessarily so. In Hungarian, the phonetic interpretation of a nucleus without any elemental content does not correspond to a member of the vowel system (i.e., there is no /i/), but vowel ~ zero alternation still exists. From this it follows that in a language where the segmentally empty nucleus has no phonetic correspondent (like in Hungarian), such nuclei can only occur in positions where they can remain silent (i.e. they do not need to govern, or they do not form a lapse).

Further evidence for the syncope solution is provided by those languages, such as Russian, where more than one vowel alternate with zero, as shown in (28) (Scheer 1998).

(28) Russian vowel ~ zero alternation

djevu∫ka ~ djevu∫ɛ ‘girl NOM SG ~ GEN PL’
ki∫ka ~ ki∫ɛk ‘intestine NOM SG ~ GEN PL’

In these cases, if the alternating vowel was underlyingly empty, it could not be predicted what quality it will acquire on the surface.

7. Position of the alternation

The last issue concerns the exact position of vowel ~ zero alternation. (23) is repeated here as (29) for convenience.

(29)=(23)

| | | | | | | | | | | | | | | | | |
C V₁ C V₂ C V₃ C V₄
| | | | | | | | | | | | | | | | | |
t o r o k
t o r <o> k o k
t o r o k b a
torgk
torkok
torgkba

It has already been discussed why V₂ is properly governed in (29b), but not in (29c). But so far it has been unclear why V₂ cannot be properly governed in (29a) either. (This would be entirely obvious with traditional right-headed government, since nothing follows V₂ that could govern it.) In fact, the same situation is found in Turkish, which however is not surprising, as we have already seen in (16) that this language prohibits the last vowel of a domain from being a licensed empty nucleus.
In this article I propose that even though Hungarian allows the last vowel of a domain to be licensed, it does so only underlyingly (in stable final clusters or long vowels), but it does not allow such nuclei to be created during the derivation (via syncope). The restriction in (16) is therefore better regarded as an Optimality Theoretic constraint (in the sense of Prince & Smolensky 1993), rather than as a parameter, because it is not completely switched off in Hungarian. It is unviolated in Turkish, whereas it can be violated in Hungarian, but (29a) constitutes an example of the Emergence of the Unmarked (whereby creation of marked structures is avoided even in those languages which do not repair already existing marked structures of the given type (McCarthy & Prince 1994)). The constraint hierarchy is given in (30).

\[(30) \quad *\text{Elements} \gg \text{Last N} \neq \emptyset \gg \text{ProperGovernment} \gg \text{Parse/Fill}\]

Syncope in \textit{tor<o>kok} in (29b) is the result of ranking the constraint \textit{ProperGovernment} (demanding proper government and therefore underparsing of lexically marked vowels) above \textit{Parse/Fill}. In \textit{torok} (29a) syncope does not apply (to produce impossible \textit{*tor<o>k}) because of the next higher ranked constraint, dubbed \textit{Last N} \neq \emptyset in (30), corresponding to the parameter in (16). Therefore in this case \textit{ProperGovernment} is violated, and the last vowel is interpreted. Finally, in cases like (15b), \textit{park}, the final cluster is not repaired via epenthesis, giving ill-formed \textit{*parok}, because there is an even higher ranked constraint, \textit{*Elements}, forbidding the insertion of additional features. \textit{Last N} \neq \emptyset can therefore be violated here, even though its effect can be observed in other cases (such as in \textit{torok} in (29a)), where higher ranked constraints are satisfied.\footnote{Note that final clusters, as in \textit{park}, are not unrestricted in Hungarian, as an analysis in terms of proper government would predict. Maybe the constraint \textit{Last N} \neq \emptyset has some effect in this case too, and this is why such an empty nucleus must be supported by being embedded in a consonantal governing domain, which in turn would account for the phonotactic restrictions. The details of this proposal, however, are left for future research.}

Another issue concerns vowel-initial suffixes that do not trigger vowel ~ zero alternation, such as the anaphoric possessive -é, as in \textit{toroké}. As mentioned in (18), only synthetic suffixes trigger this alternation, whereas -é is an analytic suffix. This can be seen from the fact that it does not trigger other alternations either, like \textit{v}-augmentation (e.g. \textit{ló} ~ \textit{loyak} ‘horse sg ~ pl’ vs. \textit{lóé} ‘horse anaph poss’) or open syllable shortening (e.g. \textit{nyár} ~ \textit{nygrak} ‘summer sg ~ pl’ vs. \textit{nyáré} ‘summer anaph poss’).\footnote{In fact, the situation is more complicated than that: the superessive -\textit{on} and the adjective forming -\textit{i} trigger \textit{v}-augmentation and vowel ~ zero alternation just like the plural, but they do not trigger open syllable shortening, just like the anaphoric possessive (e.g. \textit{ló} ~ \textit{loyon} ‘horse
As can be seen here, analytic suffixes, separated from the stem by an analytic domain boundary (indicated by “]” in (31)), are invisible for proper government. The stem behaves as if it was standing alone, and V2 is not properly governed, because it is the last vowel in the domain, and we do not get \*torké (cf. (29a), as opposed to (29b)). (31b) shows that triconsonantal clusters can also be created by analytic suffixation, when the stem ends in a cluster, and the third consonant is provided by the suffix. But because of loose CV, there is only one licensed silent empty nucleus, viz. V2, therefore No Lapse is satisfied here.

In fact, on the basis of this, we have to conclude that (29c) should really be represented as (32), since suffixes like -ba are analytic for the same reasons as suffixes like -é.

\[(32)\] \[\text{V V V} \quad \text{C V}_1 \quad \text{C V}_2 \quad \text{C V}_3 \quad \text{torokba}\]

This case is therefore simply a subtype of (29a).

The position of vowel ~ zero alternation can be summarized in the following formula: – VCVCV –. That is, the alternating vowel remains silent, if it is flanked by a single consonant and a vowel on each side, where the first vowel must be short. If the first vowel is long, it can only be á or é (except for the two examples of ólom ‘lead’ and sólyom ‘falcon’) (Rebrus 2000). The vowel following the alternating
one, in turn, must be provided by synthetic suffixation (or by quasi-analytic suf-
fication in the case of verbs, in the terminology of Rebrus 2000).

In other words, in Hungarian (and also in Turkish) the alternating vowel nev-
er remains silent in the first or last syllable of the word, after a long vowel, or next
to a consonant cluster. Why this does not happen in the last syllable has just been
explained. It is also easily understandable why it never happens in the first syllable
either, as in this case there would be nothing to properly govern the alternating
vowel. The lack of syncope after long vowels does not require extra explanation
either, because the second position of a long vowel, itself properly governed, can-
not provide proper government for the alternating vowel. And we have already
seen above that in Hungarian á and é are the only long vowels that can precede a
consonant cluster (see (3)). The situation is similar following a consonant cluster,
where the silent empty nucleus inside the cluster could not provide proper govern-
ment for the alternating vowel. Finally, there is no syncope preceding a conso-
nant cluster, because in that case it is the empty nucleus inside the cluster that
would have no proper governor, and a lapse would be created.

The last issue concerns the quality of the consonants flanking the alternating
vowel (cf. Rebrus 2000). Even though we do not expect to find phonotactic restric-
tions in this case, not all types of combinations actually occur. More precisely, the
consonants cannot have the same place of articulation (except for coronal frica-

13. There are, however, languages where vowel ~ zero alternation can occur in the initial syl-
lable as well, e.g. Russian or Polish. For an analysis of Polish, see Rowicka (1999b).

Note also that the fact that syncope is ruled out in the first syllable in languages like Hun-
garian for lack of a proper governor, does not mean that word-initial consonant clusters should
also be illicit, because a two-member cluster would not violate No Lapse in this position. In
Hungarian, word initial clusters indeed exist, but they are restricted to obstruent + liquid/glide
sequences (apart from sC(C) clusters, which are special in most languages). Such phonotactic
restrictions, similarly to word-final clusters, suggest that the empty nucleus might be embedded
in a consonantal governing domain. Infrasegmental government, proposed by Scheer (1998,
1999), could be adopted for this purpose.

In Turkish, as opposed to Hungarian, word-initial clusters are ill-formed, and they are bro-
ken up by ephenthesis, when they occur in loanwords. This follows from the fact discussed above
that in this language empty nuclei are pronounced, unless they are properly governed, for which
they are lexically marked. The first nucleus in the word, however, can never be governed, even if
it is marked as governable in principle.

14. Among alternating verbal stems, we can find the following further exceptions: kínoz ‘tor-
öriz ‘protect’. Apart from the last example, however, all of these are polymorphemic, and we have
already seen in footnote 2 that the restriction concerning long vowels only applies to monomor-
phemic forms.

15. The only exception is the form hang<o>zik ‘sound 3sg’, which however may also contain a
nasalized vowel + stop sequence on the surface [hɔgzik].
tives), and they cannot form a cluster that otherwise (in monomorphemic forms) would be excluded by some assimilation process. As interaction between the flanking consonants is ruled out by both types of Government Phonological analysis, because the consonants are not adjacent to each other in either approach (in one they are separated by an empty nucleus, in the other by a full vowel), I will not deal with this issue further here. It is interesting to note, however, that in the case of verbs, the restriction is much less severe, and it only rules out the creation of geminates. Interested readers are referred to Rebrus (2000) for a possible solution.

8. Summary

In this article I have argued for a loose CV analysis of Hungarian, utilizing trochaic proper government. This is supported by the facts that there are hardly any phonotactic restrictions on internal consonant clusters, that long vowels (apart from á and é) cannot occur before any type of clusters, and that word-final “superheavy syllables” exist in the language. We have seen that the main difference between Hungarian and Turkish is that in the latter “superheavy syllables” are ruled out even word-finally. This can be expressed by a parameter prohibiting the last vowel of a domain from being a licensed empty nucleus.

In this approach, vowel ~ zero alternation cannot be analyzed as the phonetic interpretation of an underlying empty nucleus, because then the representation of alternating stems cannot be distinguished from the representation of stems ending in a stable cluster. Instead, I proposed that alternating vowels are not empty, but they are marked in the lexicon as properly governable. In Turkish, this proposal receives strong support, because here it is the high vowels that alternate, which are traditionally regarded as segmentally empty. However, as they do not always alternate with zero, one group of them must be lexically marked in any case. It seems more reasonable to mark the alternating stems, because these form a closed class. On the basis of the parallels between the Turkish and the Hungarian alternation, I have argued to extend the syncope analysis to Hungarian as well. Further evidence for this solution is provided by languages where more than one vowel alternate with zero (e.g. Russian).

Finally, I have investigated the exact position of the alternation. The fact that the syncopated vowel must be preceded by a single consonant and a short vowel follows from trochaic proper government, because only under these circumstances does the alternating vowel have a proper governor. The syncopated vowel cannot be followed by a cluster, because being itself governed, it cannot provide proper government for the empty nucleus inside the cluster, and a lapse is created.
Finally, lack of syncope in the last syllable can be explained, if the parameter concerning the last vowel of the domain is turned into an OT constraint.

In summary, a loose CV approach to Hungarian syllable structure employing trochaic proper government can provide an analysis of vowel ~ zero alternation which is more satisfactory in several respects than the standard GP account.

References


Ablative causes in Hungarian

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In this paper, I discuss the grammar of ablative causes in Hungarian, and the ensuing ramifications for the general treatment of cause PPs in anticausative constructions. I argue that ablative causes are more diverse than they are generally assumed to be. In particular, a distinction must be made between what I call low ablative causes, which are licensed by anticausative predicates, and high ablative causes, which are not lexically governed and can appear with agentive predicates, too. Assuming a particular extension of Reinhart's (2000, 2002) Theta System, I analyze the former as adjuncts that bear thematic specification. As such, they are of the same grammatical type as other optional participant phrases, which I have discussed in Rákosí (2006).

1. Introduction*

Transitive verbs whose subject can be interpreted as a non-agentive cause are known to have an intransitive alternate universally. I follow current practice in referring to such intransitive verbs as anticausatives. Anticausative verbs license the presence of an oblique cause that appears at first sight to correspond to the transitive subject, except that it cannot be interpreted as an agent.

* This paper is a substantially revised version of the talks I gave at the 8th International Conference on the Structure of Hungarian in New York (2007) and at the NORMS Workshop on Argument Structure in Lund (2008). I thank the audiences for useful comments and discussion. The first draft of the current paper was read by two anonymous reviewers, one of whom actually identified himself as Florian Schäfer. I am grateful to the reviewers for their very detailed comments, which I have tried to incorporate into the final version. Finally, I thank the editors for all the work they have put into this volume. Needless to say, I take sole responsibility for any remaining errors.

The original impetus to pursue this work came from discussions with Tanya Reinhart while I was a PhD student at the Utrecht Institute of Linguistics in 2005–2006. I dedicate this paper to her memory.
György Rákosi

In Hungarian, these expressions are marked with ablative case, which is a source-type marker, used elsewhere to express movement away from the proximity of the referent of the noun stem. Since the languages frequently discussed in the pertaining literature generally employ prepositions to mark oblique causes of the anticausative type (cf. English from, German durch ‘through,’ Italian per ‘through,’ etc.), I use the generic term cause PPs below whenever language-independent reference is made to this type of oblique phrases in the paper. I use the term ablative cause when the discussion is specifically about Hungarian data.

Assuming a particular extension of the Theta System of Reinhart (1996, 2000, 2002), I try to elaborate and defend an essentially lexicalist account of the grammar of cause PPs. In particular, I focus on the following two questions:

**Question 1**: What is the grammatical status of cause PPs in anticausative constructions?

**Question 2**: How can the non-agentivity restriction be explained in a lexicalist framework?

I develop an answer to both questions after an examination of ablative causes in Hungarian, which will lead to the conclusion that ablative causes are not uniform, but fall into three distinct grammatical types. I use this background to set up a lexicalist analysis of anticausative cause PPs in which they are treated as low-level adjuncts that receive thematic specification.

The structure of the paper is as follows. In Section 2, I briefly review the literature on the anticausative alternation, paying special regard to previous accounts of the role cause PPs play. This overview and the lexicalist assumptions adopted will enable me to recontextualise the two research questions posed in this introduction. In Section 3, I substantiate the claim that Hungarian ablative causes fall into three distinct grammatical types, and anticausative constructions certainly do not represent the only contexts in which ablative causes are licensed. Anticausative ablatives cannot be conflated with ablative causes that are regular, high level adjuncts and with ablative causes that are regular arguments. These latter two types are shown to exist. In Section 4, I first briefly overview Reinhart’s Theta System, and then I propose a Theta Theoretic analysis in which anticausative cause PPs are...
treated as adjuncts that receive a thematic role from the predicate. The agentivity restriction is argued to follow from a constraint on the types of thematic roles that can be discharged on low-level participant expressions functioning as adjuncts.

2. Cause PPs: The state of the art

2.1 The decasutativization approach

Lexicalist accounts generally assume some sort of directionality in anticausative alternations. (2) serves to illustrate the phenomenon.

(2) a. The draught opened the window.
   b. The window opened.

One can in principle derive (2a) from (2b) through a causativization operation that increases the arity of the presumed basic monadic entry by one. This is the more traditional approach, represented, among others, by Dowty (1979) and Pesetsky (1995), as well as Alberti (1997: 148–150) specifically for Hungarian. Alternatively, one can derive (2b) from (2a) by taking the cause argument away and thus reducing the arity of the basic dyadic entry. This is the position taken in Chierchia (2004), Levin & Rappaport (1995) and Reinhart (1996, 2000, 2002). A third possibility is to derive both the transitive (2a) and the intransitive (2b) entry from a common root. This view is propagated in Piñón (2001), Alexiadou et al. (2006) and in Schäfer (2008a, b), among others.¹

The directionality problem is a central issue in any general discussion on anticausatives, but note that the existence of cause PPs in the anticausative construction is not explained automatically under any of these accounts. In this paper, I assume the decausativization approach of Reinhart (1996, 2000, 2002), and I aim to show that it is an adequate framework for developing an account of anticausative cause PPs. Since the decausativization analysis has been criticised recently (see especially Piñón (2001) and Alexiadou et al. (2006)), let me provide here some arguments in favour of this approach.

¹. This is not the whole analytic spectrum. Komlósy (2000) splits Hungarian anticausative verbs in two classes on morphological grounds. When the anticausative is marked and the transitive is unmarked (as in megoldodikint ‘gets solved’ and megoldint ‘solves’), the former is assumed to be derived from the latter. When it is the other way around (as in felkelint ‘awakes’ and felkeltint ‘wakes up’), he takes the intransitive verb to be the basic, and the transitive to be the derived, causativized version of the intransitive verb. Some arguments against such an analysis are presented immediately below.
It is well-known that anticausative formation is blocked if the subject argument of the transitive verb is necessarily agentive and cannot be interpreted as a cause, cf. (3):

(3) a. John/*The bomb assassinated the president.
b. *The president assassinated.

Decausativization approaches capture this constraint as an input condition on anticausative formation: necessarily agentive verbs cannot undergo decausativization. In this context, Reinhart (2006) calls attention to the important fact that the theme unergatives of Levin & Rappaport (1995) show an opposite sort of restriction, inasmuch as they do not normally have causative transitive alternates. Compare the behaviour of a theme unergative (4a) with that of a theme unaccusative (5a) verb:

(4) a. The cherry trees blossomed early this year.
b. *The warm weather blossomed the cherry trees early this year.

(5) a. The cherry trees broke.
b. The strong wind broke the cherry trees.

Levin & Rappaport (1995) argue that relevant difference between blossom and break is that the former describes a change of state event that is internally caused. This is ultimately an encyclopaedic difference, which, nevertheless, has serious grammatical consequences: blossom projects an unergative construction, whereas break is unaccusative in its intransitive use. However, it need not be immediately obvious which verbal concept is compatible with external causation and which is not, and, as Reinhart (1996, 2000, 2002) argues, we should have clear language-internal evidence to be able to classify any given intransitive verb as a theme unergative or as an unaccusative predicate. Unaccusativity should be a learnable feature of intransitives even in languages like English, where there is relatively little visible clue to its presence during the acquisition process. The most obvious clue is the availability of a causative transitive alternate: if there is one, children will know that there is a corresponding intransitive entry which is unaccusative. I discuss the details of the mapping procedure that captures these facts in 4.3. Crucially, this argumentation fits in well with a decausativization framework, for what not needs to be checked for the anticausative (i.e., unaccusative) use of a verb to be licensed is whether a transitive alternate with a non-necessarily agentive subject is available or not.

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2. It may happen that a particular unaccusative verb does not have a transitive counterpart in a specific language. Reinhart argues, however, that these are instances of frozen lexicalisations, and that one can always find languages where the relevant pair is attested. Arrive, for example, is generally taken to be a non-alternating unaccusative. But in Hungarian, for example, *érkezik ‘arrives’ happens to be the decausativized form of the dyadic verb ér ‘gets (to a place), reaches (a place)’.
A frequent source of criticism for proposals that assume a directionality in anticausative alternations is that they do not capture the fact that anticausative alternations are subject to morphological variation both within and across languages (cf., for example, Piñon (2001) and Alexiadou et al. (2006)). Hungarian, in particular, has examples of all the 5 morphological alternation patterns that Haspelmath (1993) discusses. Sometimes the transitive stem is marked and the intransitive is unmarked (6a), and sometimes it is the other way round (6b). In many cases both share a common (bound) stem, but have different derivational markers (6c). And in a few cases, the transitive and the intransitive form do not differ derivationally (6d), or completely unrelated stems are employed (6e).

(6) a. forr-al\textsubscript{tr} ‘boils’ – forr\textsubscript{intr} ‘boils’ \textit{causative}
   b. megold\textsubscript{tr} ‘solves’ – megold-ódik\textsubscript{intr} ‘gets solved’ \textit{anticausative}
   c. megszár-ít\textsubscript{tr} ‘dries’ – megszár-ad\textsubscript{intr} ‘gets dry’ \textit{equipollent}
   d. tör\textsubscript{tr} ‘breaks’ – törik\textsubscript{intr} ‘breaks’ \textit{labile}\textsuperscript{3}
   e. megöl\textsubscript{tr} ‘kills’ – meghal\textsubscript{intr} ‘dies’ \textit{suppletive}

Notice that Haspelmath (1993) uses the term \textit{anticausative} to refer to intransitives that are marked morphologically and have a non-marked transitive counterpart. In contrast, and in line with much of the current syntactic literature, I use this term here to refer to any derived unaccusative verb, irrespective of their morphological makeup (but see Koontz-Garboden (2009) for a recent work adopting the strict view of anticausativization in terms of Haspelmath).

While it is indeed the case that this morphological variation does not support any directionality in unaccusative alternations, it is also true that it is difficult \textit{within any approach} to make predictions with certainty about which type of morphological coding is going to be employed on a particular stem in a given language. Furthermore, the morphological argument against decausativization approaches rests on the assumption that overt derivational complexity directly reflects the derivational history of the lexical entry. Though this assumption is motivated, it is certainly not necessary even in a lexicalist framework. Finally, it is important to emphasize in this context that whereas the morphology of the anticausative alternation is subject to variation, the morphology of what is often referred to in the typological literature as \textit{factitive causativization} is always stable in languages which have morphological marking for this purpose. Reinhart (2006) and Horvath & Siloni (2008) discuss causativization in the framework of the Theta.

\textsuperscript{3} The suffix -\textit{ik} is a special 3SG agreement marker, which appears on many reduced verbs in present tense in third person singular (the citation form of Hungarian verbs). This, crucially, is not a derivational difference, and other slots of the paradigm have nondistinct forms for the transitive and the intransitive alternate, cf. tör-\textit{ök} break-1sg ‘I break’, which functions either as a transitive or as an intransitive form.
System. This operation takes a verb with an external argument and increases its arity by adding an agent argument. Thus it can take, for example, agent or even theme unergatives, as is shown in the following Hungarian examples. Theme unergatives require strong contextual support in their causative use, as is discussed by Levin (to appear). Levin points out that if the animate causer can be construed as a direct cause (for example, when the gardener tries hard to help the flowers to blossom), then examples like (7b) can become acceptable.

   John.NOM jump-caus-3sg Pete-ACC
   ‘John makes Pete jump (around).’

b. A kertész kivirágoz-tat-ja a fák-at
   the gardener.NOM blossom-caus-3sg the trees-ACC
   ‘The gardener makes the trees blossom.’

Causativization is always marked on the causativized verb with the suffix -(t)Vt (the quality of the vowel being subject to constraints regulating vowel harmony).

The morphological instability of decausativization contrasts therefore with the morphological stability of causativization. Critics of the decausativization approach to the anticausative alternation (like Piñon (2001) and Alexiadou et al. (2006)) do not mention this contrast, whereas this is an important cross-linguistic universal, as discussed by Reinhart (2006) and Horvath & Siloni (2008). It is true that this argument in itself does not destroy the power of the morphology-based criticism of decausativization, but I hope to have been able to show here that the issue is more complex, and morphological considerations do not necessarily render the decausativation approach invalid.

Finally, Alexiadou et al.’s (2006: 195) major argument against the decausativization view is that cause PPs “are expected to be ungrammatical” in anticausative structures, since anticausatives “are taken not to contain a thematically unspecified implicit external argument.” While the description of Reinhart’s (op. cited) analysis is correct, the conclusion is not necessary. It is my major goal in this paper to show that the grammar of cause PPs can be written as an integral part of the decausativization account.

2.2 The literature on the status of cause PPs

Irrespective of how one thinks about the anticausative alternation, there is a consensus that a causative verb and its anticausative counterpart (8a-b) are systematically related, and it is not an accident that we generally find the same root in both constructions. There is also general agreement that the appearance of the cause PP
in the anticausative construction (8c) does not radically change the syntax of the clause, and both (8b) and (8c) are unaccusative constructions.

(8)  
  a. The draught opened the window.
  b. The window opened.
  c. The window opened from the draught.

The optional merge of the cause PP is not concomitant with a morphological change on the verb even in languages like Hungarian, which is an indication that the two verb forms in (8b) and (8c), respectively, are grammatically non-distinct. This, in fact, is tacitly assumed in much of the literature.

Irrespective of whether one believes in the existence of argument structure as an independent level of representation, the majority of the proposals I am aware of shares the contention that the English verb in (8b) has one argument less than the one (8a). Or, to be more precise, the anticausative verb is a monadic entry in the sense of having only a single syntactically relevant argument. This does not necessarily entail, however, that the lexical semantic representation or the mental concept behind the intransitive open is also considered to be monadic. For Levin & Rappaport (1995: 84), the lexical semantic representation of the anticausative open is dyadic. Reinhart (1996: 26) also assumes that there is but one verbal concept underlying all the three structures in (8), and this concept includes a semantic cause argument, which, however, is not part of the argument structure of the verb in the case of (8b,c) and is therefore not visible for the computational system.

But it has also been argued in the literature that cause PPs (as in 8c) are syntactic arguments of some sort. Such a claim is explicitly made in Levin & Rappaport (2005: 28), and Komlósy (2000: 264–266) also considers this analysis the most promising in his work on Hungarian ablative causes. In the absence of further auxiliary assumptions to the contrary, this entails that what looks like the same argument structure projects two radically different constructions: a transitive (9a) and an unaccusative structure (9b).

(9)  
  a. The draught\textsubscript{cause} opened the window\textsubscript{patient}.
  b. The window\textsubscript{patient} opened from the draught\textsubscript{cause}.

First of all, this means in any lexicalist account that we have two different verbal entries in (8b) and (8c), whereas, as I have pointed out above, this never seems to be assumed in practice. Second, and more importantly, the dyadic analysis of (9b) is incompatible with certain well-established principles of grammar. In particular, it seems to fly in the face of Baker’s (1988) Uniformity of Theta-Assignment Hypothesis (or any derivative notion in current syntactic theory), which requires a one-to-one correspondence between thematic roles and D-structure syntactic positions.

But with or without the UTAH, the analysis compressed in (9) represents a
non-trivial problem for any linking proposal, especially within lexicalist frameworks. If what looks like the same argument structure (\langle\text{Cause}, \text{Patient}\rangle) can either be realized as a transitive or as an unaccusative+PP construction with a simple flip of the two arguments, then, in the absence of other constraints to the contrary, the available syntactically relevant lexical features will greatly underdetermine the syntactic realization of the predicate.4

A more promising line of research focuses on a comparison of anticausative cause PPs and passive by-phrases:

(10)  
  a. *The window opened from the draught.*  
  b. *The window was opened by John/by the draught.*

The point is that we may possibly get a better grasp of anticausative constructions if we understand how they relate to passives. I now briefly overview a lexicalist approach and a family of (partially) constructionist approaches.

Reinhart (2006) lays down a framework for a lexicalist account. Just like Grimshaw (1990), she also takes passive by-phrases to be adjuncts that are linked to the implicit external argument of the verb, which has been suppressed during passivization (see also Reinhart 1996). Crucially, such an adjunct does not receive a thematic role in its own right. It is merely linked to a suppressed implicit argument that bears a thematic role. On the other hand, Reinhart (2006) refers to the cause PP in the anticausative construction (10a) as a quasi-argument. As such, it is of a distinct grammatical type from a passive by-phrase (not being linked to a suppressed argument), but it is not equivalent to a regular argument either. We must, of course, properly understand what a quasi-argument is. It is one of my main objectives in this paper to give substance to this notion, but I will classify these cause PPs as thematic adjuncts and not as quasi-arguments. The argumentation is presented gradually below. Let me now proceed with the current agenda.

Passive and anticausative oblique phrases have been much discussed recently by several authors who assume a non-lexicalist approach to grammar in which verb meaning is (at least partially) decomposed in syntax. One line of research, represented by Kallulli (2006, 2007), argues that the only grammatically relevant

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4. The anonymous reviewer remarks that such argument flips do occur, as in the following case (s)he mentions:
   
   i. *Love leads to misery.*  
   ii. *Misery comes from love.*
   
   Here the same two arguments (*love* as a source and *misery* as a *goal*) seem to be projected in both cases, but the structure is entirely different. I do not wish to deny that this can be viewed as a real case of the sort of flip I am expressing my reservations about in the main text. I still believe, however, that the assumption that such phenomena occur massively in language (as would be the case if we had such an analysis for anticausative pairs) is undesirable in a lexicalist theory.
difference between *by*-phrases and *from*-phrases (her terms) is that they are licensed by different feature bundles on the same light verbal head $v^0$ above the lexical VP. A passive *by*-phrase is licensed in the presence of a $[v [+\text{act}(ivity)][-\text{ext}(ternal)\ \text{arg}(ument)]]$ bundle, whereas an anticausative *from*-phrase is licensed by a $[v [+\text{cause}][-\text{ext arg}]]$ bundle (Kallulli 2007: 774). The [-ext arg] feature has the role in both cases of preventing an overt DP from being merged in Spec,vP, and *by*-phrases and *from*-phrases respectively “identify” (Kallulli 2006: 204) this suppressed argument. In short, both PP types take up an argument with a thematic role.

Alexiadou et al. (2006) and Schäfer (2008a,b) develop an analysis in which the two PP types are more substantially differentiated. They posit two distinct semi-functional heads on top of the lexical VP. VoiceP is responsible for the introduction of external arguments, irrespective of their thematic content (as in Kratzer 1996 and subsequent literature). Below VoiceP, a causal light verb head introduces a causal relation between a causing event (which is taken to be the implicit argument of $v_{\text{CAUS}}$) and the result state denoted by the unit of the verbal root and the theme. The difference between a passive and a standard anticausative structure is that VoiceP is present only in the former. A passive *by*-phrase is licensed at the level of VoiceP, and it spells out an implicit external argument (be it an agent or a cause, as in (10b) above). On the other hand, an anticausative *from*-phrase does not take up an external argument, but it directly modifies the causative event denoted by $v_{\text{CAUS}}$. Schäfer (2008b: 16) provides the following schema for anticausative constructions with a cause PP (like 10a).

\[
\begin{array}{c}
\text{vPCAUS} \\
\text{vPCAUS} \quad \text{PP} \\
\text{vCAUS} \quad \text{resultP} \quad \text{P} \quad \text{DP} \\
\quad \text{result} \quad \text{theme}
\end{array}
\]

In this structure, the cause PP is essentially treated as an adjunct in its own right.

In sum, under this approach there are two important differences between passive *by*-phrases and anticausative *from*-phrases. First, the former is licensed at a higher level than the latter. Second, the former is associated with an external argument, whereas the latter is a modifier of the causative event.

5. Both Alexiadou et al. (2006) and Schäfer (2008a) claim on independent grounds that in certain languages a vacuous or defective VoiceP can be present in certain unaccusative structures, but this has no direct relevance on the issue at hand.
This view ties in with Reinhart’s (2006) suggestion and the account I wish to defend here, namely that passive by-phrases and anticausative cause PPs are licensed by essentially different mechanisms. Before presenting my own arguments, let me first comment on the answers constructionist accounts give to the two research questions posed in the introduction.

2.3 The non-agentivity restriction and the distribution of cause PPs: where we are now

The non-agentivity restriction on anticausative cause PPs follows straightforwardly from the assumption that they range over events as modifiers of vPCAUS. In a lexicalist theory, where causation is not taken to be directly represented in syntactic structure, this restriction needs independent explanation. Notice, nevertheless, that the claim is not that such PPs are unacceptable with animate participants (contra, for example, Kalluli (2007: ft. 2)). Animate participants may be acceptable as long as they can be conceptualized as non-agentive causes, as in the following Hungarian example.

(12) Felébredt-em János-tól.
woke.up-1sg John-ABL
‘John inadvertently woke me up.’ [Possible context: John snores very loudly.]

Such shifts of meaning are essentially contextually governed, and the point still holds that no agentive interpretation of the ablative phrase is possible in (12).

In characterising the grammatical type of the cause PPs in question, the constructionist proposals quoted above set up a strong association between syntactically represented causation and the licensing of cause PPs. In particular, a cause PP is licensed only if the causal relation is encoded through a functional projection as in (11) or, alternatively, if it is represented as a thematic feature on a light verbal head. This implies that the P-element (ablative case in Hungarian) cannot in itself be responsible for the introduction of causation, and its inherent semantic content may possibly only specify the type of the cause (for example, indirect or direct cause).

To argue against this strict association, one has to find cases where a true cause PP is grammatical in a construction in which causation is otherwise not assumed to be present. One such case is that of agent unergatives, which Alexiadou and Anagnostopoulou (to appear) claim not to contain a causative component. Therefore they are not expected to license cause PPs, but as Levin (to appear) argues, sometimes they do. The following is her example:

(13) a. The dog yelped from the blow.
b. The blow made the dog yelp.
As she points out, the periphrastic causative (13b) appears to be a good paraphrase of (13a), therefore the from-phrase should be regarded as a true cause.

Levin also mentions the fact (to appear: ft. 4., personal communication with Andrew Koontz-Garboden) that stative predicates can also license cause PPs in English, cf. (14):

(14) *Her face was red from embarrassment.*

Such examples are also grammatical in Hungarian (though not in Greek, see Koontz-Garboden 2008: 121–122, or in German, see Schäfer 2008b: 16), and the following pair is especially telling:

(15) a. *Az ablak párás volt a gőz-től.*
   the window.nom hazy was the steam-abl
   ‘The window was steamed-up.’ [lit.: ‘The window was hazy from the steam.’]

b. *Az ablak párás lett a gőz-től.*
   the window.nom hazy got the steam-abl
   ‘The window got steamed-up.’ [lit.: ‘The window got hazy from the steam.’]

The only grammatical difference between (15a) and (15b) is that the former contains the stative form of the copula, and the latter contains the resultative copula. It seems then that English from-PPs, as well as Hungarian ablative phrases, can themselves introduce causation rather than simply modify a causative component already present in the syntactic structure. This, in fact, is what we expect under the decausativization approach to anticausative formation.

If this is indeed so, then there is no a priori reason to rule out the possibility that ablative causes can productively occur outside of the anticausative domain in Hungarian. In Section 3, I show that this is in fact the case.

Before turning to the discussion of the pertaining data, let me briefly comment on the observation made in Alexiadou et al. (2006: 194), the importance of which was reinforced to me by Florian Schäfer (p.c.). They point out that a cause PP can be licensed in the presence of an overt agent subject if this agent can control the causative event modified by the PP. The English example is from Alexiadou et al. (op. cited), and the German is from Florian Schäfer.

(16) a. *I cooled the soup by lowering the temperature.*

b. *Die Menschheit veränderte das Klima durch ihren enormen CO2-Ausstoss.*
   the mankind changed the climate through its enormous CO2-emission
   ‘Mankind changed the climate with its enormous CO2-emission.’
It is important to note first that from-phrases are not acceptable in English in such contexts, and either a by-PP or a with-PP is used. Similarly, these sentences cannot be translated with an ablative phrase into Hungarian. Hungarian generally marks these types of causes with instrumental case (=‘with’) or with the postposition által ‘by’. Secondly, these cause PPs do not increase the causality chain that is already encoded in the basic structure, but rather they spell out the exact manner in which the agent performed the kind of event denoted by the verbal stem.

The ablative causes that occur outside of the anticausative domain and which I discuss immediately are not of this type. They always truly introduce a cause that is independent of the event denoted by the verbal stem. In the rest of the paper, I focus on ablative causes and from-PPs, and leave the discussion of cause PPs of the type represented by (16) for another occasion.

3. The diversity of ablative causes

3.1 High ablative causes

As we have seen, there is general consensus that from-PPs are not grammatical in the context of agentive transitive and unergative predicates. It is entirely non-surprising then that ablative causes are likewise ruled out in these contexts in Hungarian in the default case.

(17) *János (sok viz-et) ivott a gyógyszer-től.
   John.nom much water-acc drank the medicine-abl
   ‘*John drank (a lot of water) from the medicine.’

However, Gábor & Héja (2006: 140) have recently noted that ablative causes can be grammatical in these contexts in Hungarian in the presence of an adverbial modifier that spells out a manner component of the event described by the verbal predicate. Such adverbials are preverbal in neutral sentences and they themselves often occupy the immediately preverbal focus position. (18) is a relevant example modelled on their (5).

(18) A gyógyszer-től János *(lassan) dolgozott.
    the medicine-abl John.nom slowly worked
    ‘The medicine made John work slowly.’

Though such an ablative can modify the adjectival stem of the adverb in examples like (19a), there is no obvious evidence that the ablative and the adverb form a constituent in (18). Note, first of all, that the two are separated by the subject, and standard constituency tests, like forcing them together to a focus position (19b), fail.
(19) a. a gyógyszer-től lassú dolgozó
the medicine-ABL slow worker
‘the worker slow from the medicine’

only the medicine-ABL slowly worked John.NOM
intended: ‘Slowly from the medicine was the only way that John worked.’

It looks plausible that what the ablative combines with is not solely the adverb, but the adverb-plus-verb unit.⁶ Indeed, that seems to be the order of semantic composition. Consider the following example.

(20) Az új gyógyszer-től János *(kemény-en) dolgozott.
the new medicine-ABL John.NOM hard-ly worked
‘The new medicine made John work hard.’

(20) does not refer to a working event that has the property of being hard under the influence of the new medicine. Rather, it is about a hard-working event that is caused as such by the new medicine.⁷ This implies then that these ablative causes are not directly licensed by the adverb, but in the presence of a minimal layer of clause structure that includes at least the lexically extended verb phrase and the predicate adverbial. Therefore these ablatives must be inserted relatively high.

Accordingly, I will call the type of ablative cause in (18) and (20) a high ablative cause, or HAC for short, and I assume that it represents a grammatical type different from the one that appears in anticausative constructions. From now on, I use the term low ablative cause, or LAC to refer to this latter type. The fact that what I call HAC’s are grammatical outside the anticausative domain already lends strong support to the validity of this distinction, which I further substantiate in the next subsection. What I intend to establish first is that HAC’s have a relatively wide distribution. We have just seen that HAC’s are licensed in the presence of predicate adverbs that extend the core verb phrase. If, as I am claiming here, they are indeed positioned higher in the clause structure, nothing in principle rules out the possibility that the presence of specific functional material in the left periphery may also facilitate the insertion of HAC’s.

This conjecture seems to be confirmed by the facts. Interestingly, HAC’s resemble weak polarity items inasmuch as they are licensed in the presence of certain

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6. É. Kiss (2008) argues that predicate adverbials are adjoined to TP in Hungarian (see also Ernst 2002), which is the first functional projection above the maximal lexically extended verb phrase.
7. Gábor & Héja (2006: 140) claim that the ablative is in a causal relation with the adverb acting as a “superordinate predicate”. If what I say here about (20) is on the right track, then this assumption is not tenable.
non-veridical operators. They are not always perfect in these contexts, but they never seem to be outright ungrammatical. (21–24) is a representative list.

(21) **Negation**

a. *(Nem)* lát-t-um a koncert-ét az eső-től.
not saw-1SG the concert-ACC the rain-ABL
‘I did not see the concert from the rain.’

b. *(FOC P A gyógyszer-től)* nem dolgozik János.
the medicine-ABL not work John.NOM
‘It is the medicine that causes John not to work.’

(22) **Questions**

Ki énekelt egy dal-t a bor-től?
who.NOM sang a song-ACC the wine-ABL
‘Who did the wine make sing a song?’

(23) **Conditionals**

(?) Ha a gyógyszer-től dolgoz-na János, ...
if the medicine-ABL work-cond John.NOM
‘If medicine made John work, …’ [then I myself would give him a big portion.]

(24) **Modals**

? Tényleg dolgoz-hat a gyógyszertől János.
indeed work-POS.SUF the medicine-ABL John.NOM
‘Medicine may indeed make John work.’

This, nevertheless, does not in itself render HAC’s polarity items. Assuming that the ablatives in (21–24) are of the same type as the ones in (18) and (20), they clearly cannot be true polarity items since (18) and (20) are veridical contexts. Still, non-veridical contexts seem to be especially well-suited to embed high level ablative causes. The reason, I believe, is not strictly internal to the computational system but it has to do with the fact that non-neutral clause structure is the most appropriate tool to relate the ablative referent to discourse.

What is common to all the sentences above is that they are felicitous only if the ablative refers to an entity that has already been introduced into the discourse in one way or another, and normally its causal role has also been asserted prior to the utterance of the sentence that contains the HAC. And even if such an ablative is non-referential, it has to participate in a discourse contrast. If this is not satisfied, a high ablative does not sound right, in contrast with regular anticausative ablative causes (LAC’s), which are not subject to such restrictions. Consider the following pair for illustration.
In (25b), two factors are given that both should license the HAC: the adverb (cf. 18) and the epistemic modal suffix (cf. 24). Still, I find (25b) degraded and it seems to me that the problem lies with the fact that the ablative is non-referential and, not being focussed, it does not participate in a discourse contrast either. Thus the ablative in (25b) is not embedded in the universe of the relevant discourse. The same holds of the ablative in (25a), which, however, is a low ablative cause and as such, it is not subject to discourse related constraints.

I do not have an account for why high ablative causes are so sensitive to discourse factors in Hungarian. But note that this very sensitivity itself supports their treatment as a distinct group. Predicate-licensed expressions should not generally be conditioned by properties of discourse, as is true of low ablative causes, which only appear in the company of the members of a well-defined predicate class. Needless to say, this implies that high ablative causes should also be possible in anticausative constructions. I show in the next subsection that this indeed is the case.

In sum, I have shown here that there exists a high level ablative cause type that is not directly licensed by the predicate. The intuitive function of such ablative is to introduce event-external causes under discourse-related conditions. Let me now provide some further arguments that high and low ablatives are indeed distinct grammatical types.8

3.2 Three types of ablative causes in Hungarian

Distinguishing between high and low ablative causes makes the very clear prediction that if the two different types of licensing conditions are both satisfied, then

8. I cannot discuss the cross-linguistic implications of the distinction I am making here between high and low ablative causes. I translated the examples in this subsection by using periphrastic causative constructions, rather than from-PPs, which would be out in most cases in these contexts in English. But, as the anonymous reviewer remarks, English from-PPs have a very limited distribution anyway, and they are often marginal in anticausative constructions, too.

Florian Schäfer, however, informs me that the corresponding German constructions (with the preposition durch ‘through’) are either more or less fully acceptable (18, 20, 21a), or are marginally acceptable (21b, 23, 24). He only finds the German equivalent of (22) ungrammatical. This implies that the licensing conditions for HAC’s discussed here are not specific to Hungarian, but a more detailed discussion is beyond my present reach.
two ablative causes may appear simultaneously in the same clause. This can happen, for example, in an anticausative construction that contains negation.

(26) [I made a very strong iron frame for the window, and I changed the lock.]

\[\text{Ettől} \text{ ablak nem nyílt ki a robbanások-tól.}\]

\[\text{this abl window.nom not opened out the explosions-ABL}\]

‘This caused the window not to open from the explosions.’

The low ablative at the end of the clause is of the type that regularly occurs in anticausative constructions. The sentence-initial ablative (indexed to the supertext) is a high ablative cause. Scope relations conform to the default Hungarian pattern of overt syntactic coding: the initial, high ablative scopes over negation and the low ablative cause, and negation in turn scopes over the low ablative cause.

The fact that high ablative causes may take higher scope with respect to certain scope-sensitive operators is another strong indication that we must distinguish them from low ablative causes, which do not take scope. In (27), for example, the low ablative has been topicalized but it still takes low scope with respect to negation.

(27) \[\text{At-tól a néhány robbanás-tól nem nyílt ki az ablak.}\]

\[\text{that-abl the some explosion-ABL not opened out the window.nom}\]

‘It was not the case that those few explosions caused the window to open.’

HAC’s, on the other hand, may often take scope over negation. This was the case in (21a) and (26) above; here are two other illustrative examples.

(28) a. \[\text{Pont attól a kis bor-tól nem dolgozik János.}\]

\[\text{right that-abl the little wine-ABL not work John.nom}\]

‘It is exactly that little amount of wine that causes John not to work.’

b. \[\text{A dobozok-tól nem nyílt ki az ajtó.}\]

\[\text{the boxes-ABL not opened out the door.nom}\]

‘The boxes caused the door not to open.’ [i.e., ‘The boxes blocked the door’]

In (28), causation has scope over negation. I assume here the simplest account: the high ablative is base-generated in a position from which it can directly scope over negation.

I have claimed in the previous section that high ablative causes are inserted outside of the maximal lexically extended verb phrase. This strongly correlates with the fact that HAC’s are licensed under facilitating discourse conditions, and these conditions are coded in the computational system through the functional

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9. This statement is restricted to ablatives that have pure lexical content, and it is not meant to extend to cases when the ablative encodes functional features (for example, when it is a negative or an existential pronoun). The interesting fact is that high ablatives may take scope over negation even if they carry none of the usual scope-sensitive functional features.
domain of clause structure. It is for this reason that high ablative causes sound most natural in the preverbal domain, whereas low ablative causes appear postverbally in neutral sentences. This is not to say that HAC’s must not occur postverbally, though they often sound marginal there. Sentence adverbials can also be positioned postverbally in Hungarian under the right prosodic and discourse conditions. A clear indication, however, for the high position of HAC’s comes from constructions in which a high ablative co-occurs with a low one. In such cases, their order is fixed, and the HAC cannot occur postverbally (as in 26).

   the boxes-ABL not opened out the door.NOM the draught-ABL
   ‘The boxes caused the door not to open from the draught.’

b. *A huzattól nem nyílt ki az ajtó a dobozoktól.
   intended: ‘The boxes caused the door not to open from the draught.’

(29a) is slightly altered version of (28b), and (29b) only minimally differs from it in that the two ablatives have been flipped.

The distributional and scope-related facts surveyed here reinforce the distinction that I have established between high and low ablative causes in the previous subsection. High ablative causes are adjuncts in the sense that their licensing is not predicate-governed. If low ablative causes are also adjuncts, as I want to claim here, they must be of a different type, since they are licensed by a class of predicates that share distinctive argument structure properties.

Remember that what I am calling here low ablative causes instantiate the class of regular anticausative cause PPs in Hungarian. These cause PPs are treated as modifiers and are merged in an adjoined position in the analysis of Alexiadou et al. (2006) and Schäfer (2008a,b), cf. (11) in subsection 2.2. To give further substantiation to the adjunct analysis, I now briefly compare LAC’s with argumental ablative causes.

There are two classes of subject experiencer verbs in Hungarian that select an ablative-marked argument that is interpreted as a cause. Some, like fél ‘fears, is afraid’, form a subset of the verbs that Belletti & Rizzi (1988) refer to as the temere-class. Some, like megijed ‘gets scared’, are the decausativized versions of a subset of the verbs in what they call the preoccupare-class. (30) serves as an illustration.

(30) János félt/megijedt a zaj-tól.
   John.NOM was.afraid/got.scared the noise-ABL
   ‘John was afraid of/got scared from the noise.’

I discuss these subject experiencers in Rákosi (2006: Chapter 2), where I also argue at length that the ablative phrase in (30) is a true VP-internal argument of these
verbs. I briefly compare now low ablative causes with the ablative of these subject experiencers.

First, let me apply the “by itself”-test to the current case. The Hungarian equivalent of this phrase is in fact the ablative-marked form of the reflexive anaphor, which is interpreted differently in the two constructions.

    John.NOM was.afraid/got.scared himself-ABL
    i. ‘John was afraid of /got scared from himself.’
    ii. *‘John was afraid/got scared by himself.’

    b. János magá-tól felébredt.
    John.NOM himself-ABL woke.up
    i. *‘John woke up from himself.’ [i.e., He woke up from his own snoring.]
    ii. ‘John woke up by himself.’

In (31a), the ablative does not have the idiomatic ‘alone, without external help’ reading by the experiencer verb. Rather, it is interpreted as the subject matter of John’s fear. On the other hand, it is only the idiomatic reading that is available in the anticausative construction in (31b). The availability of the literal reading in (31a) is to be expected if the ablative is an argument there, and the lack of this reading is also expected if the ablative is not an argument in (31b).

The syntactic properties of VP-internal arguments and low-level adjuncts often do not differ radically in Hungarian. Nevertheless, contrasts can be found in the expected direction. One such case is possessor extraction. Possessors can be extracted from possessive noun phrases if they bear dative case. This extraction is subject to various (sometimes extra-linguistic) factors, but one relevant factor is the syntactic status of the possessive noun phrase. Consider the following contrast:

(32) a. Éppen János-nak gondolkozt-am a kérdés-én, amikor...
    just John-DAT thought-1SG the question-3SG.POSS.ON when
    ‘I was just thinking about John’s question, when...’

    b. ??Éppen Jánosnak gondolkozt-am a terasz-án, amikor...
    just John-DAT thought-1SG the terrace-3SG.POSS.ON when
    ‘I was just thinking on John’s terrace, when...’

The possessive noun phrase bears superessive case in both sentences, but it is an argument only in (32a). When it functions as a locative adjunct (32b), possessor extraction is degraded.

The same contrast, though in a slightly weaker form, reappears with ablative phrases.
The only relevant difference, as I claim here, is that whereas the subject experiencer takes an ablative argument (33a), the anticausative construction contains a low level ablative adjunct (33b).

4. The grammar of ablative causes

4.1 An overview

I have claimed in the previous section that there exist three, well-distinguishable types of ablative causes in Hungarian. What I am calling here *high ablative causes* introduce event-external causes, and they are not constrained by the predicate type. Instead, their licensing seems to be conditional on discourse factors, which are often, but not necessarily associated with non-veridical contexts. Two sub-classes of subject experiencers have true ablative arguments. Ablative causes licensed by anticausative verbs (*low ablative causes*) differ from both, and therefore they deserve a differential treatment.

I present now an analysis in which low ablative causes are treated as adjuncts. This reflects one of their crucial properties, namely that they are optionally inserted and that they are not linked to an implicit cause argument. They are, however, adjuncts of a special sort, since they receive thematic specification in terms of the Theta System of Reinhart (1996, 2000, 2002). The emerging picture is schematized in (34).

(34)
In essence, low ablative causes are at the intersection of the lexical and the non-lexical domain. They are non-lexical inasmuch as they are adjuncts, which do not fill in argument slots and do not change the categorial type of the predicate they combine with. They are, nevertheless, lexically constrained inasmuch as they are licensed by a specific type of argument structure configuration. In contrast, high ablative causes do not receive thematic specification since they are not constrained lexically and are merged in a high position, outside of the thematically governed domain of clause structure.

(34) encapsulates a view of grammar that I have tried to argue for and defend elsewhere, mainly on the basis of an analysis of dative experiencers (Rákosi 2006, 2009). It seems that certain universally recurring semantic roles can be borne by event-internal and event-external participants alike, subject to constraints. These roles corresponds roughly to what Ernst (2002) calls participant PPs, and the claim I am making here is that cause PPs also belong to this domain. In the rest of this section, I spell out the outlines of an analysis along the model in (34), and try to answer the two research questions that I posed in the introduction to this paper. I mostly use English data below for expository purposes, since the analysis is intended to have cross-linguistic coverage over anticausative cause PPs. Nevertheless, the forthcoming claims are to be interpreted against the Hungarian background I have sketched in Section 3, which has led me to reconsider the place of anticausative cause PPs in grammar.

As a syntactic background, I first give a necessarily short overview of Hungarian clause structure on the basis of É. Kiss (2008) in 4.2. Then in 4.3 I introduce Reinhart’s (2000, 2002) mapping proposal within her Theta System. I spell out the details of the thematic adjunct analysis of low ablative causes in 4.4, and I make an attempt at accounting for the non-agentivity restriction in 4.5.

4.2 The lower part of the Hungarian clause: É. Kiss (2008)

É. Kiss (2008) is a recent attempt at reconciling the configurational and non-configurational aspects of Hungarian syntax. In a nutshell, the challenge is that word order is fixed preverbally but it is relatively free postverbally. Building on recent advances in phase theory, É. Kiss argues that though the lexical phase is configurational at the base, this domain becomes flattened when the verb is raised to the higher, functional phase. I refer the reader to her paper for the details, and concentrate on the structure that she proposed for the lexical phase. This much will be sufficient for my current purposes.

É. Kiss performs a Kratzerian (1996) decomposition of argument structure, in which the external argument is removed from the VP and is generated in the specifier of a semi-functional vP. No further decomposition is assumed, contra the
constructionalist accounts that I surveyed in 2.2. Hungarian verbs are frequently accompanied by resultative or terminative particles that procliticise to the verb in neutral sentences. É. Kiss takes these to be predicative complements that are generated in the VP but land in the specifier of a PredP phrase (cf. Koster 1994 and Zwart 1994). (35) illustrates the emerging structure.

(35) \[
\text{PredP} \quad \text{ki} \quad [\text{Pred} \quad \text{nyitotta} \quad [\text{vP} \quad \text{[DP János]}]
\text{out} \quad \text{opened} \quad \text{John}
[\text{v} \quad \text{nyitotta} \quad [\text{vP} \quad \text{[DP az} \quad \text{ajtó-tl} \quad [\text{v} \quad \text{nyitotta} \quad \text{ki}]]]]]]
\text{the} \quad \text{door-ACC}
\]

‘John opened the door.’

PredP is the left-edge of the maximal lexically extended verb phrase, and the functional phase starts above this domain.

Mapping the schema in (34) to this structure, we get the following generalized picture (the brackets around the vP simply indicate that it is absent in unaccusative constructions).

(36)

\[
\text{ei} \rightarrow \text{high ablative cause adjuncts}
\text{ei} \rightarrow \text{low ablative cause adjuncts}
(\text{vP}) \rightarrow \text{argumental ablative causes}
\text{VP} \rightarrow \text{argumental ablative causes}
\]

Argument ablative causes of the subject experiencer verbs are merged as internal arguments inside the VP. I refer the reader to Reinhart (2000, 2002) as well as to Rákosi (2006) for details of how this mapping is executed in the Theta System.

I will not be much concerned here with high ablative causes either. As I argued in Section 3, high ablative causes are merged in what É. Kiss calls the functional phase. Following Ernst (2002), I do not assume that they have a fixed position there. They may be merged relatively freely in this domain, what matters is that they can combine with an expressions of the appropriate semantic type. And since high ablative causes denote event external participants, they must combine at least with a PredP-level denotation, which includes all the event-internal participants. This is always satisfied, since they are merged above the PredP. This setup allows them to scope over or below NegP in the functional phase, depending on where exactly they are merged (see 3.2 for the data).
I finally assume that low ablative causes are adjoined directly to PredP (since they occur in unaccusative structures, vP is not projected in this case). PredP, as is conceived of here, is the extended level of predication, and it is the locus that hosts participant PPs in Ernst’s theory (2002). Since I will group low ablative causes together with more familiar participant PPs (such as instruments and comitatives), this view on their being adjoined to PredP fits in well with Ernst’s analysis. It also fits in well with the fact that low ablative causes denote event internal participants, and therefore their base position is expected to be inside the lexical phase even if they are treated here as adjuncts.

4.3 The mapping proposal of Reinhart (2000, 2002)

This article is embedded in the lexicalist framework of Reinhart’s Theta Theory, especially as it is presented in Reinhart (2000, 2002). This implies that I assume here that the lexical phase is built according to features that are already determined at a lexical level. I restrict this overview to the data that are immediately relevant for us.

The Theta System uses two conceptually grounded features to encode thematic information: [+/-c(ausal)] and [+/−m(entally involved)]. An argument may be specified for both features, for one or for neither. I illustrate this in (37). The theta clusters are listed on the argument list of the predicate, but for expository purposes I now write them directly on the arguments themselves.

(37) a. I [+c+m] read the book, [-c−m].
    b. John [+c] broke the window, [-c−m].
    c. The window, [-c−m] broke.

Read selects for an agent subject, which is coded with the binary feature [+c+m]. The book is not a causally responsible participant, nor is it mentally involved, hence it is coded as [−c−m]. The window is coded the same way in (37b,c), which shows that affectedness is not a thematic feature in the Theta System. Break allows its subject to be either an agent or a non-agentive cause, which is captured by leaving the mentally involved feature unspecified. As discussed in 2.1, a non-necessarily agentive argument can be reduced during decausativization. In terms of the Theta System, a [+c] argument is reduced from the argument structure, and the result is the decausativized/anticausative entry in (37c). Now let me summarise Reinhart’s mapping proposal, which ensures that (37c) will be an unaccusative structure.

The underlying idea is that though the computational system cannot read the content of the theta clusters, the merging properties of the arguments are still determined by two types of syntactically legible features that are both derived from the thematic structure of the predicate. (38) through (40) gives a summary.
(38) **Lexicon Marking I.**
Given an n-place verb-entry, n>1
a. mark a [−] cluster with index 2. \{[−c−m], [−m], [−c]\}
b. mark a [+\] cluster with index 1. \{[+c+m], [+m], [+c]\}

(39) **Merging Instructions**
a. An argument realizing a cluster marked 2 merges internally.
b. An argument realizing a cluster marked 1 merges externally.
c. When nothing rules it out, merge externally.

(40) **Lexicon Marking II.**
a. Mark the verb with the ACC feature if the entry includes both a [+\] cluster and a fully specified cluster \[/\alpha, /−c\], i.e., \[−c−m\] or \[−c+m\].
b. The unary clusters \[−c\] and \[−m\] require inherent case by default.
(Or an adposition, depending on the morphological inventory of the language).

First, “all +” and “all −” clusters receive the respective merging index 1 and 2 if the verbal concept is at least dyadic. In this case, the former is necessarily merged as an external argument, and the latter is necessarily merged as an internal argument.

An elsewhere condition (39c) allows any argument to be merged externally if nothing rules this out - among other things, this allows theme unergatives (the internally caused verbs of Levin & Rappaport (1995), like blossom[−c−m], see the discussion in 2.1) to undergo an unergative derivation.

Since the indices are assigned to the basic entry, and the unaccusative open is derived from the transitive open by reducing the [+c] argument, the patient argument bears the merging index 2 in both cases. Thus the relevant argument structures, together with the indices, are as follows:

(41) a. open\textsubscript{tr} <[+c+m]_{1}[−c−m]_{2}>
b. open\textsubscript{intr} <[−c−m]_{2}>

This takes care of the attested unaccusative derivation of the intransitive open.

The other dimension of the mapping procedure is lexically determined case. Most importantly, in the presence of an “all +” cluster and a fully specified /−c cluster (i.e. \[−c−m\] or \[−c+m\]), the verb bears an accusative feature which normally requires the merge of a VP internal argument that can check this case feature. This happens both in the case of the transitive read and open. The intransitive open, however, enters the derivation with one argument, and therefore the accusative feature cannot be assigned, and the single argument receives nominative case by default.
4.4 Question 1: The grammatical status of low ablative causes

I finally have all the ingredients at my disposal to answer the research questions I posed in the introduction. Let me start with the grammatical status of low ablative causes, which we find in anticausative constructions.

As I have anticipated several times in this introduction, I group these cause PPs together with other optional participant phrases, such as the following.

(42) a. I opened the door with John. comitative
     b. I opened the door with a key. instrument
     c. I opened the door for John. beneficiary
     d. It seems good to me. experiencer
     e. I moved the chair to the corner. goal

In these particular constructions, all the bold-marked obliques are syntactically optional, and, at least in the case of (42a–c), they are not entailed by the predicate. Nevertheless, they name a participant that is internal to the event.

In the more traditional approach to argument structure, such expressions were regularly discussed together with true arguments as bearers of thematic roles. Recent constructionist proposals, in line with the general tendency to decompose argument structure in syntax, introduce them into appropriate functional projections, which are, however, distinct from the projections that introduce true external and internal arguments. It is exactly these types of phrases that applicative heads are argued to license in the generalized theory of applicatives (see, for example, Pylkkänen 2002). Cinque (2006) groups participant phrases (which he refers to as circumstantials) together with VP-internal heavy adverbial PPs, and argues that they are inserted into a rigidly ordered sequence of functional projections, just like adverb phrases are claimed to be in Cinque (1999). Though it is technically not essential for him that circumstantial phrases receive a thematic role, he does make this assumption (Cinque 2006: 160–161).

Lexicalist theories prefer not to employ such functional machinery, but the notion that participant phrases should not be treated on a par with true argument phrases is recurrent. Ernst (2002), for example, treats them as bearers of auxiliary theta roles, and, as we have seen in 2.2, Reinhart (2006) calls cause PPs in anticausative constructions quasi arguments. In work on the Theta System, it was Marelj (2004) who first proposed in a discussion of locative goals (42e) that such phrases are non-argumental but still receive Theta-theoretic thematic encoding. In Rákosi (2006, 2009) I have argued, mainly on the basis of an analysis of different
types of experiencers, that this is a possibility generally open to participant phrases. What differentiates them from true arguments is that they are optional, their morphology is often subject to variation, and they may show adjunct properties with respect to traditional adjunct tests. On these grounds, I treat participant phrases as adjuncts that bear a thematic specification in terms of the Theta System, and make an attempt at describing the constraints that govern this domain. For the details, I refer the reader to Rákosi (2006).

What is directly relevant for us is that thematic adjuncts are not represented on the argument list of the predicate, since they are not part of the underlying verbal concept. Instead, they are licensed by particular argument structure configurations. A comitative thematic adjunct, for example, can enter the derivation if an agent argument is present. In other words, a comitative is licensed at the interface between the computational system and the lexicon if the predicate has an agent argument.

The question is now what argument structure property licenses low ablative causes (and cause PPs in general) in anticausative constructions. I propose the following convention.

(43) **Convention on the licensing of cause thematic adjuncts**

A low cause PP is licensed as a thematic adjunct if the argument structure of the predicate selected for derivation includes no argument that can be interpreted as a cause, i.e. [+c], [+c+m], [+c−m], [−m] and [+m].

The intuitive content of (43) is that an optional, cause-type thematic adjunct is licensed if the underlying verbal concept includes reference to causation, but the particular argument selection that is sent off for computation does not include a participant that could be interpreted as a cause. In these cases, it is possible to sneak a cause back, but only as an optional, non-argumental thematic adjunct.

Remember that passive *by*-phrases are not thematic adjuncts (i.e., they do not bear a theta role in their own right), but simple adjuncts that are linked to implicit arguments (see the discussion in 2.2). This is how they are distinguished from low cause PPs, such as the English *from*-phrases or the Hungarian low ablatives discussed in this paper. Low cause PPs are not linked to an implicit external argument, but they themselves introduce a cause participant if there is no argument in the structure that can be interpreted as a cause.

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10. The anonymous reviewer notes that optionality *per se* is not sufficient to distinguish adjuncts from arguments. English secondary resultative predicates, for example, are optional but have a complement status (as in *John painted the wall (white)*).
4.5 Question 2: A possible explanation for the non-agentivity restriction

The second problem I set out to account for was the non-agentivity restriction on what I call here low cause PPs. As has been pointed out by several authors cited in this paper, this is a truly universal constraint. Constructionalist approaches postulate that anticausatives lack the agentive layer of the verbal decomposition, therefore agent-oriented modification, which for them includes agentively interpreted PPs, is not licensed.

I would like to view this constraint from a different perspective. The fact that real agent-oriented modifiers – such as instruments, purpose clauses, etc. – are not grammatical in anticausative constructions follows from the lack of an agent argument that could license them. But for cause thematic adjuncts, a different question poses itself in the framework that I have proposed: Why is it that these thematic adjuncts must be thematically coded in such a way that rules out an agentive interpretation?

In principle, the Theta System allows us to code participants that can be interpreted as causes in five different ways, which are summarised below.

(44) i. \([+c]\): Possibly agent or non-agentive cause.
    ii. \([+c+m]\): Agent only.
    iii. \([+c–m]\): Cause only, no agentive reading.
    iv. \([-m]\): Underspecified for cause, no agentive reading.
    v. \([+m]\): Underspecified for cause, possibly interpreted as an agent.

Out of these five potential clusters, \([+c]\), \([+c+m]\) and \([+m]\) can or must be interpreted as agents, therefore we must rule them out somehow as theta cluster candidates for cause thematic adjuncts if we want to be at least descriptively adequate. The next question is then what makes these clusters ungrammatical candidates.

An obvious property that these theta clusters share is that they are the “all +” clusters. Remember that in argument structures that are at least dyadic, they receive the merging index \(I\), which forces them to merge externally. If they are the sole argument on an argument list (as in the case of agentive unergatives), they do not receive a merging index, but they are nevertheless merged externally by (39c), which states that if there are no constraints to the contrary, an argument must be merged externally. This means then that the “all +” arguments are always destined for external merge, irrespective of the nature of the actual configuration they enter. Possibly, the arity condition on merging index assignment (38) can then be viewed as restricted to \([-]\) clusters only – at least this is the practical impact of assigning indices to arguments only if the argument structure is at least dyadic.

I now make the assumption that “all +” thematic content generally destines for external merge, irrespective of whether it is assigned to an argument or a thematic
adjunct.\textsuperscript{11} This, as it stands, is a hypothesis but it seems to me a plausible one. Using the same logic as in the previous section, if you have removed an argument that contributes to the projection of a vP, then you do not want to sneak the same thematic type back into the structure. Since by the convention in (43), a cause thematic adjunct is licensed exactly in the absence of an external argument and in the concomitant absence of a vP, the “all +” coding of the thematic adjunct would require a structural layer that simply cannot be present in an anticausative construction. In other words, “all +” thematic adjuncts would have the drive, but not the power to build a vP by themselves.

This leaves us with the two clusters [+c-m] and [-m] as possible candidates for cause thematic adjuncts. The first may be preferred for the reason that [+c−m] is a “mixed cluster”, which never receives a merging index by (38). This makes it an ideal candidate for a thematic adjunct that is adjoined to PredP, above the argument layer of the lexical phase.

By way of summary, I conclude now with the thematic structure of the intransitive open.

\[
\text{open}_{\text{intr}} \prec [-c-m]_2 \rangle ([+c-m])
\]

The argument structure has only one argument, which bears the merging index 2, and must therefore be merged internally. Optionally, a cause thematic adjunct can be licensed, which is, however, not part of the argument structure.

\section{Summary}

In this paper I presented arguments in favour of a lexicalist account of anticausative cause PPs, mostly drawing on data from Hungarian. I focused on properly identifying the grammatical type of these expressions and on the non-agentivity restriction on their interpretation. Hungarian marks such cause PPs with ablative case. On closer inspection, it turned out to be the case that ablative causes are not uniform. In particular, I distinguished between high and low ablative causes. I argued that low ablative causes are restricted to anticausative constructions, but high ablative causes can be licensed with any predicate types under certain conditions.

\textsuperscript{11} A weaker formulation is probably necessary here. In Rákosi (2006), I analyse comitative thematic adjuncts as bearers of the cluster [+c+m]. A comitative thematic adjunct is licensed in the presence of an agent argument, whose thematic content it simply copies, so to say.

\textit{i. I}_{[+c+m]} opened the door\textit{[−c−m]} \textit{with John}_{[+c+m]}.

It seems that “all +” thematic content either destines for external merge, or for adjunction to a vP. In the case of anticausatives, neither option is possible.
The fact that such cause denoting PPs are distinct from anticausative cause PPs and that they can used with some productivity had, to my best knowledge, not been noted in the literature before. It is a question for future research to what extent the distinction between high and low cause PPs is generalizable to other languages.

The analysis I presented was executed as part of an extension of Reinhart’s Theta System. The leading idea is that anticausative cause PPs are low level adjuncts that receive a theta role in their own right. This is the most important property that differentiates them from passive by-phrases, which are linked to an implicit external argument. I concluded with a discussion of the licensing conditions on cause thematic adjuncts, which include a possible explanation for the non-agentivity restriction on anticausative oblique causes.

References


Morphology or phonology?
The case of Hungarian -ni

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This paper discusses the issue of the Hungarian infinitive suffix that has as many as eight surface shapes occurring in the various inflected forms of the infinitive. The final conclusion is that the issue is best treated in terms of morphology (allomorph selection) and not in terms of morphophonological rules/constraints involving segment insertion and deletion, respectively. The bulk of the discussion is couched in Optimality Theoretic terms but an alternative treatment by Rebrus and Kálmán (2009) is also summarized and tentatively accepted in the final part of the paper. However, their alternative solution only serves to fill in the gaps left by the specific OT implementation proposed here: the general conclusion reached in this paper is not thereby undermined.

1. Introduction

The Hungarian infinitive marker occurs in several versions, depending on the morphological and phonological environment:

(1) a. -ni- vár-ni, vár-ni-a, vár-ni-uk
   (wait-INF, wait-INF-3SG, wait-INF-3PL)

 b. -n- vár-n-om, vár-n-od, vár-n-unk, vár-n-otok
   (wait-INF-1SG / 2SG / 1PL / 2PL)

c. -ani- tart-ani, tart-ani-a, tart-ani-uk
   (hold-INF, hold-INF-3SG, hold-INF-3PL)

d. -an- tart-an-om, tart-an-od, tart-an-unk,
   tart-an-otok (hold-INF-1SG / 2SG / 1PL / 2PL)

e. -eni- kezd-eni, kezd-eni-e, kezd-eni-ük
   (begin-INF, begin-INF-3SG, begin-INF-3PL)
g. -nni- ve-nni, ve-nni-e, ve-nni-iük (take-INF, take-INF-3SG, take-INF-3PL)
h. -nn- ve-nn-em, ve-nn-ed, ve-nn-ünk, ve-nn-etek (take-INF-1SG / 2SG / 1PL / 2PL)

These versions present various analytical problems (even if we disregard syntactic dilemmas concerning inflected infinitives, cf. É. Kiss 1986, 1989, 2001; Tóth 2000, 2002; Rákosi & Laczkó 2008; and the literature cited there). The aim of this paper is to take a look at those problems and propose tentative solutions for them. In most cases, the solution will be seen to hinge on whether the phenomenon at hand is phonological or rather morphological in nature.

2. Distribution

The simplest case is that of (1g)–(1h): the n of the suffix occurs doubled (long) in the infinitives of the verbs listed in (2), that is, in all and only the verbs whose relevant stem allomorph ends in a short vowel.1

(2) esz-ik ‘eat’ e-nni isz-ik ‘drink’ i-nni
vesz ‘take’ ve-nni visz ‘carry’ vi-nni
tesz ‘put’ te-nni hisz ‘believe’ hi-nni
lesz ‘will be’ le-nni

It would be easy to account for this length alternation by a (morpho)phonological rule, along the following lines:

(3) n → [+ long] / [V, – long] ___ [i], inf

However, the stem class in (2) constitutes a rather complex minor pattern with further stem allomorphs ending in -v, -d, or a long vowel, and with additional differences across the members of the stem class, as summarised in (4), cf. Rebrus (2000: 879–880); therefore, a morphological (allomorph-selection-based or paradigm-based) account is to be preferred.2

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1. In the case of an eighth verb, whose infinitive is jönni ‘to come’, it is impossible to tell whether its correct parsing is jön-ni or jö-nni, given that both stem allomorphs exist independently: jön- as in jön-nek ‘they come’ (as well as jön ‘s/he comes’ itself) and jö- as in jö-het ‘s/he may come’.

2. The imperative (except that of jön) is based on the -d stem alternant; it will be simply listed in (4) in its orthographic form, without further analysis/discussion here.
The verb *iszik* ‘drink’, in addition to being a member of the *-nni* class, is also an antiharmonic (*híd*-type) stem; hence the back-harmonic suffixes listed in (4). See Siptár (2008b) for a detailed discussion of antiharmonic stems in Hungarian, and
Kis (2005) for a fresh look at historical aspects of the issue. Cf. also Benus & Gafos (2007) on the phonetics of *hid*-type stems (and transparent vowels in general).

Turning to the cases in (1c)–(1f), these are somewhat more interesting: three specific issues can be raised with respect to them. First: in what environment do these versions occur? Second: what motivates the front/back alternation of the initial vowel in them? And third: what motivates the height of that vowel (its being low, rather than mid)?

The answers to all three questions appear to be fairly straightforward: the relevant environment is provided by (mainly) CC-final verb stems, the alternation a/e is an instance of vowel harmony (cf., e.g., Vago 1980, 1994, 2005; Hayes & Londe 2006; Hayes, Zuraw, Siptár & Londe 2008), and the occurrence of a low linking vowel is a special characteristic of this particular type of suffixes (known as “self-lowering suffixes”, Siptár & Törkenczy 2000: 228) rather than of the stems (as is the case with “lowering stems”). In addition to the infinitive suffix, the class of self-lowering suffixes includes those listed in (5):

(5)  a. 2sg.pres.indic. -sz/-asz/-esz
    vár-sz  ‘you wait’
    tart-asz  ‘you hold’
    kezd-esz  ‘you begin’

   b. 1sg.pres.indic. -lak/-lek/-alak/-elek
   (2sg object)  vár-lak  ‘I wait for you’
    kér-lek  ‘I ask you’
    tart-(a)lak  ‘I hold you’
    kezd-(e)lek  ‘I begin (to X) you’

   c. 3pl.pres.indic. -nak/-nek/-anak/-enek
    vár-nak  ‘they wait’
    kér-nek  ‘they ask’
    tart-anak  ‘they hold’
    kezd-enek  ‘they begin’

   d. conditional -na/-ne/-ana/-ene
    vár-na  ‘(s/he) would wait’
    kér-ne  ‘(s/he) would ask’
    tart-ana  ‘(s/he) would hold’
    kezd-ene  ‘(s/he) would begin’

3. None of which is a (monomorphemic) verbal stem, incidentally. Only nominal, adjectival, and inflected verbal stems may be “lowering”, i.e., requiring that the linking vowel that follows them be low, rather than (default) mid.
Again, a relatively straightforward (morpho)phonological rule could be suggested here (for the case of the infinitive only; but similarly for the other suffixes concerned):

\[ \emptyset \rightarrow [V, + \text{low}] / \text{CC } \text{___ n(i)}_{\text{inf}} \]

However, the behavior of these suffixes shows a certain amount of idiosyncrasy. In some cases, the occurrence of the vowel is unexpectedly optional: mond(a)sz ‘you-sg. say’ vs. sértész (*sértész) ‘you-sg. hurt’; for -lak/-lek, such optionality is perhaps characteristic of each and every relevant verb. After some geminate-final verb stems, the vowel fails to occur: varr-ni ‘to sew’, forr-ni ‘to be boiling’, áll-ni ‘to stand’, száll-ni ‘to fly’, függ-ni ‘to depend’, fedd-ni ‘to reproach’, as opposed to hall-ani ‘to hear’, hull-ani ‘to fall’, vall-ani ‘to confess’, kell-eni ‘to be needed’.4 Furthermore, a low linking vowel also occurs after some (but not all) verbs ending in a long vowel plus a single short coronal stop: tanít-ani ‘to teach’, bocsát-ani ‘to let go’, véd-eni ‘to defend’, vs. imád-ni ‘to adore’, lát-ni ‘to see’. Therefore, unlike the behavior of lowering stems that can be given a phonological treatment (though cf. Szentgyörgyi 1998), the behavior of self-lowering suffixes, including the distribution of a- or e-initial versions of the infinitive marker, is arguably a morphological issue (a matter of allomorph selection) as well.5

Of all the versions of the infinitive suffix, the opposition in (1a)–(1b) is the most intriguing (the same opposition of course obtains between (1c) and (1d), between (1e) and (1f), and between (1g) and (1h), too). At first blush, (1b, d, f, h) appear to be cases of hiatus resolution by first vowel deletion (Casali 1997; Siptár 2007, 2008a). However, there are two major problems associated with this assumption. First: why is the -i- not missing in forms of the type várnia, várniuk (3sg, 3pl), too? Second: if something has to be missing, why is it not the linking vowel of the

---

4. With polysyllabic stems of the sokall ‘find [something] too much’ type, the appearance of the vowel is often optional: sokall-ni ~ sokall-ani.

5. Conversely, it is possible – if most of the idiosyncrasies mentioned in this paragraph are swept under the rug – to take self-lowering suffixes (and multiple suffixation) to represent the core phonological phenomenon and relegate everything else to morphology and/or to lexical (underlying) representation. For instance, Rebrus & Polgárdi (1997) present an analysis in which self-lowering suffixes (as well as suffixes that follow another inflectional suffix) receive their linking vowels by epenthesis (of the default vowel a) and all other linking vowels are underlingly present as domain-final o’s or a’s (in non-lowering and lowering stems, respectively). Wherever these stem-final vowels are not needed as linking vowels, they are deleted (or, “remain unparsed”). This solution is somewhat reminiscent, at least inasmuch as the story of self-lowering suffixes goes, of the classical generative analysis of Vago (1980) in which a battery of epenthesis rules are posited, some of which insert o’s and others a’s, with some of these inserted vowels subsequently deleted, lengthened, raised or lowered, as the case may be. With these devices at hand, the whole area can of course be described in phonological terms. For further details and discussion, cf. Vago (2007; 2008).
personal suffixes -om, -od, -unk, -otok 'my, your-sg, our, your-pl' (cf. masni-m, masni-d, masni-nk, masni-tok 'my etc. bow (of ribbon)' vs. mosn-om, mosn-od, mosn-unk, mosn-otok 'for me etc. to wash')? In the rest of this paper, we will consider these two issues in turn.

Olsson (1992: 138) claims that, despite appearances, the -i- is deleted in third-person forms but then j-insertion takes place just like in possessive forms, that is, várn-om, várn-od, várn-ja 'for me/you/him to wait', as in bárd-om, bárd-od, bárd-ja 'my/your/his axe'. ‘The spelling should then just be traditional rather than phonetic, reflecting an assumed connection with the suffix ni’, Olsson adds. There are two good reasons why this clever but rash suggestion is untenable. First, a form like várnia is trisyllabic (vár.ni.a) (witness the yes/no question test (Siptár 2002: 72–73): Kell várni-a ‘Does he have to wait?’, *Kell várni-ja); and second, the i = /j/ analysis would predict *[vár necesita] by nasal place assimilation and j-assimilation as in konszernje [kɔsɛɾnje] 'his syndicate'. Yet, Olsson’s suggestion has something to it, after all. Note that the phonetic forms of várnia, várniiuk are [várnij] and [várniiut], respectively. The [j] in these forms could well be the usual hiatus breaker as in dia [diá] ‘slide’ – but it does not have to be.

In general, third-person possessive suffixes are j-initial for certain nouns, e.g. pár-ja ‘its pair, a pair of it’ and j-less for others, e.g. vár-a ‘its castle’; but for vowel-final nouns they are invariably j-initial, e.g. zokni-ja ‘his socks’ (for further details and a proposed analysis, cf. Ritter 2002). Now, if we assume that third-person suffixes are -ja, -juk (rather than -a, -uk) in the case of inflected infinitives, too, it becomes quite clear why the vowel of -ni- is present before them: it is followed by a consonant, not by a vowel. Paradoxically, then, Olsson’s conclusion is sound, even though he did not draw it from the correct analysis: the written forms várnia, várniiuk are indeed ‘traditional rather than phonetic’. Or rather, they reflect pronunciation in a way (given that [ijɔ], [iju] sequences that do involve hiatus resolution are spelt ia, iu as in miatt [mjɔt] ‘because of’, miután [mjutaŋ] ‘since’) but, if this explanation is on the right track, what they do not reflect is which allomorph of the person/number suffix is concerned.

Note, however, that hiatus resolution by spreading (Siptár 2008a) is an area of Hungarian phonology whose experimental phonetic study is still in its infancy. The preliminary results presented in Menyhárt (2006) suggest that the actual phonetic events taking place in this area are less than fully understood at present. Native speaker intuitions are also less than conclusive. For instance, Rákosi & Laczkó (2008) point out that the [j] in e.g. zokni-ja ‘his socks’ and that in szokni[j]a ‘for him to get used to it’ are, in their own native intuition, “qualitatively (at least slightly) different. However,” they hasten to add, “careful phonetic investigations would be necessary to test our intuition and to turn it into a piece of conclusive evidence.” In the meantime, they carried out a Google search (28 December 2005) to tap other
speakers’ intuitions in this matter. Their results appear in (7), based on their Table 1 (ibid.: 166) where shaded cells represent standard orthography (except for hyphens that are inserted for clarity) and white cells represent non-standard orthography.

<table>
<thead>
<tr>
<th>(7)</th>
<th>3sg: -ja/-je</th>
<th>3sg: -a/-e</th>
<th>3pl: -juk/-jük</th>
<th>3pl: -uk/-üük</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOUN</td>
<td>'socks'</td>
<td>zokni-ja</td>
<td>484</td>
<td>zokni-a</td>
</tr>
<tr>
<td>INF</td>
<td>'get used to'</td>
<td>szok-ni-ja</td>
<td>5</td>
<td>szok-ni-a</td>
</tr>
<tr>
<td>NOUN</td>
<td>'perfume'</td>
<td>kölni-je</td>
<td>150</td>
<td>kölni-e</td>
</tr>
<tr>
<td>INF</td>
<td>'kill'</td>
<td>öl-ni-je</td>
<td>0</td>
<td>öl-ni-e</td>
</tr>
<tr>
<td>NOUN</td>
<td>'barnstorm'</td>
<td>hakni-ja</td>
<td>53</td>
<td>hakni-a</td>
</tr>
<tr>
<td>INF</td>
<td>'put'</td>
<td>rak-ni-ja</td>
<td>9</td>
<td>rak-ni-a</td>
</tr>
</tbody>
</table>

Rákosi & Laczkó comment on these results as follows: “Non-standard orthography is much more likely to turn up in the nominal domain than in the infinitival one. In addition, the (non-standard) use of j in the infinitival paradigm almost always occurs in contexts which seem to suggest that this orthographical deviation is deliberately intended to achieve stylistic effects, e.g., as an indication of high-level informality. By contrast, non-standard orthography in the nominal domain occurs across the board and is not primarily conditioned by style. These considerations suggest that spelling mistakes of this kind are not purely accidental but indicate the underlying uncertainty of native speakers about the status of j in the nominal paradigm, as opposed to the much firmer intuitions about the lack of this phoneme in the infinitival paradigm.”

Be that as it may, the morphological evidence (i.e., the occurrence of i before third-person suffixes) suggests that those suffixes do begin with a consonant in infinitival paradigms, just like they do – postvocally, at least – in nominal (possessive) ones.

The other question we asked above is why it is the -i- that is missing in várnom etc., rather than the -o-. Note that the reason one would expect the -o- to be missing is that (first and second person) possessive suffixes are added to vowel-final stems without a linking vowel: hajó-m ‘my ship’, kocsi-d ‘your car’, zokni-nk ‘our socks’, etc. (cf. Siptár 2008a for the details). But then, in várn + om ‘for me to wait’, why is the surface form várnom, and not *várnim? In order to provide a principled


7. Or, to put it operationally, how could we make sure that infinitives count as consonant-final with respect to the shape of person/number suffixes (in first and second persons)? Note that, in a derivational framework, this constitutes a classic case of an “ordering paradox”. If an i-deletion rule like “i → Ø / n ___ \[V”] was involved, the linking vowel should appear on stage prior to the application of that rule because it constitutes the environment in which i-deletion is to apply; but i-deletion should in turn “take applicational precedence” over the insertion of the person/number suffix in order for the latter to exhibit a linking vowel at all.
answer to that question, involving the choice in the title (i.e., whether this is a morphological or a phonological issue), the rest of this paper will be couched in optimality-theoretic terms.

3. Analysis

In Optimality Theory, the general dispreference for hiatus can be ascribed to the universal constraint Onset (8a); languages that tolerate hiatus will have Onset ranked relatively low, whereas languages that never tolerate it will have Onset ranked relatively high. The two general repair strategies, elision and epenthesis, involve violation of Max-IO (8b) and Dep-IO (8c), respectively (cf. McCarthy 2007, see also Casali 1998).

\[ (8) \quad \begin{align*}
\text{a.} & \quad \text{Onset} \quad \text{Syllables must have onsets.} \\
\text{b.} & \quad \text{Max-IO} \quad \text{Input segments must have output correspondents} \\
& \quad \quad \quad \quad \quad \quad \text{('no deletion')}. \\
\text{c.} & \quad \text{Dep-IO} \quad \text{Output segments must have input correspondents} \\
& \quad \quad \quad \quad \quad \quad \text{('no epenthesis')}. 
\end{align*} \]

Depending on which of these three constraints is ranked lowest, the three basic situations in (9)–(11) are predicted, where dots represent syllable boundaries, < > enclose underparsed (≈ deleted) segments and bold \( C \) stands for an epenthetic consonant:

\[ (9) \quad \begin{array}{|c|c|c|}
\hline
/\text{CVV}/ & \text{Max} & \text{Onset} & \text{Dep} \\
\hline
\text{CV.V} & \text{!} & \text{!} & \text{!} \\
\text{C}<\text{V}>\text{V} & \text{!} & \text{!} & \text{!} \\
\text{CV}<\text{V}> & \text{!} & \text{!} & \text{!} \\
\text{CV.CV} & \text{!} & \text{!} & \text{!} \\
\hline
\end{array} \]

The ranking in (9) is inadequate for Hungarian: although special cases of ‘consonant insertion’ do occur (karcsú-s-it ‘make slim’, a-z-alma ‘the apple’, fi[j]ú ‘boy’), these have to be accounted for in some other manner (see Siptár 2008a). Ranking Dep-IO lowest is not the appropriate way of capturing them.

\[ (10) \quad \begin{array}{|c|c|c|}
\hline
/\text{CVV}/ & \text{Dep} & \text{Onset} & \text{Max} \\
\hline
\text{CV.V} & \text{!} & \text{!} & \text{!} \\
\text{C}<\text{V}>\text{V} & \text{!} & \text{!} & \text{!} \\
\text{C}<\text{V}> > & \text{!} & \text{!} & \text{!} \\
\text{C}<\text{V}> & \text{!} & \text{!} & \text{!} \\
\text{CV.CV} & \text{!} & \text{!} & \text{!} \\
\hline
\end{array} \]
The ranking in (10) appears to be adequate for cases in which the first (tiszta ‘clean’ (adj.) + it → tisztít ‘clean’ (vb)) or the second (hajó ‘ship’ + unk → hajónk ‘our ship’) vowel is deleted (cf. Siptár & Törkenczy 2000). But it is insufficient to capture the Hungarian pattern in general since it counterfactually predicts that, even in monomorphemic instances, one or the other vowel will have to go, too.

The ranking in (11), on the other hand, suits Hungarian as far as cases like fáraó ‘pharaoh’ (monomorphemic hiatus), szomorú-ak ‘sad-pl.’ (synthetic morpheme boundary), kutyá-ul ‘(feel) wretched’ (analytical morpheme boundary), kutya-öl ‘kennel’ (compound boundary) or szomorú arc ‘sad face’ (word boundary) are concerned. However, in this case, all (partial) resolution strategies (for an exhaustive enumeration of which see Siptár 2007) remain unaccounted for.

For instance, as can be seen in (12) and (13), the three basic constraints defined in (8), ranked as in (11), fail to yield the correct output both for nominal cases like zoknim ‘my socks’ and for infinitival cases like szoknom ‘for me to get used to it’:

(12) zoknim ‘my socks’

For instance, as can be seen in (12) and (13), the three basic constraints defined in (8), ranked as in (11), fail to yield the correct output both for nominal cases like zoknim ‘my socks’ and for infinitival cases like szoknom ‘for me to get used to it’:

(12) zoknim ‘my socks’

8. The issue of which of the two vowels will be dropped in any particular case has to be determined by the help of further constraints (cf. Casali 1997). A derivational analysis of second vowel deletion of the hajó-nk type (in terms of “Vowel Truncation”) was first proposed by Vago (1980: 54).
Recall that possessive suffixes occur without a linking vowel iff they are added to a vowel-final stem; in such cases, the stem-final vowel remains part of the representation and the potential hiatus is resolved by deletion of the linking vowel. Hence, we have to define another constraint, $\text{Max}_{\text{stem}}$ as in (14), and $\text{Onset}$ has to be ranked in a way that it is sandwiched between $\text{Max}_{\text{stem}}$ and $\text{Max}$ (15). The result can be seen in (16).

(14) $\text{Max}_{\text{stem}} \quad \text{Do not delete stem-internal material.}$

(15) $\text{Max}_{\text{stem}} \gg \text{Onset} \gg \text{Max}$

(16) $\text{zoknim}$

As can be seen in this tableau, the second candidate violates highly-ranked $\text{Dep}$, whereas the third and fifth candidates both violate $\text{Max}_{\text{stem}}$. From the remaining two candidates, the uppermost one that appeared, incorrectly, to be the winner in tableau (12), violates $\text{Onset}$ that now dominates the general $\text{Max}$ constraint. Therefore, the attested output will win, as it only violates the latter.
This solution also works for morpheme internal, unresolved, hiatuses:

(17) .fxrao ‘pharaoh’

<table>
<thead>
<tr>
<th></th>
<th>Dep</th>
<th>Maxstem</th>
<th>Onset</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>fór</td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fórə</td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fórə</td>
<td>✗!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fórə</td>
<td>✗!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fórə</td>
<td>✗!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Consonant insertion is penalized by Dep again, whereas deletion of either the first or the second vowel (or indeed both) is excluded by Maxstem. The first candidate, even though it violates Onset, carries the day.

However, this move does not solve the problem of szoknom (see (18)). It is true that the correct output does not lose the game right away this time, given that it does not violate Maxstem; but it ends up in a tie with the incorrect candidate *szoknim. We are back in square one: what new constraint, or what ranking of old constraints, could make szoknom the sole winner?

(18) szoknom

<table>
<thead>
<tr>
<th>/sok + ni + Vm/</th>
<th>Dep</th>
<th>Maxstem</th>
<th>Onset</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>sokniom</td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>soknitom</td>
<td>✗!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>soknom</td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>soknim</td>
<td>✗!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>soknm</td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An additional constraint that would penalize deletion of the suffix vowel (ranked above the general Max-IO constraint) is obviously out of the question since retaining the linking vowel would be wrong in all other cases (involving vowel-final stems and potential, but non-surfacing, linking vowels). Nor would reranking of our existing constraints be a good idea since the present ranking is fine elsewhere. But we do not need either a new constraint or a new ranking: all we have to do is posit two allomorphs of the infinitive suffix:9 -ni and -n (for a general discussion

9. Rebrus & Polgárdi (1997: 272) also suggest that the infinitive suffix has the morphologically-derived alternants -ni and -n (eventually, with the linking vowels underlyingly specified domain finally, the alternants -ni- and -nO-, where the latter surfaces as -no-, -nô-, or -ne-; cf. footnote 5 above).
of this kind of solution, cf. Hayes & Londe (2006: 83–85) and the literature cited there). This solves our problem at one fell swoop:

(19) \textit{szoknom}

\begin{center}
\begin{tabular}{|c|c|c|c|c|}
\hline
\text{\textit{szoknom}} & \text{\textit{Dep}} & \text{\textit{Max}} & \text{\textit{Onset}} & \text{\textit{Max}} \\
\hline
soknom & - & - & - & *! \\
\hline
soknim & *! & - & - & - \\
\hline
soknitom & *! & - & - & - \\
\hline
\end{tabular}
\end{center}

Note that in this case we compare the first, second and fourth candidates to the allomorph \textit{-ni-}, but the third and fifth candidates to \textit{-n-}, in evaluating them with respect to the constraint Max.\textsuperscript{10} Thus, the third candidate violates no constraint at all, whereas both the fourth and the fifth violate Max (with respect to the linking vowel, \textit{-o-}). Given that for the third candidate (as well as for the fifth) we assume selection of the allomorph \textit{-n-} rather than the deletion of \textit{-i-}, the actual output will turn out to be optimal.

But now, consider what happens in the case of \textit{szoknia} ‘for him to get used to it’ and \textit{szokni} ‘to get used to’:

(20) \textit{szoknia}

\begin{center}
\begin{tabular}{|c|c|c|c|c|}
\hline
\text{\textit{szoknia}} & \text{\textit{Dep}} & \text{\textit{Max}} & \text{\textit{Onset}} & \text{\textit{Max}} \\
\hline
soknij & - & - & - & - \\
\hline
soknj & - & - & - & - \\
\hline
\end{tabular}
\end{center}

\textsuperscript{10}. One of the anonymous reviewers suggests that it is not just a matter of arbitrary assumptions which allomorph is involved in the form evaluated in each particular case: “Depending on which allomorph is selected, phonetically identical output candidates may score different types and number of violations.” Indeed, a set of structurally different but phonetically identical candidates, in the order in which their homophones are listed in (19), would be \textit{sok-n[i]-om}, \textit{sok-n[iti]-om}, \textit{sok-n[i]<i>-om}, \textit{sok-n[i]<o>-om}, and \textit{sok-n[i]<i>-<o>-om}, respectively (where symbols in square brackets indicate epenthetic segments, those in angled brackets stand for deleted segments, and hyphens indicate morpheme boundaries). Notice that each of these additional candidates involves the “wrong” allomorph and is \textit{harmonically bounded} by its counterpart listed in (19): \textit{sok-n[i]-om} violates \textit{Dep} (in addition to violating \textit{Onset}), \textit{sok-n[iti]-om} violates \textit{Dep} twice; \textit{sok-n[i]<i>-om} violates \textit{Max}, \textit{sok-n[i]<o>-om} violates both \textit{Dep} and \textit{Max}, and \textit{sok-n[i]<i>-<o>-om} violates \textit{Max} twice. Thus, the same constraints that select the actual output from among the candidates involving the “correct” allomorph (as in (19) above) are also able to discard the homophonous candidates that involve the “wrong” allomorph of the infinitive marker.
The problem is that our devices so far are insufficient to enforce the selection of the allomorph -ni in these cases. However, we can capitalize on the insight that the choice between the two allomorphs is based on the phonological environment: before a consonant or word boundary we have to select -ni, whereas prevocally we have to select -n. This can be done on the basis that neither internal -knj- nor final -kn satisfies the phonotactic restrictions of Hungarian.\textsuperscript{11} Obviously, a set of constraints must exist that tell phonotactically well-formed and ill-formed outputs apart. Referring to that set of constraints informally as SyllStr here and ranking it topmost (although the actual ranking of SyllStr relative to the other constraints is immaterial here) solves our problem:

(22) **szoknia**

<table>
<thead>
<tr>
<th>/sok + { ni, n } + j\textsuperscript{a}/</th>
<th>SYLLStr</th>
<th>Dep</th>
<th>Max\textsubscript{stem}</th>
<th>Onset</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\phi) sokni\textsuperscript{b}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\otimes\ \phi) soknj\textsuperscript{c}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(23) **szokni**

<table>
<thead>
<tr>
<th>/sok + { ni, n }/</th>
<th>SYLLStr</th>
<th>Dep</th>
<th>Max\textsubscript{stem}</th>
<th>Onset</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\phi) sokni</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\otimes\ \phi) sokn</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Unfortunately, we cannot be fully satisfied with this solution until we resolve two further puzzles. First, as we mentioned earlier, the third person singular suffix has another allomorph (in the same back-harmonic context). In addition to the -ja

\textsuperscript{11.} Internal -knj- cannot be properly syllabified given that -kn is not a possible branching coda and nj- is not a possible branching onset in this language. For further discussion, cf. Törkenczy & Šiptár (1999).
occurring in (20)/(22) above, it also has the variant -a.\textsuperscript{12} Now, if we happen to select the second member of both \{ni, n\} and \{j, o\} in (24), we end up with the phonotactically impeccable form [sokn\textael].\textsuperscript{13}

\begin{tabular}{|c|c|c|c|}
\hline
/sok + \{ ni, n \} + \{ j, o \}/ & SYLLStr & Dep & Maxstem & Onset & Max \\
\hline
\(\Rightarrow\) & sokni\textael & & & & \\
\(\Rightarrow\) & sokn\textael & & & & \\
\hline
\end{tabular}

But that form is “reserved” for the conditional szokna 'he would get used to sg'. Is that enough for it to be avoided as a surface representation of ‘for him to get used to it’? Probably, yes.\textsuperscript{14}

Second, and more disturbingly, why is it not possible to opt for an implementation of the second candidate in (22) that is repaired (by nasal place assimilation and j-assimilation) into [sokn\textael]? More exactly speaking, what excludes such a possibility? The fact that this would make szoknia homophonous with szoknya 'skirt' does not suffice as an explanation, for two reasons. First, paradigm-external homonymy is not normally avoided in languages. And second, this potential homophony is not more than a coincidence and does not extend to cases like várnia 'for him to wait', adnia 'for him to give', futnia 'for him to run', mosnia 'for him to wash', etc. So why do we not get \*{[sokn\textael]}, \*{[várni\textael]}, \*{[ěntni\textael]}, \*{[ufen\textael]}, \*{[moʃni\textael]}, and so forth?

\textsuperscript{12} It is true that CC-final stems, just like V-final ones, normally select the allomorph -ja/-je – but by no means without exception. For instance, we find -a/-e in test-e 'his body', cikk-e 'his article', ing-e 'his shirt', orrha-a 'his nose', etc., as well as in all cases where the second C is v (except in konzerv-je 'his canned food') and/or the noun is a lowering stem, e.g., terv-e 'his plan', szarv-a 'his horn', olyv-e 'his hawk', könyv-e 'his book', nyelv-e 'his tongue'; talp-a 'his sole', térd-e 'his knee', áll-a 'his chin'; cf. Ritter (2002). In the present case, v-final or lowering stems are beside the point since items like szokn- are neither v-final nor lowering; nevertheless, a simple statement like "CC-final stems do not select the allomorph -a/-e" is clearly insufficient. And even if that statement were true, that fact would not excuse us, in an optimality-based analysis, from trying to account for it.

\textsuperscript{13} Similarly, in third person plural forms, where the relevant pairs are [ni, n] and [juk, uk], selecting the first member of each pair gives us the attested form [sokni\textael], but selecting the second member yields \*{[sokn\textael\textael]}. To make things worse, the latter form does not conflict with any existing form and therefore homonymy avoidance is not a possible way out in this case.

\textsuperscript{14} With respect to possible optimality-theoretic approaches to such paradigm-internal homonymy avoidance, see Rebrus (2001) and the literature cited there.
4. An alternative approach

Rebrus & Kálmán (2009), in what is in effect a rejoinder to an earlier version of the present paper, offer an alternative solution to the whole problem area discussed here. In what follows, we will first summarize their proposal, and then see what they would do with the problem raised at the end of the preceding paragraph (unfortunately, they do not directly tackle the problem of third-person forms; but their treatment of the first and second person forms may shed some light on the problem we ended up with here).

Rebrus & Kálmán’s proposal presupposes a procedure of optimization that – unlike other, more traditional varieties of Optimality Theory – does not establish pairwise correspondences between underlying and surface forms but between surface forms only (output/output faithfulness constraints, cf. Rebrus & Törkenczy 2005) and they reject the idea of underlying representation altogether. In their view, the whole system and coherence of human language is regulated by a single principle, cited in (25) below:

(25) **Principle of functional optimization**

Natural languages strive for a situation in which forms serving similar functions are formally as similar as possible, and forms serving different functions are as different as possible.

They clarify the above formulation by adding that ‘strive for’, ‘as similar as possible’, and ‘as different as possible’ are meant to reflect the importance of quantitative aspects. This does not only mean that similarities and differences are quantifiable; it is also important how many forms are characterized by the similarity or difference at hand and how frequently those forms occur. The kind of optimization they envisage is therefore extremely complex and not fully predictable, either. For instance, with respect to inflected infinitives, they do not offer an explanation for why facts are the way they are – all they wish to claim is that the attested paradigm is coherent and harmonic in that it satisfies the principle of functional optimization.

In particular, Rebrus & Kálmán suggest that the various infinitival forms “strive for” being as similar to other infinitival forms as they can; and as similar to other person/number inflected forms as they (simultaneously) can. For that similarity to obtain, the mere presence of -n- and possessive suffixes is not enough – it is also necessary that the form of inflected infinitives as wholes be similar to other Hungarian word forms, and primarily to possessive nouns. In order to show this with respect to first/second person infinitives, the authors looked at a webcorpus of 589 million running words (http://mokk.bme/hu/resources/webcorpus) and counted all possessive noun forms that were similar to such infinitives (that is, all n-final nouns like mén ‘stallion’ or trón ‘throne’, appropriately inflected) vs. those that were...
dissimilar (that is, all ni-final nouns like néní ‘auntie’ or póní ‘pony’, appropriately inflected). They found the following distribution (where O = o/e/ò, U = u/ü):

(26) Frequency of various nominal forms (as a percentage of all word forms, rounded)

<table>
<thead>
<tr>
<th>type</th>
<th>frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>-nOm, -nOd, -nOToK</td>
<td>0.1506</td>
</tr>
<tr>
<td>-nim, -nid, -nitek</td>
<td>0.0010</td>
</tr>
<tr>
<td>-nUnk</td>
<td>0.0068</td>
</tr>
<tr>
<td>-nink</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

As can be seen, the frequency of word forms that end in a way that resembles inflected infinitives (first and third columns) is higher by at least two orders of magnitude than the frequency of word forms that do not (second and fourth columns). In Rebrus and Kálmán’s view, this explains, or rather makes it reasonable and harmonic, why inflected infinitives have the form they do, and predicts that untested forms like *szoknim, *szoknid, etc. will not occur, not even as performance errors (slips of the tongue).

Returning to our earlier question of why we do not get *[soknɔ], *[vəɾnɔ], *[ɛnɔ], *[fucnɔ], *[moʃnɔ] as surface forms of szoknia, várnia, adnia, futnia, mosnia, respectively, we can now guess what Rebrus & Kálmán’s answer to that would be (had they not decided to concentrate on first/second person forms only). There are simply too few other word forms in this language (and even fewer – almost none – among 3sg possessive forms) that end in -knya, -rnya, -dnya [-ɛnɔ], -tnya [-ɛnɔ], or -snya [-ɛnɔ].15 On the other hand, the relative abundance of infinitives (both uninflected and inflected for third person singular/plural) serves as a statistical basis for each particular infinitive to “strive for” being like all the others (ganging effect).

How we could replicate that effect in our own analysis is difficult to tell, due to the basic assumptions and principles being so widely different – but the answer may lie somewhere in the direction of where Rebrus and Kálmán were attempting to find it.16 Various ways of how to incorporate statistics, frequency, graduality, and probability into a formal OT model are explored and discussed e.g. in Hayes, Zuraw, Siptár & Londe (2008).


16. But the deeper conclusion of the present paper, viz. that the problem discussed here is morphological rather than phonological, is not threatened by Rebrus & Kálmán’s alternative analysis, given that their account is built on paradigms, analogy, and lexical statistics (as well as text frequency), not phonological mechanisms like rules or constraints (other than output/output similarity).
5. Conclusion

The most important problem we set out to solve in this paper was whether, of the versions of the infinitive suffix, the choice between -ni- and -n- (or more generally, the distribution of i-final vs. i-less versions) should be accounted for in terms of morphology or phonology. We ended up with the answer that the alternation is a morphological one whose contexts, however, are defined in phonological terms. Thus, it is not the case that in first/second person forms, unlike in third-person forms and in forms not involving a personal suffix, the -i- is deleted.

Rather, the correct generalization is this: from among the allomorphs of the infinitive suffix, we pick one of the i-less ones (-n-, -an-, -en-, or -nn-) before a vowel, and one of the i-final ones (-ni-, -ani-, -eni-, or -nni-) elsewhere (which of the four we select in each particular case depends on the left-hand context).

In third-person forms, the reason for selecting the allomorph -ni- (-ani-, -eni-, -nni-) is that the two personal suffixes involved are consonant-initial (-ja, -juk), not vowel-initial (-a, -uk). In first and second person forms, on the other hand, the reason why it is the -i- of the infinitive suffix and not the linking vowel that fails to surface is exactly the fact that we have to do with the selection of one of the i-less allomorphs rather than with deletion of the vowel of -ni.17 That is, the phenomena discussed in this paper are part of Hungarian morphology, and not of phonology.

References


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17. This entails that, in general, the alternation between presence vs. lack of a linking vowel depends on deletion rather than insertion: in other words, the lexical representation of these suffixes begins with a vowel (-Vm, -Vd, etc., and not -m, -d, etc.).


Adpositional preverbs, chain reduction and phases*

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This paper develops a syntactic account of two types of adpositional preverb constructions in Hungarian that explains their special behavior, including their mixed argument/adjunct properties. It is maintained that in neutral clauses both types of preverbs come to occupy a position left-adjacent to the verb by XP-movement of an adpositional phrase. Apart from yielding a regular overt movement chain, Chain Reduction (Nunes 1999, 2004), applying in the mapping to PF, may also reduce the copy of the PP left-adjacent to the verb to its adpositional head. Morphosyntactic reanalysis of the reduced copy makes it possible to realize the lower copy of the PP-chain overtly, either as a partial copy or as a full double, depending in part on the morphological status its head. Drawing on the assumption that Chain Reduction applies at the phase level, the paper accounts for the complex pattern of the (non-)availability of these spell out forms in various positions of the clause.

1. Introduction

This paper explores the syntax of two classes of preverbs in Hungarian, illustrated in (1) and (2) below.¹ As is characteristic of verbal particles in Germanic and

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¹ The term ‘preverb’ is a traditional descriptive notion in Indo-European linguistics, referring to immediately pre-verbal morphemes forming a semantic unit with the verb, not infrequently idiomatic in nature. Often the preverb can function as an independent morphological word, as an adverb or adposition. ‘Preverb’ is frequently used in the literature as a cover term for pre-verbal prefixes as well as for free morphemes typically occurring left-adjacent to the verb, but
lexical verbal prefixes in Slavic, both classes systematically enable the verb to combine with a modifier phrase that appears to be an argument, whose morpho-syntactic form is restricted by the choice of the particle. Both types of preverbs apparently alter the argument structure of the verb: the modifier phrases display properties that render them similar to arguments. One way in which they consistently behave as adjuncts, however, is that their co-occurrence with the prefixed verb is invariably optional, see (1b), (2b). In what follows I will be referring to these elements agnostically as ‘quasi-arguments’ whenever their argument structural status is irrelevant to the discussion, or yet to be determined.

(1) a. Péter futott (*Marinak)  
P.-nom ran-3sg (M.-dat)  
‘Peter ran (to Mary).’

b. Péter utána futott (Marinak)  
P.-nom after-poss.3sg ran-3sg (M.-dat)  
‘Peter ran after Mary.’

(2) a. János tolt egy bevásárlókocsit (*az autóhoz)  
J.-nom pushed-3sg a trolley-acc (the car-to)  
‘John pushed a trolley (to the car).’

b. János hozzá tolt egy bevásárlókocsit (az autóhoz)  
J.-nom to-poss.3sg pushed-3sg a trolley-acc (the car-to)  
‘John pushed a trolley (to the car).’

It will be argued that both the quasi-arguments and the preverbs themselves may be either arguments/secondary predicates or adjuncts of the verb. Both can be raised to the immediately pre-verbal position by the same syntactic XP-movement operation.

The particular proposal put forward in this paper is that the quasi-argument phrase and the preverb are related by a direct syntactic movement dependency, i.e., they are spell out forms associated with two links of a single movement chain. Based on this basic analysis the paper seeks to explain the apparent argument properties of the phrase optionally co-occurring with the verb, as well as conditions on the availability of several different alternative spell out patterns attested in these constructions. The account is formulated in terms of Nunes’ (1995, 2004) Chain Reduction, applying at the syntax/PF interface at the phase level. It crucially draws on a phase-based cyclic mapping to PF forms, and will be couched in a framework where one component of morphology operates post-syntactically in the syntax to PF mapping (as in Distributed Morphology).

also being able to occur elsewhere in the sentence. Whenever the label ‘particle’ is used in this paper, it is intended as being neutral with respect to the distinction between separable verbal prefixes, preverbs and particles.
The paper is structured as follows. Section 2 presents the basic empirical generalizations pertaining to the constructions illustrated in (1) and in (2). Section 3 presents a ‘direct dependency’ analysis, on which the preverb and the modifier phrase are related directly by movement. Section 4 compares the proposed analysis with an ‘indirect dependency’ account put forward by É. Kiss (1998, 2002), pointing out problems for this latter analysis. Section 5 presents the main conclusions.

2. Adpositional preverb constructions in Hungarian

2.1 Preverbs in Hungarian

Analogously to Germanic particles and Slavic lexical verbal prefixes, Hungarian verbal particles may incur a shift in the meaning of the verbal predicate they compose with, including a change in argument structure, and they frequently form an idiomatic combination with the verb. They apparently interfere with argument structure and they play a role in determining the situation aspect (telicity) of the predicate phrase (Kiefer 1994, É. Kiss 2006b), similarly to lexical prefixes in Slavic (e.g., Gehrke 2008) and Germanic (e.g., Svenonius 2004). Hungarian particles morphosyntactically side with Germanic separable preverbs in that even though in certain clause types they must occupy a left-adjacent position to the verb, in other syntactic contexts they can also appear at a distance from it, which can happen either when the verb undergoes movement on its own or when the particle itself is subjected to displacement. This property contrasts them with so-called inseparable verbal particles of Germanic, as well as with verbal prefixes in Slavic, which are uniformly left-adjacent to the verb.

The mainstream syntactic account of preverbs in Hungarian, also supported by the results of basic constituency tests applying to the preverb construction, assigns preverbs to a specifier of some functional projection above the verb phrase, where they get to by phrasal movement. Piñón (1995), Puskás (2000), É. Kiss (2002) and others identify this projection as AspP. É. Kiss (2003, 2005, 2006a) proposes that the relevant functional projection is a PredP (analogous to Koster’s 1994 PredP projection), whose specifier hosts secondary predicates, including verbal particles. The left-adjacency of the preverb to the verb on most of these functional projection based accounts is reduced to the general strict locality of the specifier–head relation. Accordingly, for instance on É. Kiss’s (2005, 2006a) account, Pred pulls up the verb:

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2. For the most part of this paper, I will not be concerned with the complement/secondary predicate/adjunct status of the base position of Hungarian preverbs, for which see Surányi (2009).
(3) \([\text{PredP } PV_1 [\text{Pred } V + \text{Pred }] [\text{VP } \ldots t_i \ldots ]]\) (PV = preverb)

For concreteness, I will adopt this syntactic analysis of Hungarian preverbs in what follows.\(^3\)

2.2 Two classes of adpositional preverbs

Adpositional preverbs in Hungarian, of which two classes need to be distinguished, are (synchronically) locative in nature. The first class, which I dub the U-class, contains preverbs that are formally (directional or stative locative) postpositions, agreeing in person and number with their Ground argument (cf. (1b) above). Marácz (1986) assigns a full PP structure to such inflected postpositions, with the P head functioning as the possessum and the Ground argument as the possessor (see also É. Kiss 2002). The Ground may be pronominal, or lexical. A pronominal Ground argument can generally remain covert, i.e., pro (both in these PPs and also in possessive DPs); see (4a). If the Ground is lexical, then P remains uninflected for agreement, see (4b).\(^4\)

\[(4)\]
\[\text{a. } [\text{PP } \text{én / pro}}_{1\text{SG}} [_{p} \text{utánam}]\]
1-nom / pro\(_{1\text{SG}}\) -nom after-poss.1sg

\[\text{b. } [\text{PP } \text{Mari} [_{p} \text{után}]]\]
M-nom after

The second set of preverbs to be analyzed in this paper, dubbed the H-class, are traditionally referred to as ‘pronominal adverbs’ (cf. (2b) above). They are headed by adverbial elements that bear the same (possessive) agreement morphology as inflected postpositions. The adverbial elements that syntactically head ‘pronominal adverbs’ historically go back to postpositions, in particular, to the inflected variety of postpositions. The inflected postpositions at issue got encliticized and began to take part in vowel harmony (cf., e.g., the allomorphs -hoz/-hez/-höz ‘to’), finally becoming suffixal (see G. Varga 1992). Adverbial case suffixes have been argued to syntactically be postpositions in Hungarian, paralleling the case of morphologically free postpositions, which also remain uninflected when their nominal complement is lexical (i.e., non-pronominal), cf. (4b) above (see e.g., Bartos 2000, 2000).

3. The preverb must overtly appear in the Spec, PredP position, which is apparent in a neutral clause from the fact that the preverb must be left-adjacent to the verb in both finite and non-finite tenses. Accordingly, Pred is assumed to be strong, i.e., to bear an EPP property, in terms of Chomsky (2000 et seq) (compare É. Kiss 2005, 2006a). Surányi (2009) argues that Spec, PredP is filled even in those clauses that do not contain a preverb.

4. Bartos (2000) argues that this is also the case for nouns in possessive DPs, which, rather than bearing a zero agreement affix, lack agreement when they combine with a lexical possessor.
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É. Kiss 2002). Their syntactic analysis as morphologically affixal P elements heading PPs is adopted here.5

‘Pronominal adverbs’ themselves followed a different path: they did not become suffixal. They do not take part in vowel harmony, and they do not require the overt presence of their pronominal possessor host (e.g., \((te)-hoz-zád ‘(you)-to-pos.2sg’\)). The heads of ‘pronominal adverbs’ are also analyzed from a synchronic point of view as belonging to the category of (inflected) Ps (see É. Kiss 2002, cf. Bartos 2000).

Let us turn now to the empirical generalizations regarding the preverb constructions these two classes of preverbs participate in, which the analysis to be proposed seeks to account for. Overall, U- and H-preverbs behave in largely parallel ways. One crucial difference that emerges is that the quasi-argument is invariably a dative form for the U-class, while it is a PP headed by one of a variety of adverbial suffixes for the H-class. The lexical choice of the latter is determined strictly by the choice of the H-preverb itself:

\((5)\)  
\(\begin{align*}  
\text{Neki} & \quad \text{ütközött} \quad \text{a fálnak}/*\text{ba}/*\text{hoz}  
\text{to-pos.3sg} & \quad \text{bumped-3sg} \quad \text{the wall-to/*/into/*to}  
\text{‘He bumped into the wall.’}  
\end{align*}\)

Another difference between U- and H-preverbs is that the quasi-argument after a verb composed with a H-preverb must appear in a ‘full’ PP form headed by a (suffixal) H-postposition (in a sense, ‘doubling’ the H-preverb) (e.g., (2b)). The analogous full PP form headed by a U-postposition cannot follow a verb composed with a U-preverb:

\((6)\)  
\(\begin{align*}  
\text{Utána} & \quad \text{futottam végül} \quad \text{Mari után}  
\text{after-pos.3sg} & \quad \text{ran-1sg} \quad \text{finally M-nom after}  
\text{‘I finally ran after Mary.’}  
\end{align*}\)

As for the quasi-argument in the H-preverb construction, only a full H-PP double is available as a quasi-argument anywhere in the clause, i.e., both in post-verbal and in pre-verbal positions. By contrast, while a full U-PP double is not available in the U-preverb construction in the post-verbal field (cf. (6)), the U-preverb preceding the verb can be doubled by a ‘full’ U-PP when the double is to the left of the preverb, or is in a higher clause, see (7a–b). In both the pre-verbal and the post-verbal fields a dative case-marked quasi-argument is also a well-formed alternative, see (1b) and (8).

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5. Bartos (2000: 699f) puts forward the proposal that H-adpositions have been grammaticalized in present-day Hungarian as K (Case) heads, rather than P heads. K and P are taken to be structurally parallel, both taking a DP as their Ground argument. Given that they are alternants of each other, behaving in analogous ways, I will not distinguish H-adpositions from U-adpositions as far as their syntactic category as P is concerned.
Both U- and H-preverbs syntactically alternate in the surface preverb position Spec,PredP with the quasi-argument itself:6

(9a) a. János Mari után futott
cf. (1b)
J.-nom M.-nom after ran-3sg
‘John ran after Mary.’

b. János az autóhoz tolt egy bevásárlókocsit
cf. (2b)
J.-nom the car-to pushed-3sg a trolley-acc
‘John pushed a trolley to the car.’

6. The alternation between the construction in (9a)/(9b) and (1b)/(2b) is far from being productive both in the U-class and in the H-class of PPs: to some PP–verb combinations only one or the other of the two forms is available. Their availability is affected by properties like the “affectedness,” “referentiality,” and “abstractness” of the quasi-argument, or by the “natural predicate” status of the preverb+verb, i.e., factors that frequently play a role in (both head- and pseudo-)incorporation constructions in general.
(10) \textit{H-adposition}

a. \([\textit{pro} \text{ hozzá}] \ V \ldots [\text{DP-hoz}]

b. *\([\textit{pro} \text{ hozzá}] \ V \ldots [\text{DP-nak}]

c. \([\text{DP-hoz}] \ V \ldots [---] \]

d. \([\text{DP-hoz}] \ldots [\textit{pro} \text{ hozzá}] \ V \ldots [---] \]

e. *\([\text{DP-nak}] \ldots [\textit{pro} \text{ hozzá}] \ V \ldots [---] \]

(11) \textit{U-adposition}

a. *\([\textit{pro} \text{ utána}] \ V \ldots [\text{DP után}]

b. \([\textit{pro} \text{ utána}] \ V \ldots [\text{DP-nak}]

c. \([\text{DP után}] \ V \ldots [---] \]

d. \([\text{DP után}] \ldots [\textit{pro} \text{ utána}] \ V \ldots [---] \]

e. \([\text{DP-nak}] \ldots [\textit{pro} \text{ utána}] \ V \ldots [---] \]

3. A direct dependency account

In what follows I argue for a direct dependency account of the relation between the adpositional preverb and the quasi-argument expression.\(^7\) (10c) and (11c) involve the regular overt movement of the full PP quasi-argument to the preverb position, which pattern alternates with (10a) and (10b) in the case of the H- and the U-preverb construction, respectively. I propose that (10a) and (11b) involve the same syntactic movement of a PP to the preverb position, differing from each other, as well as from (10c) and (11c), respectively, only in terms of the internal ‘contents’ of both the tail and the head occurrence involved in the movement chain. The paper seeks to provide a uniform analysis of all three basic constructions involved, accounting both for the syntactically unconstrained alternation of the overt movement pattern and the pattern in (10a)/(11b), and for the mostly parallel behavior of the U- and the H-preverb constructions, seeking to relate their differences to lexical differences between the two classes of adpositions they involve. In what follows I first spell out the details of the proposal, and then go on to explore its consequences for the analysis of the patterns that obtain when further movements are involved.

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\(^7\) I extend the proposal to both classes of adpositional preverbs under discussion, nevertheless, it should be noted that the success of the analysis as applied to the H-class can be assessed independently of its merits as applied to the U-class. An alternative account of the U-class, not explored in the present work (or indeed elsewhere in the relevant literature), is a subextraction analysis, according to which the U-preverb corresponds to the lower segment of the U-PP, subextracted from the base occurrence of the U-PP into the preverb position, leaving behind a ‘high’ dative possessor within the base-generated U-PP.
3.1 Adpositional preverbs and chain reduction

The account of (10a) and (11b) that is to be proposed below involves a two-membered movement chain with both chain links associated with PF interpretation. A movement chain with multiple overt copies is a conception that has become prominent with the advent of the copy theory of movement in Minimalism (see, e.g., Nunes 1999, 2004, Hornstein 2001, Richards 2001). Nunes (1999, 2004) bases his implementation of this conception on the notion of linearization in terms of Kayne's (1994) Linear Correspondence Axiom (LCA), which, following Chomsky (1995) is conceived of as a PF filter. He argues that a chain with multiple non-distinct copies must have all but one copy deleted before reaching PF, otherwise it yields a non-linearizable structure. This is because if an element E has two non-distinct copies resulting from movement, with the higher one asymmetrically c-commanding some intermediate element X, which in turn asymmetrically c-commands the lower copy of E, then the result is a set of contradictory linearization instructions, according to which the element E must both linearly precede and linearly follow the intermediate element X. Nunes dubs this process of deletion in a chain Chain Reduction. That it is normally the lower copy that gets deleted is determined by the presence of uninterpretable features.

Within the frame of these assumptions, drawing on work by Bošković (2001, 2002), Fanselow and Ćavar (2000, 2002) and others, Nunes (1999, 2004) proposes that other spell out patterns are also available in a movement chain. In particular, in case the spell out of the higher copy violates some independent requirement, then (and only then) the lower copy can exceptionally be realized at PF instead of the higher copy, emulating the spell out pattern of covert movement. If only some part of the higher copy violates a certain requirement, another possibility is to delete only the offending part from the higher copy, spelling it out as part of the lower copy instead. The same complementary pattern of partial deletion in a chain (aka scattered deletion, or distributed deletion, see also Fanselow and Ćavar 2000, 2002) may come about due to two independent factors that require some parts of two non-tail copies in the same chain to be spelled out overtly in two distinct non-tail chain-link positions. In the latter scenarios, we get a movement chain with multiple overt copies due to the application of deletion to distinct parts of different copies in a chain.

On Nunes’ (1999, 2004) approach, another case of a chain with multiple overt copies arises when some of the links have been tampered with, altering their original content. Nunes argues that if two chain links are distinct, then they do not give rise to contradictory linearization instructions of the sort alluded to immediately above, and the structure remains linearizable even if more than one chain link gets phonetically realized. Nunes (2004) takes the tampering of one of the copies to
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involve morphosyntactic reanalysis, which he assumes to be applicable only to syntactically head-level elements. The key argument he puts forward to support this particular view comes from a range of observations where multiple overt copies can appear in a chain only if the moved element is, or can be construed as, a head-level element, but not if the moved constituent is a phrase with a syntactically complex internal structure.

An option that Nunes does not entertain, but one that is predicted to be available in the model he develops, is the following. It should be possible for partial deletion itself, effected as part of Chain Reduction applying to a phrasal chain, to produce a morphosyntactic form of a given copy that renders it eligible for morphosyntactic reanalysis. That in turn makes available a spell out pattern involving multiple overt copies. I propose that this is precisely what happens in the doubling constructions in (10a), (11b), (10d) and (11d). Specifically, in all these constructions, a PP containing a lexical Ground argument is raised to the preverb position, where it undergoes partial deletion, yielding a PP that is realized at PF as just the postposition. This postposition can then undergo morphosyntactic reanalysis, rendering the copy of the PP in the preverb position distinct from the one in the base position. Given that the two copies that constitute the PP-chain are distinct, a spell out pattern with multiple overt copies does not violate the LCA. In other words, partial deletion within the PP in the preverb position ultimately makes a doubling spell out pattern possible. This possibility is realized in the case of H-preverbs as shown in (10a). The corresponding doubling pattern involving a full lexical PP is not available to U-preverbs, however (see (11a)). The base copy of the PP, instead, is spelled out only partially, as in (11b): the possessor surfaces, but the postposition itself does not.

That the postposition spelled out in Spec,PredP undergoes some sort of reanalysis in that position has been proposed by Brody (2000) and by É. Kiss (2002). Brody (2000) treats Hungarian preverbs analogously to Romance pronominal clitics, moving as phrasal units but getting morphosyntactically realized in the functional head whose specifier they come to occupy in the neutral preverb position. In terms of the structure adopted here, a preverb raised to Spec,PredP would be realized in Pred on Brody’s account. É. Kiss (2002), on the other hand, suggests that a preverb in the Spec,PredP position undergoes reanalysis by virtue of the morphosyntactic encliticization of the verb onto it. Either way, the higher copy in the chain arising from the movement of the PP to Spec,PredP will no longer be

8. Specifically, Nunes takes this reanalysis to involve the morphological fusion operation of Distributed Morphology, a choice that is not directly relevant to our present concerns.
non-distinct from the base copy, allowing Chain Reduction to leave behind two overt copies.\textsuperscript{9}

Morphosyntactic reanalysis of the preverb is logically independent of another process that is associated with the PredP projection, namely the formation of a complex predicate (see Koster 1994). At the same time, the availability of morphosyntactic reanalysis in PredP has a certain degree of naturalness from the perspective of the interpretation assigned to the element in Spec,PredP. In particular, the element in Spec,PredP that undergoes morphosyntactic reanalysis at the level of PredP is semantically interpreted as part of a single complex semantic predicate. Farkas and de Swart (2003) argue that in Hungarian bare nominals must occupy the preverb position (i.e., Spec,PredP) because they are only interpretable if semantically incorporated into the verbal predicate, and the mode of composition of semantic incorporation is available exclusively in the preverb position. Plausibly, this analysis extends to all XP–V complexes formed by a verb and an XP that raises to its preverb position (usually termed ‘verbal modifier’), including bare noun phrase–verb, preverb–verb, ‘full’ lexical PP–verb, and verb (phrase)–verb combinations (cf. Surányi to appear a). That means that all such verbal modifier–V expressions involve semantic incorporation yielding a single complex semantic predicate. This is an explicit reformulation of a central tenet of lexicalist approaches to verbal modifiers, according to which the verbal modifier and the verb form a ‘complex predicate’ (e.g., Ackerman and Webelhuth 1998, see also Neeleman 1994). Koster (1994) argues for an analogous syntactic slot in the Dutch clause (termed PredP), where complex predicates are formed with the verbal predicate.\textsuperscript{10}

Several immediate questions arise from the general approach to the patterns in (10a) and (11b) that has just been proposed. i. First, even though morphosyntactic reanalysis of the higher chain link makes the overt realization of the lower copy possible as far as the LCA is concerned, why is the spell out of the entire lower PP copy obligatory in H-PP chains? In particular, why cannot the base copy

\textsuperscript{9} The choice of the implementation of the reanalysis of the preverb in Spec,PredP is left open here. As Bošković and Nunes (2007: 32) point out, reanalysis into a single morphological element is only one of several conceivable ways in which distinctness of chain links can arise. What seems crucial, however, is that reanalysis in PredP can only take place if the PP in Spec,PredP contains only one morphological word, i.e., if this PP is not reduced to a single overt adpositional head, then doubling in the base copy is impossible.

\textsuperscript{10} The properties of PredP in Hungarian, as conceived of here, and those of PredP in Dutch, as proposed by Koster (1994) diverge beyond this point. For instance, Koster’s PredP is not a unique projection in Dutch, while in Hungarian it is. The uniqueness of PredP in Hungarian limits the number of semantically incorporated pre-verbal elements to one. Accordingly, there can only be maximally one pre-verbal particle (unlike in Slavic), and the number of bare singular nominals in the clause is also restricted to one.
of the PP be reduced to just a dative possessor in the H-class (= (10b)), as in the
U-class? ii. Second, can reduction in the base copy of the PP leave behind a non-
case-marked possessor, rather than a dative possessor? iii. Third, why is full dou-
bbling by a lexical PP (= (11a)) unavailable in the U-class?

I argue that on the approach developed here the unacceptability of this latter
pattern, i.e., (11a), can be related to the grammaticality of (11b). Specifically, (11a)
is unacceptoble because it is blocked by (11b), on the assumption that the general
complementarity of deletion in links of a single chain, which can be witnessed in
“overt movement,” in “covert movement” and in “scattered deletion” PF-realization
patterns alike, is far from being accidental; rather, it is due to a general representa-
tional economy condition applying at the syntax/PF interface:

(12) Minimize redundancy in the PF representation of chains.\(^{11}\)

Condition (12), which governs the application of Chain Reduction, militates
against redundancy in PF representations, and hence favors (11b) over (11a),
where the postposition gets doubled at PF.

Blocking by a more economical alternative requires the alternatives at issue to
be comparable by the given economy metric. (11a) and (11b) may be competing
on account of the fact that the two derivations target the same interpretation, as in
Reinhart’s (2006) ‘interface economy’ approach. However, the two derivations are
arguably based on an identical Numeration of input elements too, assuming that
the non-case-marked and the dative possessor are surface alternants deriving from
the same basic structure. The latter view of possessor forms is shared by Szabolcsi
(1994), den Dikken (1999) and É. Kiss (2000, 2002), despite significant differences
in their analyses of the possessive construction. The overall approach to morpho-
syntax in which this basic view is to be embedded holds of the morphological
forms that get associated with purely formal/grammatical syntactic categories or
features (or of all morphological forms, as in Distributed Morphology) that they
enter the derivation in the mapping from the output representation of syntactic
computation to PF. On such an approach, a possessor is a PP (or a KP, see
Footnote 5) whose head is realized either as the dative case suffix or as zero, de-
pending on its surface position. In short, (11a) and (11b) are true competing alter-
natives, hence the former can be blocked by the latter, given the PF economy con-
dition (12). As the mapping to PF takes place cyclically at the phase level (Chomsky

\(^{11}\) (12) applies in the mapping from (morpho)syntax to PF; i.e., it is sensitive to (morpho-)
syntactic specification, rather than phonological form. On an Internal Merge / Remerge theory
of movement, chains are equivalent to sets of occurrences. The choice between conceptualizing
movement ‘chains’ as a set of ontologically distinct syntactic objects or as a set of occurrences of
a single syntactic object does not bear on the present discussion.
2000 et seq.), the effect of the PF interface economy condition in (12) applying in the mapping is confined at each stage to a single phase.

If deletion of the postposition in (11b) is favored by the PF interface economy condition over the doubling chain in (11a), then why cannot the same deletion pattern obtain in the case of H-preverbs (= (10b))? This question (= i. above) can be answered if we consider the morphological status of H-adpositions, assuming their structural analysis outlined in Section 2.2 above. Recall that a basic morphological property of H-adpositions combining with a lexical Ground argument is that they are affixal, appearing as a suffix on the left-adjacent Ground. The H-adposition bears no possessive morphology when its Ground argument is lexical, and the Ground nominal bears no morphological case. The morphosyntactic behavior of H-adpositions makes them analogous to a Case affix (see Footnote 5). In order to reduce redundancy in the PF representation of the PP chain to zero, the Case affixal H-adposition itself would need to be deleted in the base copy of the PP, yielding (13a), realizing the pattern in (10a) above. However, deleting just a Case affix, leaving behind its host, is not permitted in Hungarian (Kenesei 2000); deleting just the H-adposition also results in ungrammaticality in backward ellipsis (see (13b)), which is known to be more permissive than forward ellipsis. Deletion of the H-adposition would be necessary to generate the pattern in (10b), with a base copy of the PP overtly containing only a dative Ground argument. As deletion of the Case affixal adposition on its own is precluded, the result is ungrammatical, see (13c).

(13) a. *[Benne] maradt [a cikkben] egy sajtóhiba
in-poss.3sg remained-3sg the paper-in a typo-nom intended: ‘There remained a typo in the paper.’

the house-in and the garden-in

c. *[Benne] maradt [a cikk(nek) -ben] egy sajtóhiba
in-poss.3sg remained-3sg the paper-dat -in a typo-nom
‘There remained a typo in the paper.’ cf. (10b)

In fact, the deletion operation employed in (13a) is excluded independently of the affixal status of H-adpositions, provided that H-adpositional phrases have a possessive internal structure (cf. Section 2.2). For a deletion operation that strands a non-case-marked possessor yields ungrammaticality in possessive constructions generally, including nominal possessive phrases (see (14a)). The same holds in
U-adpositional phrases too, which also have a possessive structure (see (14b) and (14c)). Deletion below a dative possessor, by contrast, is well-formed, see (14d).12

(14) a. A: \textit{Kinek a versét olvastad fel?} \\
    who-dat the poem-poss-3sg-acc read-past-2pl \textit{pv} \\
    ‘Whose poem did you recite?’ \\
    B: \textit{*János ---} \\
    John-nom \\
    ‘John’s.’

b. A: \textit{Ki után futottál?} \\
    who-nom after-poss.3sg ran-2sg \\
    ‘Who did you run after?’ \\
    B: \textit{*Mari ---} \\
    M-nom \\
    ‘Mary.’

c. \textit{*[Utána futottam [Mari után]} \\
    after-poss.3sg ran-1sg M-nom after \\
    ‘I ran after Mary.’

d. A: \textit{Kinek a versét olvastad fel?} \\
    who-dat the poem-poss-3sg-acc read-past-2sg \textit{pv} \\
    ‘Whose poem did you recite?’ \\
    B: \textit{Jánosnak ---} \\
    J-dat \\
    ‘John’s.’

Since there is no way to delete the H-adposition only, and the entire PP cannot be deleted for reasons of recoverability, the optimal realization of the PP chain at issue (i.e., a chain with a head link reduced to just the adpositional head and subjected to morphosyntactic reanalysis) involves the full spell out of the base copy of the PP (= (10a)).

12. The term ‘non-case-marked’ is used in the neutral sense of phonologically realized case marking, subsuming any non-Case-marked or nominative forms. The explanation of why deletion immediately below a non-case-marked possessor is ill-formed is not directly relevant to our present concerns. What is important is that the issue of why a deletion pattern like (14c) or perhaps also (13a) is excluded is reduced to a broader phenomenon that pertains to the possessive construction in general. Note that the dative possessor, which can be stranded by deletion, occupies a higher position within the extended projections of the nominal expression than the nominative possessor (Szabolcsi 1994, den Dikken 1999). Deletion immediately below a definite determiner is also ungrammatical, which may be a manifestation of the same restriction, if É. Kiss’s (2000, 2002) proposal is correct that the non-case-marked possessor and the definite determiner occupy the specifier and the head of the same DP projection.
The analysis laid out in this subsection is based on Chain Reduction at the PF interface, which may result both in an ‘overt movement’ chain, and in a ‘scattered deletion’ chain, where the latter is made possible by morphosyntactic reanalysis involving the copy of the moved PP in the Spec,PredP position. ‘Scattered deletion’ yields either a full duplicate PP or a dative quasi-argument in the base position, depending on whether P is affixal or not. A ‘covert movement’ pattern, with a fully reduced chain link in Spec,PredP, is unavailable due to the EPP property of Pred, which does not permit the deletion of the entire upper chain link. Any Spec,FP position that is required by the EPP property of F to be filled must contain a phrase XP with (at least) its head X being overt, i.e., not deleted (see Landau 2007). The fact that the Spec,PredP preverb position is associated with an EPP property requires at least the head of the PP raised there to be overt. As a result, not only the ‘covert movement’ pattern is ruled out, but an alternative ‘scattered deletion’ pattern where it is only the possessor that remains overt in the PP in Spec,PredP is also excluded.

Before proceeding, two notes are in order. The first one concerns the extent of the reduction applied to the chain link of a PP in Spec,PredP. This chain link is impoverished compared to the base copy due to the deletion of the lexical Ground argument. In the case of H-preverbs, this link is at the same time morphologically more specified, as its P head bears an inflection that the corresponding P head of the base copy of the H-PP lacks. If deletion removed the lexical Ground argument entirely, the pattern in (15a) below would be expected to ensue. This, however, is blocked; not only on account of the fact that in the H-class the P that would be stranded is affixal, but also on account of the fact that adpositions in Hungarian heading a possessive PP cannot syntactically lack a possessor, i.e., a Ground argument (e.g., *[pp után]). Chain Reduction, therefore, instead of deleting the Ground DP entirely, deletes all of its features except for its phi-features. The DP bearing only phi-features is then interpreted by morphology as a phonologically null pronoun, pro. In the context of a pronominal possessor, inflections on P are generally overtly realized (compare (4a) vs. (4b)). The same is true of (15b). Deletion may apply also internally to the set of phi-features, deleting a [plural] feature. This is

13. A notable example of morphological repair in ‘scattered deletion’ contexts comes from “split” DPs in German. If deletion in a DP-topicalization chain involving a singular count nominal leaves behind the numeral/indefinite article, the rest of the DP is expected to surface without an article in the topic position. This, however, cannot be the case, as singular count nominals cannot appear without a determiner in German. The situation is resolved either by inserting an article into the topicalized DP, or by adding plural morphology (the latter is illustrated in i., from Fanselow and Ćavar 2002).

i. Zeitungen liest er nur eine Zeitung
   newspaper-pl reads he-nom only one newspaper
   ‘As for newspapers, he only reads one.’
permitted by the recoverability condition on deletion, since the same feature is present on the Ground argument within the other PP-chain link. When this happens, a plural DP Ground argument reduces to a singular pro. Since the inclusion of [plural] in the set of deleted features is an option, in principle the inflected adpositional preverb will optionally agree in number with the quasi-argument, e.g. (15c). Note that as expected, the possessor is realized as the grammatically unmarked type of personal pronoun in the language, i.e. as covert pro, rather than as an overt pronoun, see (15d). In case the Ground argument is pronominal in the base-generated PP, redundancy is minimized in the PP-chain in the mapping to PF only if the base copy of the PP is fully deleted, see (15e). This is because in such cases the quasi-argument is represented by the pronominal preverb itself. All of (15) can be replicated for U-adpositional preverbs (not demonstrated here for reasons of space), to which the same account extends without change.

\[(15) \begin{align*}
\text{a.} & \quad *[\text{Mari}_{-}\text{hoz}] & \text{ért} & [\text{Marihoz}] \\
& \quad \text{M. -to touched-3sg M-to} \\
\text{b.} & \quad [\text{pro hozzá}] & \text{ért} & [\text{Marihoz}] \\
& \quad \text{to-poss.3sg touched-3sg M-to} \\
\text{c.} & \quad \text{János neki ment / nekik ment a járókelőknek} \\
& \quad \text{J.-nom to-poss.3sg went-3sg / to-poss.3pl went-3sg the passers-by-dat} \\
& \quad \text{‘John bumped into the passers-by.’} \\
\text{d.} & \quad *[\text{ő hozzá}] & \text{ért} & [\text{Marihoz}] \\
& \quad \text{she-nom to-poss.3sg touched-3sg M-to} \\
& \quad \text{‘He touched Mary.’} \\
\text{e.} & \quad \text{János } [\text{pro hozzá}] & \text{ért} & *([\text{pro hozzá}]) \\
& \quad \text{J-nom to-poss.3sg touched-3sg to-poss.3sg} \\
& \quad \text{‘John touched her.’}
\end{align*}\]

The spell out pattern in (11b) is the case of ‘scattered deletion’ in a U-PP chain. This pattern is straightforward to account for in the above terms of Chain Reduction: the morphological form of the adposition appearing in the higher copy is identical to that of the deleted adposition in the base copy, as illustrated in (16).

In much the same way, if lexical DP Ground arguments are assumed not to bear any phi-features (e.g., Bartos 2000), then either pro or the (syntactic features corresponding to the) inflectional morphology on P must be assumed to be inserted by a morphosyntactic repair mechanism.

The issue to be explicated is why a dative possessor can surface in a U-PP in this construction, whereas normally a dative possessor cannot appear inside a U-PP: a dative possessor and a U-adposition can never be realized as a constituent. This is shown in (16b), where, to warrant that the dative possessor and the inflected P form one PP constituent, this PP is placed between the two component parts of the correlative scalar additive particle még...is ‘even’ (lit. ‘still...too’), which can flank only a single constituent. The result is ungrammatical.

   after-poss.3sg ran-1sg M-dat after-poss.3sg
   ‘I ran after Mary.’
   b. *Még [Marinak utána] is meg fordulnak a fiúk
   still Mary-dat after-poss.3sg too pv turn-3pl the boys
   intended: ‘Boys turn their heads even after Mary.’

As known from Szabolcsi’s work (e.g., Szabolcsi 1994), the dative possessor occupies a higher position within the hierarchy of extended projections of the nominal expression than its nominative counterpart (see also den Dikken 1999, É. Kiss 2000, 2002). Call the functional projection harboring this higher position FP. I suggest that although U-postpositions (and H-postpositions) can function as a possessum, they are syntactically defective. An analogous proposal is put forward by den Dikken (2005) regarding personal pronouns of the language. In essence, his proposal is that these elements are structurally defective in that they do not project a DP layer, nor any higher functional phrase, such as FP. However, if some syntactic condition (e.g., an [EPP] feature associated with the subject position, or the “objective” conjugation of the verb) requires a DP layer, they will project it. Adpositions are similar to personal pronouns in a number of regards: they are closed class items, they do not have a plural form, and they cannot be preceded by an article. I suggest that they are structurally defective in exactly the same way as personal pronouns, viz., they normally do not project a DP layer either, nor any higher functional projection, including FP. FP is projected only when the possessor has to be raised there. This happens if the possessor subextracts from the PP and must pass through Spec,FP as an escape hatch to do so (see Szabolcsi 1994), or if the lower segment of the adpositional phrase undergoes deletion, which deletion operation the possessor needs to escape, as in (16a). When neither of these independent factors require FP to be projected, it is not present in the structure. This also explains a restriction on the appearance of a dative form, namely, that a dative possessor form is unavailable in a PP-internal position, see (16b).

15. For both den Dikken (1999) and É. Kiss (2000), dative case is an exponent of P heading a PP that corresponds to the possessor phrase. While for É. Kiss this PP is generated as a comple-
In (16a), an example of the Chain Reduction pattern (11b), it is the PF interface economy condition (12), requiring the minimization of the redundancy of the PF representation, that triggers the deletion of the lower part of the base copy of the PP. Since a non-case-marked possessor cannot appear as a remnant of that deletion (see (14c) and supra), the Ground argument needs to be raised to the (higher) dative possessor position: therefore, FP needs to be projected to harbor the possessor.16

3.2 Chain reduction by phase

Having proposed a direct dependency account of the (un)availability of the constructions in (10a–c) and (11a–c), as well as of the additional patterns in (13a,c), (14c) and (15), let us turn now to constructions where the quasi-argument associated with the U- or H-preverb is extracted from its base position across the preverb. The spell out patterns available in such a scenario are given in (10d,e) and (11d,e) above. The relevant generalizations regarding the form of the quasi-argument appearing in positions in the clause that precede the pre-verbal preverb are as follows. An H-preverb can be associated in these positions with a full H-PP double, but not with a dative nominal. A U-preverb can co-occur with either a dative nominal or a full U-PP double. The first generalization is unsurprising, given that the dative form was argued to be unavailable within H-PPs generally (cf. (13c)). Chain Reduction reduces the lexical possessor in the H-PP copy in the preverb position (to a pro), so it is realized as part of the quasi-argument PP, as before. What needs to be explained is how come a full U-PP double becomes an available alternative as the realization of the quasi-argument in these examples.

To address this issue, a further observation needs to be made regarding this general construction type. The construction involves three copies of the PP: a base

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16 A group of speakers appear to disprefer the marked option of projecting the adpositional phrase up to FP, and hence they judge the pattern in (11b) to be degraded. Although there is a significant degree of idiolectal variation in this regard, for these speakers the unacceptability of the doubling pattern (11a), illustrated in i. below, tends to be ameliorated. This is expected: given that the adposition in the lower copy cannot be deleted on its own if it leaves behind a non-case-marked possessor (cf. (14c)), to the extent that a PP structure with a dative possessor in the FP projection is unavailable, the remaining option is the doubling pattern, which therefore arises as the optimal PF realization despite the double spell out of the adposition in the PP-chain.

i. [% Utána] futottam [Mari után] after-poss.3sg ran-1sg M-dat after 
'I ran after Mary.'
copy, a copy in the Spec,PredP position, and a copy outside of PredP, where this latter copy is overt by assumption. As shown below, the copy in Spec,PredP cannot be spelled out as a full PP, as in (17a). This is expected, for two reasons. First, (17a) involves more PF redundancy than the grammatical version of (17b), therefore it should be blocked. Second, a full PP copy cannot undergo morphosyntactic reanalysis, which is a prerequisite of any doubling (see Section 3.1). Observe that the copy in Spec,PredP cannot be reduced to zero, but must be realized overtly, with its possessor reduced, see (17b). In other words, the PP cannot raise on by ‘overt movement’ from Spec,PredP into a higher position. This ‘freezing’ effect is reminiscent of freezing in A-bar movement or in A-movement to a Case position (for recent discussion, see Rizzi 2006, and Boeckx 2003). Chomsky (2008) argues that apparent cases of phi-related A-movement feeding an A-bar movement operation are to be analyzed as involving two ‘parallel’ movements: one movement chain involves the copy in the Case position and the base copy, and a second chain consists of the copy in the A-bar position and the base copy. A characteristic property of a ‘frozen’ head link of a chain is that it is saturated, i.e., all its uninterpretable features are checked / valued. The structure and movement dependencies in a construction like (17b)=(7a) along these lines are outlined in (17c).

(17)  a. *Mari után bezzeg Mari után futottál
      M-nom after in.contrast M-nom after ran-2sg

     b. Mari után bezzeg *(utána) futottál    cf. (7a)
      M-nom after in.contrast after-poss.3sg ran-2sg

     c. \[TopP [Mari után]_i \ldots [PredP [pro utána]_i, futottál
      M-nom after after-poss.3sg ran-2sg
     [Mari után]_i,j] \]
      M-nom after
      ‘As for (after) Mary, you did run after her.’

The question we asked above, viz. why the copy of the U-PP outside PredP (with subindex j) is not reduced in this construction, is resolved once the phasal structure of the Hungarian clause is taken into account. It is argued in Surányi (2002, 2004) that the projection harboring the preverb position (which is labeled here as PredP) and the projection containing the fronted focus in its specifier (call it ‘FocP’) are phasal categories. This claim is amply motivated in the case of FocP, for which this proposal has been made repeatedly over the past years, while it may seem less well-motivated for PredP. However, to the extent that phases are categories that have relative independence at both the LF and the PF interface, PredP displays phasal characteristics. At the LF interface, PredP is the category that corresponds to the comment part of the clause (see É. Kiss 2002 and references there).
The view that Hungarian preverbs are secondary predicates (e.g., É. Kiss 2005, 2006a) as well as the assumption that secondary predicates are generated in a syntactic predicate position together imply that preverbs in Spec,PredP are inverted predicates. If so, PredP is a phase on den Dikken’s (2007) approach to phasehood, where any syntactic domain that is semantically interpreted as involving predication is a phase by default. On the PF side, in a neutral clause PredP is the clausal domain that is mapped by rules of prosody onto an intonational phrase. Nuclear Stress falls by default on the leftmost phonological phrase contained in PredP (see e.g., É. Kiss 2002). That PredP is a phase in Hungarian is also entailed by den Dikken’s (2007) theory of phase extension, according to which phasal domains are extended by head movement of the phase head. Given that the verb raises (from V to) v to Pred, PredP becomes a phase by extension of the vP phase up to PredP.

We have seen that interface criteria for phasehood imply that PredP is a phase. Note that these criteria suggest that the domain that Transfer maps to the interface system is PredP itself, rather than the complement of Pred, as entailed by Chomsky’s (2000) model (see e.g., Abels 2003). Elements in the Edge of a phase need to be accessible for further movement, hence they cannot belong to the domain of Transfer of a phase. For reasons independent of the present concerns, I argued in Surányi (2006, 2008) in favor of a notion of Transfer domain that includes the phase head and any elements Merged to the projection of the phase head that are fully saturated (fully checked/valued, with no need for being moved on) at the stage when the phase is completed and is accessed by the interface systems. Edge has no status other than being the set of elements that do not fall inside the domain of Transfer. I will adopt this division between Transfer domain and Edge here.17

Given that PredP is phasal, movement of the base copy of the PP to a position outside of PredP in (17c)=(7a), as well as in (7b), must proceed through the Edge of PredP, before landing in its surface position higher up in the clause. The copy of the PP in the preverb position is fully saturated, and cannot serve as input to a movement operation. This intermediate stage of the derivation is depicted in (18).

\[(18)\] $\ldots [\text{PredP: Edge} [\text{Mari után}]_j [\text{PredP} [\text{pro utána}]_i \text{ futottál [Mari-után]_j_i_j ]}]
\]

M-nom after after-poss.3sg ran-2sg M-nom after

Note before proceeding that if the PP in the preverb position was not fully saturated and/or would still need to move further, then it would not count as being part of the Transfer domain of the PredP phase in the sense defined immediately above: only those elements are not subjected to Transfer in the left periphery of a phase along with the rest of the phase that are yet to be moved on in order to check

17. Compare also Fox and Pesetsky’s (2005) approach, where the domain of linearization upon Transfer is the whole phase rather than just the complement of the phase head.
some feature higher up. A PP in the preverb position that is to be moved on to check some feature should therefore be part of PredP’s Edge, from where it can raise higher into the next higher phase. Such a derivation, however, typically gives rise to a semantic conflict. In particular, an element that is interpreted in the preverb position as semantically incorporated, an expression of a predicate (semantic) type forming part of a complex semantic predicate (see Section 3.1), cannot be simultaneously interpreted as a referential (aboutness) topic, as a quantifier expression, or as an identificational focus. Indeed, preverbs in general, (reduced or full) PPs among them, cannot be raised on to positions where they would receive any of these interpretations.18

Upon the completion of the PredP phase in (18), it is accessed by the interface systems, and Chain Reduction applies to it. Chain Reduction, which accesses the whole PredP phase, can only perform deletion inside the domain of Transfer. As the copy of the PP in Spec,PredP is fully checked, it falls inside the domain of Transfer, whereas the copy in the Edge of PredP does not. It follows that reduction can only affect the PP in Spec,PredP. Given the PF economy condition (12) militating against duplication, this copy must be reduced up to convergence. Due to the EPP property of Pred, as before, the copy of the PP in Spec,PredP cannot be fully deleted: the postposition must remain overt. The duplication of overt H-preverbs by a full copy of the PP in the pre-verbal domain, as in (10d) above, is derived the same way as above.19

That the lower copy of the PP can be raised to the edge of the PredP phase in a scenario where the PP is to be raised on to a position within a higher phase is due to the fact that the copy of the PP in Spec,PredP can undergo reduction, and in turn, reanalysis. Given that the PP in Spec,PredP cannot itself be raised on as a result of its semantic incorporation, another copy is raised to the Edge of PredP instead. The lower copy is accessible for movement to the phase Edge precisely because the copy in Spec,PredP undergoes reduction and reanalysis upon the completion of the phase, thereby becoming inaccessible for further movement,

18. Preverb raising to a higher clause is well-formed, nevertheless. This is expected, assuming that this movement does not proceed through a Spec,PredP in the local clause: when a preverb is raised, no PredP is projected in the clause of its origin (e.g., É. Kiss 2004).

19. Note that the PP in (inner) Spec, PredP and the one in the Edge of PredP, although structurally adjacent in the tree, belong to different domains upon Transfer: the former is internal to the Transfer domain, while the latter is not. In this regard the case of these two occurrences is no different from the case of the occurrences of any other element moved to a phase-internal (and Transfer-domain internal) position (such as a subject moving to a Case position), and moved also to the phase Edge position (say, Edge of CP).
Adpositional preverbs, chain reduction and phases

and inert for economy measures like Closeness/Shortest Move. Ultimately, then, the availability of reduction, and hence reanalysis, is what licenses the movement of the lower PP copy to the Edge of PredP, in order for it to remain accessible for further movement.

The reason why a full U-PP duplicate can appear in (17c)=(7a) and (7b) is that due to its movement out of PredP, the duplicate PP is outside the local domain of those elements of the PredP phase that Chain Reduction can affect (= the domain of Transfer of PredP). Chain Reduction applies next time upon the completion of the next higher phase. Upon interpreting the next higher phase for the purposes of the interface systems, the lower phase is not processed again. Therefore the copy of the PP raised outside of PredP will be the only copy that can be accessed by Chain Reduction, hence no deletion applies to it.

This leads us to the question of how the alternative pattern with a dative quasi-argument is derived, which was shown in (8) above to be available to U-PPs (cf. (11e)). It was argued at the end of the previous subsection that subextraction of the possessor from PPs cannot be generally blocked. Indeed, on the present assumptions the availability of the pattern (8) suggests that subextraction of the dative possessor takes place to the pre-verbal field. The intermediate stage at which the dative possessor is subextracted to the Edge of PredP is shown below (cf. (11e)):

(19) \[
\text{…[PredP: Edge } \text{Marinaki [PredP } \text{pro utána] } \text{futottál...}
\text{M-dat after-poss.3sg ran-2sg}
\text{[Marinaki utána],]} \]
\text{cf. (8)}
\text{M-dat after-poss.3sg}

The source of (8) cannot be a quasi-argumental PP, reduced to a dative possessor. This is because at the stage when Chain Reduction can affect the quasi-argumental PP, i.e., when it forms part of the Transfer domain of a phase, its copy in Spec,PredP has already been Transferred. Therefore no reduction of the fronted quasi-argumental PP can take place. In other words, the only possible derivation yielding structures like (8) is that in (19).

3.3 Options for focus: Chain reduction and phase extension

The last syntactic context to be discussed here involves a PP-chain targeting a syntactic focus position. It may have appeared that the availability of the doubling of the U-preverb by a full U-PP quasi-argument is a matter of whether the quasi-argument is located in the pre-verbal or in the post-verbal domain. This, however, is

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20. I assume that syntactic operations are fundamentally free, and conformity to derivational economy principles is checked cyclically at the phase level (see Chomsky 2008), once a phase is completed.
not the case. If the quasi-argument is in the pre-verbal focus position, doubling is ruled out. In the context given below, which requires ‘(after) Mary’ to be in focus, (20a) is unacceptable. The well-formed alternative is (20b), with the full U-PP as a pre-verbal focus and without a U-preverb. That this effect is not related to the focus status of the lexical PP is evidenced by the fact that when this PP appears as the focus of the next higher clause, doubling is available once again, see (21).

(20) I had to decide which one of them to run after, and eventually…
   a. *MARI UTÁN futottam utána
      M-nom after ran-1sg after-poss.3sg
   b. MARI UTÁN futottam
      M-nom after ran-1sg

(21) Csak MARI után szeretném, ha utána futnál
    only M-nom after would.like-1sg if after-poss.3sg would.run-2sg
    ‘It’s only Mary that I’d like you to run after.’

For an explanation of the contrast in (20), the account of Hungarian “structural” focus needs to be made explicit. Employing Reinhart’s (1995) general approach to the syntax of focus, Szendrői (2003) proposes that Hungarian focus fronting takes place in order to bring the focus element into a syntactic position to which the Nuclear Stress (NS) is assigned by default. As noted in the previous subsection, default NS falls on the leftmost phonological phrase in the main intonational phrase of the clause, which in a neutral clause corresponds in the syntax to PredP. A focus can come to occupy the default NS position only if another projection (standardly labeled as ‘FocP’) is erected on top of PredP, which projection is then determined by rules of the syntax/prosody mapping to be the constituent mapped onto the main intonational phrase of the clause. Focus is raised to the left edge of this constituent to receive the default NS.21

In conclusion, the structure of a neutral clause involves a PredP as in (22a) below, while a clause containing a fronted focus expression has the structure in (22b), where the verb is raised from Pred to the head of FocP. (22a) represents a clause where the focus is distinct from the preverb element. In the cases under discussion in this subsection, however, it is precisely the PP functioning as the preverb that is focused. As Szendrői argues, it follows from her account that an element raised to the neutral preverb position does not need to undergo any

---

21. For the details see Szendrői’s work, where the labels employed for PredP and FocP are different. Category labels, however, are immaterial for the present purposes. The label ‘FocP’ is used here simply to designate a functional phrase that harbors the focused element. The relevant aspects of the rudimentary structural account of focus outlined in the main text are readily preserved in several conceivable alternative approaches, including that developed in Surányi (to appear b).
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further movement in order to function as focus.\(^{22}\) This is because the NS falls by default on the the element in Spec,PredP even without raising it to the specifier of a projection erected on top of PredP to harbor the focus element. As a consequence, when the PP in Spec,PredP functions as the focus, for reasons of economy, no ‘FocP’ is projected above PredP and the PP stays in Spec,PredP. The structure of such clauses, represented in (22c) by equating the label PredP with the label FocP (cf. fn. 21), is therefore the same as that of a neutral clause in (22a).

\[
\begin{align*}
(22)\quad &a. \ [\text{PredP} \ PP \ V \ [\ldots]] \\
&b. \ [\text{FocP} \ focus \ V \ [\text{PredP} \ PP \ (V) \ [\ldots]]]
\end{align*}
\]

On the present assumptions, what distinguishes the pre-verbal focus position in (20) both from the other pre-verbal positions in (7a–b) and (8) treated in the previous subsection and from the focus position in (21) is that it is local to the preverb. In terms of the view of Chain Reduction adopted above, the relevant sense in which the focus position in (20) and the preverb position are local to each other should be membership in the same phase, more specifically, in the same Transfer domain.

The scenario in which the focus position and the preverb position belong to the same Transfer domain can be realized in two ways, depending on whether or not partial reduction applies to the copy of the PP in the Spec,PredP preverb position. Recall that in general the copy of the PP in Spec,PredP can be spelled out in full, which corresponds to an overt movement pattern (cf. (10c) and (11c)), or else it can be reduced such that only the (inflected) postposition gets spelled out (cf. (10a) and (11b)). When the PP in Spec,PredP is reduced, its lexical Ground argument is not realized at PF. If so, it cannot function as a focus. The only way the Ground argument can be focused in such a scenario is if the base copy of the PP is raised to the focus position above PredP. A consequence of V-movement from Pred to the head position of FocP, adopting den Dikken’s (2007) theory of phases (cf. Section 3.2 above), is that the PredP phase is extended up to FocP. As a result, no stop-over at the Edge of PredP is required, and all three copies of the PP end up belonging to a single phase, viz. the FocP-phase. The resulting syntactic representation with the the two PP-chains is given in (23a) below. Given that the copy of the PP in the Spec,FocP focus position is fully saturated, it forms part of the Transfer domain of the FocP-phase. By assumption, the copy in Spec,PredP is partially reduced, and undergoes morphosyntactic reanalysis. In the relevant sense, (23a) is on a par with (16a) (instantiating the pattern in (11b)): the spell out form that incurs the minimal amount of redundancy in the PF representation will be one with

\[^{22}\text{This is also a consequence on the integrated interface-based account of Hungarian focus of Surányi (to appear b).}\]
complementary deletion. Specifically, PP\textsubscript{j} in Spec,FocP is reduced to just the dative possessor, and the whole of the base copy is deleted. The outcome is given in (23b), and it is exemplified by (23c). The (partial) doubling pattern in (20a) violates the economy condition limiting redundancy at PF in the same way as was argued for (11) above (cf. pattern (11a)).

\begin{align*}
(23) & \quad \text{a.}\ FocP,PP_jV,\ PredP,PP_i(V)\ [\ldots PP_{i,j}\ldots] \\
& \quad \text{b.}\ FocP,\ [\text{Marinak}\ ---],V,\ PredP,\ [\text{pro}\ utána}]_i(V)\ [\ldots [---]_{i,j}\ldots] \\
& \quad \text{c.}\ \text{MARINAK futottam utána} \\
& \qquad \text{M-dat ran-1sg after-poss.3sg} \\
& \qquad \text{‘It is Mary who I ran after.’}
\end{align*}

If the head of the PP involved in this construction is a H-adposition, rather than an U-adposition, the optimal pattern of deletion, given in (24a), is on a par with that in (10a) above, exemplified by (15b).

\begin{align*}
(24) & \quad \text{a.}\ FocP,\ [\text{Marihoz}]_jV,\ PredP,\ [\text{pro}\ hozzá]_i(V)\ [\ldots [---]_{i,j}\ldots] \\
& \quad \text{b.}\ \text{MARIHOZ értem hozzá} \\
& \qquad \text{M-to touched-1sg to-poss.3sg} \\
& \qquad \text{‘It is Mary who I touched.’}
\end{align*}

We have seen what happens when the PP in Spec,PredP is (partially) reduced by Chain Reduction. If it is not reduced, we derive another scenario where the focus position and the preverb position belong to the same Transfer domain. This is because if the PP in Spec,PredP is not reduced, it can function as a focus without being moved on. The resulting structure is therefore that in (25a), corresponding to the scheme in (22c). Since the copy of the PP in Spec,PredP is by assumption not reduced, the base copy will be deleted in full. It is this structure and its associated spell out pattern that (20b) above instantiates. If the relevant PP is headed by a H-adposition, the spell out pattern remains the same, see (25b).

\begin{align*}
(25) & \quad \text{a.}\ PredP=\text{FocP},\ [\text{Mari után}]_iV\ [\ldots [---]_{i}\ldots] \\
& \quad \text{b.}\ PredP=\text{FocP},\ [\text{Az autóhoz},\ toltam\ [\ldots [---],\ egy\ bevásárlókocsit]] \\
& \qquad \text{the car-to pushed-1sg a trolley-acc} \\
& \qquad \text{‘It is the car that I pushed a trolley to.’}
\end{align*}

This account of the possible spell out patterns associated with constructions involving a focused PP makes the following predictions regarding the actual availability of the two possible patterns (cf. Footnote 6). First, if in a particular PP–verb combination the PP cannot be reduced in the Spec,PredP preverb position in a neutral clause, then the pattern in (23a), realized as (23b) or (24a) depending on the class of the adposition, which also involves reduction of the PP in Spec,PredP,
is predicted to be unavailable. Second, if in some PP–verb combination the PP cannot be spelled out as a full copy in the Spec,PredP position in a neutral clause, then the pattern in (22c), realized as (25a,b), is also expected to be unacceptable. To the extent that I have been able to verify, both predictions are borne out.

This concludes the outline of the direct dependency approach being proposed. In what follows, this approach is compared to the only sufficiently elaborate syntactic account of the U- and H-preverb constructions that has been developed, namely, that of É. Kiss (1998, 2002).


4.1 Indirect dependency by extraposition

On É. Kiss’s (1998, 2002) account the basic alternation between (1b) and (9a) above is treated in terms of what is contained in the PP constituent that gets moved to the neutral preverb position, i.e., to Spec,PredP. In (9a) it is the full PP that raises to Spec,PredP, while in (1b), the same movement operation is preceded by another transformation that removes the quasi-argument phrase from inside the PP (see (26)). This transformation, which relocates the PP-internal quasi-argument to some position within the post-verbal domain, is identified as extraposition.

(26) a. János futott [tk utána] [az autónak]k
    J.-nom ran-3sg after-poss.3sg the car-dat

b. János [tk utána]i futott ti [az autónak]k
    J.-nom after-poss.3sg ran-3sg the car-dat

‘John ran after the car.’

This remnant movement account of U-preverbs relates them to a base-generated PP with a possessive structure (Marácz 1986), a view the present paper has also adopted. Therefore the dative case of the quasi-argument is put down to the fact that it originates as the possessor of that base PP. One scenario in which a possessor bears dative in Hungarian is when it is has been extracted from the possessive phrase headed by the possessum (Szabolcsi 1983, cf. Section 3.1 above). This is the case when the possessor is extracted from the possessive phrase by movement. Since on É. Kiss’s analysis the quasi-argument undergoes extraposition from the possessive PP, its dative case form follows.

The basic optionality of number agreement with a plural dative quasi-argument (cf. Section 3.1, supra (15)) is also accounted for, as this is a general property of possessive constructions where the possessor is dative (see e.g., É. Kiss 2002).
The alternation in the Spec,PredP position between the preverb and the full PP headed by the U-postposition is captured in a straightforward manner: when extraposition of the possessor from the PP does not take place, then the PP is moved to Spec,PredP as it is.

The syntactic relatedness of a U-preverb to the quasi-argument as its possessor at a previous stage of the derivation seems to be well-supported, and is also assumed by the account proposed in this paper. The specific syntactic implementation of this relatedness as involving extraposition of the dative quasi-argument faces the following issue, however. It can be shown that the extraposition of the possessor from the underlying PP is not independently attested. If the preverb position is filled by some other preverb, the dative possessor cannot occur, see (27a). That it cannot appear even in cases where the remnant PP undergoes subsequent movement (as it putatively does in the U-preverb construction, according to (26b)) is exemplified by (27b).

(27) a. Péter (*Marinak,) ki futott [t utána]
P-nom M-dat out ran-3sg after-poss.3sg
tegnap/hirtelen (*Marinak,)
yesterday/suddenly M-dat
intended: ‘Yesterday/suddenly Peter ran out(side) after Mary.’

b. [ContrTop t, Utána] j Péter futott fel tj (*Marinak,)
after-poss.3sg P-nom run-past-3sg up M-dat
a harmadikra
the third-onto
‘As for (running) after her, it’s Peter who ran up to the third floor (after Mary).’

In short, the extraposition of the Ground argument from the PP, a crucial ingredient of the remnant movement analysis of U-preverbs, is not attested independently of the U-preverb construction.

In addition, the analysis does not extend to the cases of preverb doubling introduced and discussed in Section 3 above. In order to be able to generate the doubling pattern and explain its restricted availability, the analysis needs to be coupled with an independent structural account of the doubling construction. Even if such a two-part overall treatment can be made to work empirically (which has not been demonstrated), it is a priori less appealing than a unified analysis of both the dative and the doubling pattern. Precisely such a unified analysis is offered above.
4.2 Indirect dependency by apposition

Moving on to H-preverbs now, É. Kiss (2002) proposes to generate them as a complement PP, which is moved to the neutral preverb position to the left of the verb. The quasi-argumental PP may optionally appear in the construction as an adjunct co-indexed with the H-preverb:23

\[
\begin{align*}
\text{János} & \ [\text{pro hozzá}]_i \ \text{ért} \ \ldots \ t_i \ \ldots \ [\text{a falhoz}]_i \ \ldots \\
\text{J.-nom} & \ [\text{pro to-poss.3sg touched-3sg} \ \ldots \ \text{the wall-to} \\
\end{align*}
\]

‘John touched the wall.’

The analysis explains how it is possible in the first place to have number agreement between the H-preverb and a plural quasi-argumental PP. This derives from the appositive relation between the coindexed incorporated complement PP and the adjunct PP that ‘specifies’ it (the analysis is analogous to Jelinek’s (1984) approach to non-configurational incorporating languages).

The appearance of the full PP form in Spec,PredP can be explained by a simple extension of the account sketched in (19). In these cases, the quasi-argument is not a co-indexed adjunct, but the complement PP itself. That is, the complement PP that raises to the Spec,PredP position is not pronominal, but lexical. In other words, the optionality of the quasi-argument is ascribed directly to the optionality of the apposited adjunct phrase.

On this account it remains unclear what would explain the morphosyntactic matching effect (i.e., formal identity) that holds between the H-preverb and the adverbial suffix heading the quasi-argumental PP, illustrated in (5) above. An appositive, semantic ‘specifying’ relation should not impose such a formal identity requirement. Compare the case of the H-preverbs to that of adverbial locative preverbs, illustrated in (29). No formal identity requirement holds in the latter case, to which the assumption of an appositive relation between the preverb and the quasi-argument can therefore be applied.24

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23. É. Kiss (1998) analyzes H-preverbs as a lexical part of the complex verb when it co-occurs with the quasi-argumental PP, whereas in the absence of a quasi-argumental PP she takes H-preverbs to be complement PPs (containing pro), which get moved to the neutral pre-verbal position for preverbs. É. Kiss (2002) improves on this account in several regards, which is why I only discuss this latter proposal.

24. Note that the matching effect is not morphophonological but morphosyntactic in nature: the actual morph lexicalizing the P head in the preverb position and the P head of the quasi-argument may differ, sometimes radically, when a suppletive morpheme is employed (for a discussion of these, see Bartos 2000). For instance, the stative locative P ’on’ is lexicalized as rajta
(29) *Fel ment / a másodikra / Marihoz / a mennybe / a tizedikig*
up went-3sg the second-onto / M-to / the heaven-into / the tenth floor-up.to
‘He went up to the second floor/ to Mary/ to the heaven/ as high as the
tenth floor.’

Second, the grammaticality of a lack of agreement between a plural quasi-argu-
ment and a singular H-preverb is also unexpected for an appositive construction.
É. Kiss (2002: 197) likens this lack of agreement to the case of a possessive DP like
(30a), which she considers to be a manifestation of the avoidance of a redundancy,
viz. between the plurality of the possessor and the plurality of the agreement mor-
pheme on the possessum. Whatever the cause of the lack of agreement in the nom-
inal possessive construction, the latter phenomenon itself is clearly different. For
one thing, it involves anti-agreement: the absence of number agreement on the
nominal possessum is obligatory. Further, in the nominal construction the plural
marking is omitted on the possessor, whereas in the H-preverb construction, if
number agreement is dropped, then it must be dropped from the possessum, i.e.,
the P head; cf. (15c) vs. (30b). Finally, appositive constructions do not display such
a formal redundancy based absence of number agreement, see (31a). Rather, ap-
positive constructions exhibit meaning-based agreement, see (31b). The same is
not true of H-preverbs (see (31c)):

(30) a. *az ő / *ők autójuk*
the pron.3sg-nom / pron.3pl-nom car-poss.3pl
‘their car’

b. Értük mentem a gyerekekért / *a gyerekekért
for-poss.3pl went-1sg the kid-pl-for / the kid(sg)-for
intended: ‘I went to fetch the kids.’

(31) a. *ő / ők nyelvészek
pron.3sg / pron.3pl linguist-pl

b. Értük – a három gyerekért – érdemes volt élni
for-poss.3pl – the three kid(sg)-for – worth was live-inf
‘It was worth living for them, the three kids.’

‘on it/him/her’ in the context of a (covert) pronominal possessor, while it is spelled out as -VN
‘on’ when the possessor is lexical:

i. Rajta felejtette a szemüvegét az orrán
on-poss.3sg forgot-1sg the glasses-poss-3sg-acc the nose-poss-3sg-on
‘She left her glasses on (forgot to take them off).’
c. Érte / *Értük mentem a három gyerekért
for-poss.3sg / for-poss.3pl went-1sg the three kid(s)-for
intended: ‘I went to fetch the three kids.’

Third, CED-island phenomena testify that a claim that non-pronominal (i.e., lexical) quasi-arguments appear as (appositive) adjuncts is too strong: at least some are opaque to subextraction (32b), while others are not (32a):

(32) a. Melyik politikussal találtál rá egy interjúra
which politician-with found-2sg onto-poss.3sg an interview-onto
az újságban?
the paper-in
‘Which politician did you spot an interview with in the paper?’

b. *Melyik politikussal mentél érte egy interjúért
which politician-with went-2sg for-poss.3sg a interview-for
a könyvtárba
the library-into
intended: ‘Which politician did you go for an interview with to the library.’

Fourth, it remains open why pronominal forms that stay in their postverbal base position, instead of being moved up to the neutral preverb position, cannot be associated appositively with adjuncts, see (33a). As (33b) demonstrates, the same is available with adverbial preverbs like fel ‘up’ (exemplified in (29) above). In (33b) the adverbial preverb and its associated adjunct form an appositive complex, which is fronted as a constituent. By contrast, in the case of H-preverbs no appositive complex can be formed that could undergo movement as a unit (33c).

(33) a. *El mentem hozzá Marihoz
pv went-1sg to-poss.3sg M-to
intended: ‘I went to (see) Mary.’

b. [ContrTop Fel a mennybe], csak kevesen jutnak ti,
up the heaven-into only few.people-nom get-3pl up

c. *[ContrTop Hozzá Marihoz], el mentem ti, cf. (33a)
to-poss.3sg M-to pv went-1sg

Finally, it is without an explanation why the appositive construction assumed for H-preverbs remains unavailable to the U-class:

(34) *?Utána futottam végül Mari után
after-poss.3sg ran-1sg finally M-nom after
‘I finally ran after Mary.’
The above analyses of H-preverbs and of U-preverbs are logically independent, nevertheless, they have a shared property: the representation of both constructions involves three distinct syntactic categories, and the quasi-argumental phrase is related to the neutral preverb position Spec,PredP only in an indirect manner. The two categories that form part of both representations is a base-generated PP and the PP occurrence in Spec,PredP that corresponds to the preverb. The third category is the quasi-argument, which in the case of H-preverbs is an adjunct specifying the denotation of the base occurrence of the H-preverb, and in the case of the U-class it is associated to a position within the base occurrence of the U-preverb by an extraposition transformation.

The proposal put forward in the present paper is based on the assumption that the parallelism of the elementary properties of the U- and the H-preverb constructions and considerations of parsimony warrant a unified basic syntactic analysis. The account that is proposed dispenses with the two crucial ingredients of É. Kiss's (1998, 2002) treatment that makes the two constructions look very different from the perspective of the grammatical analysis, namely, the extraposition transformation in the derivation of the U-preverb construction and the specifying adjunct construal of the quasi-argument in the H-preverb construction. The elimination of these assumptions leads to an account which has an empirical coverage that is both broader and more accurate, and which crucially relies on the independent difference in the morphological status of the two classes of adpositions.

5. Conclusion

The account developed in this paper holds that a post-verbal quasi-argument phrase in the preverb constructions analysed here corresponds syntactically to the fully or partially spelled out copy of the PP that the preverb in Spec,PredP is a reduced copy of. In the doubling pattern the quasi-argument takes shape as a PP containing a lexical Ground argument, while in the latter, scattered deletion case, relevant only to U-adpositions, only a dative DP (or alternatively, a PP whose head is realized as the dative marker) within the same PP is realized at PF. Both spell-out forms arise as a result of Chain Reduction (Nunes 1999, 2004) applying at the phase level, and they both derive from the same syntactic chain. This chain may alternatively be spelled out as overt movement of the quasi-argument PP itself in the preverb position. The unavailability to U-preverbs, as opposed to H-preverbs, of a post-verbal lexical PP double is reduced to a crucial morphological difference between U- and H-adpositions, viz. that the former are word-level elements, while the latter are affixal. Pre-verbal occurrences of the quasi-argument may or may not be full doubles of a U-preverb. It is argued that doubling is disallowed when the
quasi-argumental PP and the preverb belong to the Transfer domain of the same phase, a scenario that may obtain through phase extension due to verb raising; and it is permitted otherwise.

I conclude by making explicit a consequence the analysis has regarding the status of what has been dubbed the quasi-argument expression. Nothing that has been said prevents the original base occurrence of the PP from being generated as a selected complement, a secondary predicate, or as an adjunct. Generating the base copy of the PP as an adjunct was argued in Section 4.2 to be a real possibility, based on the opacity of some of the base PPs to subextraction, see (32b) (for a more detailed discussion of this issue, see Surányi 2009). The present account predicts that such an adjunct of a “complex verb” (consisting of preverb+verb) will display some complement-like properties. In particular, the adjunct may appear to be selected for by the “complex verb” in terms of a fixed case form (here: dative case) or the lexical choice of the adposition it is headed by, whether the quasi-argument expression is a genuine adjunct, a structural complement or a secondary predicate. The dative case marker on quasi-arguments of U-preverb+verb complexes has a possessive source internal to what in reality is a PP quasi-argument. The choice of the adposition heading H-PP quasi-arguments strictly corresponds to the choice of the H-adposition heading the H-preverb in the clause, due to the direct movement dependency relating the two.

It is merely apparent that the “complex verb” made up of the adpositional preverb and the verb takes any quasi-argument phrase as an optional modifier. In reality, selected obligatory complement PPs of the verb are obligatory throughout. Specifically, the optional appearance of a complement PP is due to the fact that in case it contains a pronominal Ground argument, when the PP is raised to the Spec,PredP position, the base copy of the PP is deleted (unless it functions as information focus) due to the PF representational economy principle (12) seeking to minimize redundancy at PF.

The “complex verb” may also appear to be involved in an argument structure alternation when compared to the verb that lacks the given preverb. This property too arises as an effect of the direct movement relation holding between the quasi-argument and the preverb, for the simple reason that the syntactic source of the preverb is the quasi-argument itself.

References


Overt nominative subjects
in infinitival complements in Hungarian*

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We argue that the infinitival complements of subject-control and subject-to-
subject raising verbs in Hungarian can have overt nominative subjects. The
infinitival subject status of these DPs is diagnosed by constituent order, binding
properties, and scope interpretation. Long-distance Agree(ment) and multiple
agreement are crucial to their overtness.

1. Outline of the argument

This paper is concerned with data that I discovered exactly 20 years ago and have been
grappling with ever since: overt nominative subjects in infinitival complements. Al-
though I do not claim to have a definitive analysis yet, the good news is that syntactic
theory seems to be in a better position to tackle them today than it was back then.

The following two examples will give a sense of the data. Note that ‘only DP’ is
interpreted inside the complement.

(1) Context: A group of friends boards a crowded bus that has only one va-
cant seat.
   Senki nem akart csak ő leülni.
nobody not wanted-3SG only he/she sit-INF
   ‘Nobody wanted it to be the case that only he/she takes a seat’

(2) Context: In the past many actors got good roles, but recently directors
have lost interest in all but one of them.
   Idén el-kezdett csak Péter kap-ni jó szerepek-et.
   this.year prt-began-3S only Peter get-INF good roles-ACC
   ‘This year it has begun to be the case that only Peter is getting good roles’

* I would like to thank the participants of ICSH 8, the two reviewers, and the editors of this
volume for helpful comments.
Example (1) is a case of obligatory subject control. The finite control predicate has its own subject, a quantifier phrase. The verb in the complement bears the infinitival suffix \(-ni\). The infinitival complement contains the overt nominative 3SG pronoun \(\ddot{o}\) (translated as ‘he/she’, because Hungarian has no grammatical gender; in what follows I will pick a gender to simplify the glosses). The pronoun acts as a variable bound by the matrix subject; moreover it has the same \textit{de se} interpretation that controlled PRO classically receives (Chierchia 1989).

The verb \textit{elkezd} ‘begin’ in (2) is a raising verb. Perlmutter (1970) showed that \textit{begin} has both a control version and a raising version. The raising version is most easily detected when the complement predicate is not agentive. Crucial to us at this point is the fact that the infinitival complement has an overt nominative subject, Péter.

It will be shown that \(\ddot{o}\) in (1) and Péter in (2) originate in and are located inside the infinitival complement and are moreover the subjects of those complements. If so, what enables them to be phonetically overt, when the subjects of control and raising complements are typically null? A reliable answer to this question is not likely to come from the consideration of just one language, because several different explanations may well be compatible with its data. On the other hand, even a single language may allow us to conclude that some particular property does not constitute a necessary condition. The discussion in this paper is largely confined to Hungarian and its goals are accordingly preliminary and modest. A cross-linguistic investigation is taken up in Szabolcsi (2007) and in work in progress.

Specifically, I propose that the overtess of the infinitival subjects in (1) and (2) is not due to rich infinitival inflection, nor to government of the subject from C, cf. Rizzi (1982) and Raposo (1987). Instead, the critical property seems to be that the infinitival subjects we are looking at agree with finite matrix verbs in person and number. (1) and (2) are, then, cases of \textit{long-distance Agree} (Chomsky 1995). Moreover, at least (1) definitely requires \textit{multiple agreement} (Ura 1996, Hiraiwa 2001, 2005, Chomsky 2008). Long-distance agreement and multiple agreement are crucial tools that Minimalism offers and the Government--Binding and Principles & Parameters frameworks did not.

If person-number agreement with a finite verb enables infinitival subjects to be overt, then the present proposal does not necessitate a major departure from the old idea that the overtess of DP is contingent on abstract Case, and Nominative is assigned by the tensed inflection. Abstract Case also figures prominently in Minimalism. There is however an alternative line of thinking that severs the relation between abstract Case and morphological case, and calls the usefulness of postulating abstract Case into question (Marantz 1991, McFadden 2004, and many others). In this paper nominative case is mentioned only as a morphological property (a significant one, given that Hungarian has over twenty morphological cases).
I remain agnostic regarding any deeper reasons why person-number agreement with a tensed verb allows the nominative DP to be overt.

The structure of the paper is as follows. Section 2 sets out to familiarize the English speaking reader with the meanings of the sentences this paper focuses on. Section 3 argues that our nominative DP is located in the infinitival complement, and Section 4, that it is none other than the subject of that complement. Section 5 discusses agreement with the finite verb. Section 6 comments on the de se interpretation of the subjects of control complements. Section 7 concludes the discussion.

2. What do these sentences mean?

It may be surprising that a paper on DP overtness starts out with worrying about the precise meanings of the sentences involved. The reason why this is critical is that the nominative DPs under investigation are scope taking operators or are modified by scope taking particles like ‘too’ and ‘only’, and in the sentences where they are claimed to occur inside the infinitival clause they take scope within that clause, carrying what will be called the LO reading. Many of the LO readings are not expressible (without complicated circumscription) unless the language makes overt infinitival subjects available. Other LO readings may be expressible, but not unambiguously. Thus the raison d’être for the overtness of such subjects is to satisfy an interface need and to minimize the mismatch between PF and LF. I propose to interpret this interface need as one that calls for a systematic way to express a particular kind of truth-conditional content, even though in some instances there is an alternative, ambiguous way available. Roughly the same interpretation is needed to explain why Hungarian generally offers a way to indicate scope relations in surface structure, even though some of those truth-conditional contents would be expressible in less transparent ways as well (as in English).

Szabolcsi (2007) argues that various languages, Italian, Spanish, Portuguese, and Russian among them have, or probably have, overt infinitival subjects of the Hungarian sort. On the other hand, English, French, German, and Dutch quite clearly lack them. Over and beyond the theoretical issues that this cross-linguistic contrast raises there is the practical consequence that the reader of this paper may find it difficult to form an intuitive grasp of the examples. The goal of this section is to set the stage by giving an informal sense of their meanings. I use English sentences that do not have the same structures as the Hungarian ones but have similar meanings.

First consider raising. I use the aspectual raising verb begin instead of seem, for two reasons. One is that Hungarian látszik ‘seem’ primarily takes either indicative or small clause complements and does not easily combine with infinitives. Thus using begin lays better groundwork for the rest of the paper. Another reason is that
the truth conditional effect of an operator scoping either in the matrix or in the complement is much sharper with the aspectual predicate than with the purely intensional one; we can get two logically independent readings. Consider two scenarios and sentence (5).

(3) The HI scenario: Total numbers growing, number of first-timers declining
In April, 4 actresses got their first good reviews and then continued to get ones.
In May, another 2 actresses got their first good reviews and then continued to get ones.
No other changes happened.

(4) The LO scenario: Total numbers declining, number of first-timers staying the same
In April, 10 actresses got good reviews, 4 of them for the first time.
In May, 8 of the above 10 actresses didn’t get good reviews. But another 4 actresses got their first good reviews.
No other changes happened.

(5) Fewer actresses began to get good reviews in May.
   a. ‘Fewer actresses got their first good reviews in May than earlier’
   b. ‘It began to be the case in May that fewer actresses overall were getting good reviews than earlier’

(5) is ambiguous. Reading (a) is true in the HI scenario but false in the LO one. It will be labeled the HI reading. Reading (b) is false in the HI scenario and true in the LO one. It will be called the LO reading, and this is the one relevant to us. Crucially, on the LO reading we are not interested in who began to get good reviews but, rather, what kind of overall situation began to obtain.

Given that neither the predicate get good reviews nor the predicate begin to get good reviews have agentive subjects (i.e. instigators of an action), begin is definitely a raising verb on the (b), LO reading. (It is plausibly also a raising verb on the (a), HI reading of (9). This latter fact is irrelevant to us though.) In English (5) the LO reading appears to be a result of “scope reconstruction” in the presence of A-movement, similarly to the classical example below (May 1985 and many others):

(6) A unicorn seems to be approaching.
   HI ‘There is a particular unicorn that seems to be approaching’
   LO ‘It seems as though a unicorn is approaching’

In English the availability of the LO reading with begin is greatly enhanced by the presence of a pertinent temporal adjunct (Edward Garrett, p.c.). The following naturally occurring example bears this out:1

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1. E. Garrett (p.c.): “The suggestion, it seems to me, is that merchants were migrating southwards as a matter of course, though perhaps to a lesser degree, even before the 3rd century BCE.”
“There was [around the third century BCE], in spite of the growth of population, still much cultivable land available. Victorious feudal lords induced farmers to come to their territory and to cultivate the wasteland. This is a period of great migrations, internal and external. It seems that from this period on not only merchants but also farmers began to migrate southwards into the area of the present provinces of Kwangtung and Kwangsi and as far as Tonking.” [224] (http://tqe.quaker.org/wealth-and-poverty/24appendixes-ch11.htm)

In Hungarian the two readings of (5) would be expressed using different constituent orders, and no temporal adjunct is necessary to obtain the LO reading in (9). Moreover, the LO reading is generally available with all operators, whereas in English the choice seems delicate.

(8) Kevesebb színésznő kezdett el jó kritikák-at kap-ni.
   HI ‘Fewer actresses got their first good reviews’

(9) El-kezdett kevesebb színésznő kap-ni jó kritikák-at.
   LO ‘It began to be the case that fewer actresses overall were getting good reviews’

Next consider control. The particle too associates with different DPs in (10) and (11). The example most relevant to us is (11): here too associates with the PRO subject of be tall. Krifka (1998) argues that postposed stressed additive particles, like English too, may associate even with a phonetically null element if that is a contrastive topic in his sense. The well-known reading in (10) is the HI reading; the more novel one in (11) the LO reading.

(10) Mary wants/hates to be tall. I want/hate to be tall too.
   HI ‘I too want/hate it to be the case that I am tall’

(11) Mary is tall. I want/hate to be tall too.
   LO ‘I want/hate it to be the case that I too am tall’

what changed is that the feudal lords began to induce farmers to come as well. On this reading, it is LO: “from this period on... it began to happen... that not only merchants (as they had for some time) but also farmers as well migrated southwards...”. On the other hand, I suppose it’s possible that merchants only started migrating southwards at the same time as farmers, in which case the reading is HI: “from this period on... not only merchants but also farmers... they began to migrate southwards...” This second reading seems to me less likely, best perhaps if there is a sense of surprise: to wit, it is common knowledge among scholars that merchants began migrating southwards in the 3rd century BCE, but interestingly farmers also began migrating southwards then as well.”
If too attaches to the matrix subject, the want-example is still ambiguous, see (12). But the variant with hate lacks the LO reading; the sequence in (13b) is incoherent.

(12) a. Mary wants to be tall. I too want to be tall.
   HI ‘I too want it to be the case that I am tall’
   b. Mary is tall. I too want to be tall.
   LO ‘I want it to be the case that I too am tall’

(13) a. Mary hates to be tall. I too hate to be tall.
   HI ‘I too hate it that I am tall’
   b. Mary is tall. #I too hate to be tall.
      intended: LO ‘I hate it that I too am tall’

In Hungarian the two readings are expressed by different constituent orders, in a manner parallel to (8) and (9).²

(14) Én is szeretnék/utálok magas lenni.
   I too would.like-1sg/hate-1sg tall be-INF
   HI ‘I too want/hate it to be the case that I am tall’

(15) Szeretnék/Utálok én is magas lenni.
      would.like-1sg/hate-1sg I too tall be-INF
      LO ‘I want/hate it to be the case that I too am tall’

². One of the reviewers notes that (14) with szeretne ‘would like’ may be ambiguous, with the HI reading favored because the LO reading is blocked by the competing specialized structure (15). The ambiguity becomes more robust when the analog of (15) does not sound good, as in (ib). (For some reason, when the matrix subject is not an operator and the infinitival clause with the overt pronoun is subjacent to the matrix, the result is degraded; see also Szabolcsi (2005). When the matrix subject is an operator or the distance between the two subjects is greater, the result is typically fine. See (1) and (72)-(75).)

i. a. Péter is szeret-ne magas len-ni.
     Peter too would.like-3sg tall be-INF
     HI or LO ‘Peter would like to be tall too’
    b. ?*Péter szeret-ne ő is magas len-ni.
       Peter would.like-INF he too tall be-INF

As the reviewer notes, this observation bears on whether the existence of overt infinitival subjects is motivated by an interface need: if i.b. were not available, the LO reading would be still expressible. But the utál ‘hate’ version has no hint of ambiguity. As we have seen, English I too hate to be tall only has a HI reading, cf. (13), so I do not think that the Hungarian counterpart, Én is utálok magas lenni would be ambiguous if the form specialized for the LO reading did not exist, compare (14) and (15). I propose to interpret the interface need as one that calls for a systematic way to express a particular kind of truth-conditional content, whether or not in some instances there is an alternative (ambiguous) expression available. I thank the reviewer for raising this issue.
To summarize, when a nominative DP is associated with a suitable scope-taking operator, English can express LO readings in both control and raising constructions. But these readings come about in specifically scope-related ways, by “scope reconstruction” or in view of the ability of postposed additive particles under stress to associate with PRO. The reader should bear these readings in mind when contemplating the Hungarian examples that carry LO readings, but this paper will not investigate English any further.

This paper focuses on Hungarian examples that unambiguously carry the LO reading, such as (9) and (15). Here the whole nominative DP occurs in a special position. It will be argued that this is the position of the infinitival subject.

3. “Our nominative DP” is located inside the infinitival clause

Some of the sentences we are looking at, for example (1), contain more than one DP in the nominative. One of them is clearly sitting in the matrix subject position and there is nothing mysterious about it. The other one is what we are interested in. The present section argues that it is located inside the infinitival clause, and the next section argues that it is the infinitival subject. Until such time as the arguments are completed, the DP under investigation will be neutrally referred to as “our nominative DP”.

Recall that in (9) and (15), the Hungarian sentences carrying LO readings, our nominative DPs occur in postverbal position. Hungarian is known to map scope relations to linear order and intonation (see Kiss 2002, Brody and Szabolcsi 2003, among many others), so this may seem like a simple instance of the same correspondence. The placement of csak DP ‘only DP’ and nem DP ‘not DP’ offers clear evidence that on the LO reading our nominative DP is not simply placed within the scope of the control/raising verb.

Due to the association of csak ‘only’ and nem ‘not, constituent negation’ with focus, csak DP and nem DP have a very restricted distribution in mono-clausal examples: they must occur in the immediately preverbal position. The reason is that focus in Hungarian is immediately preverbal.

(16) * Olvast-am csak én egy könyv-et.
    read-1sg only I a book-acc

3. Indeed, DP is ‘DP too’ may occur either preverbally or postverbally in mono-clausal examples and so (9) and (15) by themselves are not diagnostic. The main reason why the particle is ‘too’ was used above is that it was useful in conjuring up English counterparts.
The position of csak DP and nem DP completely disambiguates the infinitival examples:

(20) Csak én szeretnék magas lenni.
    only I would.like-1sg tall be-INF
    HI: ‘I am the only one who wants to be tall’

(21) Szeretnék csak én lenni magas.
    would.like-1sg only I be-INF tall
    LO: ‘I want it to be the case that I am the only one who is tall’

(22) Nem én szeretné-k magas len-ni.
    not I would.like-1sg tall be-INF
    HI: ‘I am not the one who wants to be tall’

(23) Szeretné-k nem én len-ni magas.
    would.like-1sg not I be-INF tall
    LO: ‘I want it to be the case that I am not the one who is tall’

The puzzle is how csak én and nem én can occur in postverbal position in the LO readings when we have just seen that (16) and (18) are sharply ungrammatical. The fact that (21) and (23) are perfect can only be explained if csak én and nem én, despite being the sole overt nominative DPs in the sentence, are not located in matrix clause but, instead, belong to the complement. If so, then they are not “postverbal” but in fact “preverbal”, i.e. their relevant property is that they immediately precede the infinitival verb.

It is well-established that Hungarian finite clauses have a rigid sequence of operator positions in the preverbal field. Koopman & Szabolcsi (2000: Chapter 6) argue that exactly the same sequence occurs in infinitival clauses that exhibit what they call “the English order”, i.e. no superficially noticeable restructuring. This descriptive claim has never been contested. Compare, for example, finite (24) and infinitival (25). The linear and scopal order of operator phrases in the preverbal field is topic (RefP), quantifier (DistP), and focus (with or without csak ‘only’) in both cases.
(24) Holnap minden-ről (csak) én beszél-ek.
tomorrow everything-ALLAT only I talk-1SG
‘Tomorrow everything will be such that it is me who talks about it/ only I talk about it’

(25) Szerettem volna holnap mindenről (csak) én beszélni.
would.haveliked-1SG tomorrow everything-ALLAT only I talk-INF
‘I would have liked it to be the case that tomorrow everything is such that it is me who talks about it/ only I talk about it’

These orders make it plain that csak én occupies the same focus position in the infinitival clause of (25) as in the finite (24). There is simply no other way for it to occur where it does.4

Crucial to us is the fact that constituent order shows our nominative DPs to be located inside the infinitival clause. Thus the bracketing of (15), (21), and (25) is as follows:

(15)’ Szeretnék [én is magas lenni].
(21)’ Szeretnék [nem én lenni magas].
(25)’ Szerettem volna [holnap mindenről (csak) én beszélni].

Example (25) argues for two further points. First, it shows that our nominative DP does not have to immediately follow either the matrix or the infinitival verb and thus to be governed by it, to use older terminology. An arbitrarily long sequence of operators may separate it from the matrix verb, and the infinitival verb never precedes it. Therefore its overtness cannot be due to “Exceptional Case Marking” or to “Infl-to-Comp” movement.

A second important point has to do with the absence of clause union (restructuring). The suspicion might have arisen that the phenomenon we are investigating somehow requires clause union. The long operator sequence in (25) already indicates that its infinitival clause is not a reduced complement; Koopman and Szabolcsi (2000: Chapter 6) argue that it is a full CP. Further evidence that clause union is not involved comes from the inventory of matrix verbs. Consider utál ‘hate’, cross-linguistically not a restructuring verb, and el-felejt ‘forget’. El-felejt has a prefix,

4. An important question that I am not able to answer is whether overt nominative infinitival subjects must be scope-bearing operators or can be, say, plain unfocussed proper names. It is difficult if not impossible to find syntactic or semantic tests that tell apart a name that is postverbal in the matrix clause and one that is in the initial neutral topic position in the infinitival complement. If one believes that spelling out the infinitival subject may only happen if this is necessary to express a particular truth-conditional content, then probably such subjects must be operators. But answering such big questions goes beyond the scope of this paper.
and prefixal verbs never restructure in Hungarian. Both verbs take infinitival complements that contain overt nominatives; in fact, all subject control verbs do.

(26) \[ Utál-ok \ csak \ én dolgoz-ni. \]
    hate-1SG only I work-INF
    LO ‘I hate it that only I work’

(27) \[ Nem felejtett-em el \ én is \ aláírni a level-et. \]
    not forgot-1SG PRT I too sign-inf the letter-ACC
    LO ‘I didn’t forget to bring it about that I too sign the letter’
    (cf. I remembered to sign it too)

Szabolcsi (2005) discussed the control data above and tentatively concluded that Hungarian has overt subjects in infinitival complements.

As we saw in the preceding section, not only control but also raising complements exhibit the phenomenon at hand. Szabolcsi (2005) mentioned examples with \textit{elkezd} ‘begin’ and the futurate verb \textit{fog}, but glossed over the fact that they involve raising, not control. Bartos (2006a) and Márta Abrusán (p.c.) drew attention to their raising character. The arguments from constituent order apply to raising complements exactly as they do to control complements, so I add the brackets around the infinitival clause right away.

(28) \[ Nem \ én kezdt-em el \ [éjszaka dolgoz-ni]. \]
    not I began-1SG PRT at.night work-INF
    HI ‘It is not me who began to work at night’

(29) \[ El-kezdt-em [nem \ én dolgozni \ éjszaka]. \]
    PRT-began-1SG not I work-INF at.night
    LO ‘It began to be the case that it is not me who works at night’

(30) \[ Csak \ én \ nem fog-ok \ [dolgoz-ni éjszaka]. \]
    only I not will-1SG work-INF at.night
    HI ‘I am the only one who will not work at night’

(31) \[ Nem \ fog-ok \ [csak \ én \ dolgoz-ni \ éjszaka]. \]
    not will-1SG only I work-INF at.night
    LO ‘It is not going to be the case that only I work at night’

(32) \[ Holnap fogok \ [mindenki-vel \ csak \ én beszélni]. \]
    tomorrow will-1SG everyone-comit only I talk-INF
    LO ‘Tomorrow is the day when for everyone x, only I will talk with x’

We conclude that infinitival complements of both subject control verbs and subject-to-subject raising verbs in Hungarian can contain an overt nominative DP.
4. “Our nominative DP” is the subject of the infinitival clause

4.1 An argument from Binding Theory

We have seen that our nominative DP is located inside the infinitival clause, but does it originate there? One important argument comes from the Binding Theory.

The crucial observation is that the nominative DP inside a control complement can only be a personal pronoun whereas, as (2) showed, the one inside a raising complement can be a referential DP. This is exactly as expected if the DP originates in the complement clause. In the case of control, our nominative DP is bound by the matrix subject (an overt one or dropped pro). If the two are not in the same local domain, a pronoun can be so bound (Principle B), but a referential expression cannot (Principle C). Thus we do not expect to find lexical DPs in the subject position of the control complement. Indeed, (34) is sharply degraded as compared to (33):^5

(33) \textit{Utál-na mindig csak ő kap-ni büntetés-t.}
\hspace{1cm} would.hate-3sg always only he get-INF punishment-ACC
\hspace{1cm} ‘He would hate it if always only he got punished’

(34) \textit{*Utál-na mindig csak Péter kap-ni büntetés-t.}
\hspace{1cm} would.hate-3sg always only Peter get-INF punishment-ACC
\hspace{1cm} intended: ‘Peter would hate it if always only he got punished’

On the other hand, the infinitival complement of a raising verb is not bound by another DP with an independent thematic role; it is free to be a pronoun or a lexical DP. This is what we find.

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5. One of the reviewers finds several examples similar to (34) to be acceptable. For i. he/she provides the context below. (The reviewer’s example contains \textit{nem akart} ‘didn’t want’ which, as he/she notes, has an irrelevant alternative reading, so I have replaced it with \textit{utált volna} ‘would have hated’.)

Context: A small group of students, who believe they are to be punished, lobby for the whole class to be punished, because they believe it would diminish the negative value of the punishment in the eyes of their parents.

\begin{verbatim}
i. Utált volna csak kevés diák büntetést kapni.
\hspace{1cm} would.have.hated-3sg only few student punishment-ACC get-INF
\hspace{1cm} ‘A small number of students did not want that only they get a punishment’
\end{verbatim}

I have tested this with three speakers, and although they said they understood the context, they did not accept i. as an appropriate description of it. They also noted that if the \textit{büntetést kapni} order used by the reviewer is changed to \textit{kapni büntetést}, which is normally available when the infinitival complement has a focus, i. becomes even worse. For the time being I continue to assume that the contrast between pronominal and lexical DPs is genuine.
Elkezdett mindig csak Péter kap-ni büntetés-t.

‘It began to be the case that always only Peter got punished’

Principle C definitely rules out (34) if the subject of ‘hate’ and ‘only Peter’ are independent arguments and the former binds the latter, but the status of the overt pronoun in (33) deserves further comment. When no operator is attached to it, ő alternates with some null element; what is it, PRO or pro?

(Péter/pro) Utálna [pro/pro minden nap

Peter/pro would.hate-3SG every day

büntetés-t kap-ni.

punishment-ACC get-INF

‘Peter/he would hate to get punished every day’

One of the reviewers notes that this question is crucial if specifically Binding Theory disallows normal pronominals and PRO to occur in the same position. I find it conceivable that (36) is structurally ambiguous, its infinitival complement containing PRO on one analysis and pro on another. Relevant to us is the Binding Theoretically safe pronominal option. See further discussion of pronouns and PRO in Section 6.6

If the contrast in (34)-(35) is real, it is multiply important. First, it clinches the Hungarian analysis. Second, it serves as an important diagnostic tool for work on other languages. And third, this contrast hints at the proper analysis. It makes it less likely for example that we are dealing with a case of backward control (with or

6. The reviewer writes that an unstressed but overt pronoun seems worse in this construction than one would expect it in view of the standards of Hungarian pro-drop (unfortunately, an under-researched topic). I am not sure that it is indeed worse. First, it is not clear if these infinitival complements allow non-operator overt subjects at all. It seems impossible to find syntactic or semantic tests to tell apart a plain name or non-contrastive pronoun that is postverbal in the matrix clause and one that is in the initial neutral topic position in the infinitival complement (whether it be a raising or a control construction). If one believes that spelling out the infinitival subject may only happen if this is necessary to express a particular truth-conditional content, then probably such subjects must be operators. Beyond that, comparisons should involve discoursally similar examples. To my ears, the overt pronouns are infelicitous or unacceptable in both examples below.

i. #Péter utálná, ha ő minden nap büntetés-t kap-na.

Peter would.hate-3SG if he every day punishment-ACC get-cond.3SG

‘Peter would hate it if he got punished every day (finite conditional complement)’

ii. #Péter utálna ő minden nap büntetés-t kap-ni.

Peter would.hate-3SG he every day punishment-ACC get-INF

‘Peter would hate it if he got punished every day (infinitival complement)’

In sum, I do not believe there is anything obviously wrong with a pro analysis of (36), whether or not it also has a PRO analysis.
Overt nominative subjects in infinitival complements in Hungarian

without control-as-raising). The default prediction of the backward control analysis would be that the lower subject can be pronounced as is, without being somehow reduced to a pronoun. This is indeed what the backward control literature finds (Polinsky and Potsdam 2002, Alexiadou et al. 2008; though see Boeckx et al. 2007). Thus the theoretical challenge is not just to account for when a lower link in a chain can be spelled out in a pronominal form – we are facing the general question of when a DP can be pronounced.

4.2 A potential confound in cross-linguistic counterparts

The fact that our nominative DP in control complements must be a pronoun opens the way for a potential confound. Perhaps that nominative DP is not the subject, just a “pronominal double” of the real PRO or pro subject? This question arises especially because languages like Italian, Spanish, and Modern Hebrew have such pronominal doubles in mono-clausal examples:

(37) Gianni è andato solo lui a Milano.
    ‘As for Gianni, only he went to Milan’

It turns out that in Hungarian, just like in English, such examples are simply ungrammatical. Let us consider two potential cases. First, emphatic pronouns. In Hungarian emphatics are reflexives (maga) and not personal pronouns (ő), as pointed out in Szabolcsi (2005).

(38) a. Péter maga is dolgozott.
    Peter himself too worked
    ‘Peter himself worked too’

b. Péter nem maga dolgozott.
    Peter not himself worked
    ‘Peter didn’t work himself’

(39) a. * Péter ő is dolgozott.
    Peter he too worked
    ‘Peter himself worked too’

b. * Péter nem ő dolgozott.
    Peter not he worked
    ‘He didn’t work himself’

(40) a. (Ő) maga is dolgozott.
    he himself too worked
    ‘He himself worked too’

b. (Ő) nem maga dolgozott.
    he not himself worked
    ‘He didn’t work himself’
(41) a. *Ő ő ća dolgozott.
   he he too worked
b. *Ő nem ő ća dolgozott.
   he not he worked

Second, consider pronominal placeholders for 3rd person left dislocated expressions. In my dialect (which may or may not coincide with the Budapest, or urban, variety) these placeholders are distal demonstratives, never personal pronouns. (The construction belongs to the spoken language and would not be found in the writing of educated speakers. In this respect it contrasts sharply with our nominative DPs, which do not violate the norm of the literary language.)

(42) a. Péter az dolgozott.
   Peter that worked
   ‘Peter worked’
b. A fiúk azok dolgoztak.
   the boys those worked
   ‘The boys worked’

To identify such placeholders, it is to be noted that they practically cliticize to the topic and cannot be separated or focused:

(43) a. *Péter tegnap az dolgozott.
    Peter yesterday that worked
b. *Péter csak az dolgozott.
    Peter only that worked

Pronominal subjects do not participate in this construction:

(44) a. *Én az dolgozott/dolgozt-am.
    I that worked.3sg/worked-1sg
b. *Ő az dolgozott.
    he that worked-3sg

I am aware that there are speakers who use the personal pronoun ő in the place of demonstrative az:

(45) a. Péter ő dolgozott.
    Peter he worked
    ‘Peter worked’
b. A fiúk ők dolgoztak.
    the boys they worked
    ‘The boys worked’
This fact could be a confound if only such speakers, but not speakers like myself, accepted nominative personal pronouns in infinitival complements and if the infinitival construction were similarly restricted to 3rd person. This is not the case. All the infinitival data reported in this paper are perfect for speakers like myself, who do not use (45).

These facts show that the Hungarian control construction under discussion has no possible source in emphatic or placeholder pronouns.

4.3 Complemented pronouns

But we can do even better. Postal (1966) observed that personal pronouns in English may take a noun complement. This observation is one of the cornerstones of the hypothesis that such pronouns are determiners.

(46) We linguists and you philosophers should talk more to each other.
(47) You troops go South and you troops go North.

Such complemented pronouns do not induce a Principle C violation:

(48) We know that only we linguists can do this.

If Principle C is the only reason why our nominative DP in a control complement must be pronominal, then we predict that the pronouns we analyze as overt subjects can take a noun complement. This is indeed the case. The grammaticality of (49) was observed by Anikó Lipták (Huba Bartos, p.c.). The same possibility exists with raising verbs, as in (50):

(49) Szeretné-nk csak mi nyelvészek kap-ni magasabb fizetés-t.
    would.like-1pl only we linguists get-INF higher salary-acc
    ‘We would like it to be the case that only we linguists get a higher salary’

(50) Elkezdtü-nk nem mi nyelvészek ülni az első sor-ban.
    began-1pl not we linguists sit-INF the first row-in
    ‘It began to be the case that it is not we linguists who sit in the first row’

And similarly with numerals:

(51) Szeretné-nk csak mi hárm-an kapni magasabb fizetés-t.
    would.like-1pl only we three-sfx get-INF higher salary-acc
    ‘We would like it to be the case that only we three get a higher salary’

(52) Elkezdtü-nk nem mi hárm-an ül-ni az első sor-ban.
    began-1pl not we three-sfx sit-INF the first row-in
    ‘It began to be the case that not we three sit in the first row’
The cross-linguistic significance of complemented pronouns is that in Italian they do not function as emphatic or placeholder pronouns in mono-clausal examples:7

(53) Context: The philosophers say, ‘Only we philosophers work.’ The linguists reply,

i. *Guarda che noi abbiamo lavorato sodo anche noi!
   look that we have.1PL worked a.lot also we
   ‘Look. We too worked a lot’

ii. *Guarda che noi abbiamo lavorato sodo anche noi linguisti!
   look that we have.1PL worked a.lot also we linguists
   intended: ‘Look. We linguists too worked a lot’

Hence, if noi linguisti occurs inside control complements with the characteristic interpretation described above, it cannot be the pronominal double of a PRO subject. It must be the infinitival subject itself:

(54) ∅ Vorremmo [andare solo noi linguisti a Milano].
   ‘We would like it to be the case that only we linguists go to Milan’

Therefore, if a language differs from Hungarian in that it has pronominal doubles in mono-clausal examples, this potential confound can be controlled for using complemented personal pronouns.8

To conclude, we have argued that our nominative DP is not simply located inside the infinitival complement but it originates there and is the subject of that complement. The critical argument came from the Binding Theory, which predicts the pronoun vs. lexical (referential) DP contrast between control and raising complements. We also noted that the existence of pronominal doubles could be a potential confound for control examples if Hungarian had them in the shape of personal pronouns; but Hungarian does not have personal pronoun doubles. No potential confounding factor is ever present in the raising examples.

7. All the Italian data in this paper are based on discussion with Ivano Caponigro and Andreea Cattaneo.

8. Caveat: Not all similar constructions constitute “complemented pronouns” in Postal’s sense. Spanish requires a definite article inside the construction:

i. nosotros *(los) linguistas
   we the linguists
Clearly, this construction could not be used to argue that nosotros is a determiner. Relevant to us is the fact that nosotros los linguistas does not have the same distribution as mi nyelvészek and noi linguisti, and unfortunately it cannot be used to eliminate the pronominal double confound the way noi linguisti can.
5. Long-distance agreement with a finite verb and multiple agreement

5.1 Subject agreement with a finite verb

All Hungarian infinitival subjects exhibit person-number agreement with the finite verb. To recap, for example:

(55) *Utálók [csak én dolgoz-ni].
    hate-1SG only I work-INF
    LO: ‘I hate it that only I work’

(56) Nem fogok [csak én dolgoz-ni éjszaka].
    not will-1SG only I work-INF at.night
    LO: ‘It is not going to be the case that only I work at night’

(57) Elkezdők [csak a fiúk dolgoz-ni éjszaka].
    began-3PL only the boys work-INF at.night
    LO: ‘It began to be the case that only the boys work at night’

The fact that the pronoun in (55) agrees with the finite control verb is not very surprising; after all, it is controlled by the subject of that verb. Agreement with the matrix verb is more remarkable in the raising examples (56)-(57), since we have no evidence of én and a fiúk ever occurring in the matrix clause.

If the matrix agreement morpheme is removed, effectively turning the inflection into 3SG, which in most verb classes is morphologically unmarked, all these become word salads:

(58) ***Utál [csak én dolgoz-ni].
    hate-3SG only I work-INF

(59) ***Nem fog [csak én dolgoz-ni éjszaka].
    not will-3SG only I work-INF at.night

(60) ***Elkezdett [csak a fiúk dolgoz-ni éjszaka].
    began.3SG only the boys work-INF at.night

When agreement is not possible, there is no nominative infinitival subject. This predicts, correctly, that infinitival complements of object control verbs have no nominative subjects, since the matrix verb is committed to agree with a different argument. Compare object control kényszerít ‘force’ with the agreeing unaccusative version, kényszerül ‘be forced’:

(61) * Kényszerítettek (téged) [te is dolgoz-ni].
    forced.3PL you.ACC you.NOM too work-INF
    intended: ‘They forced you to work in addition to someone else working’
(62) *Kényszerült-él [te is dolgoz-ni].
   was.forced.2sg you.nom too work-inf
   LO 'You (SG) were forced to work too (in addition to someone else working)'

As is the case with nominatives in general, the pertinent agreement must be subject- and not object-agreement. So (63), where the verb, exceptionally in the language, agrees not only with the 1SG subject but also with the 2person object, patterns exactly as (61):

(63) *Kényszerítette-le-k (téged) [te is dolgoz-ni].
   forced.3pl+2pers you.acc you.nom too work-inf
   intended: 'I forced you to work in addition to some else working'

As with nominatives in general, agreement has to be “complete”:

(64) *Kényszerül-ünk [én/te is dolgoz-ni].
   are.forced-1pl I.nom/you.nom too work-inf
   intended: 'We are forced I too to work / you too to work'

Likewise there are no overt nominative subjects in free-standing infinitives that function as rude or military imperatives:

(65) (*Maga is) Távozni!
   you too leave-inf
   'Leave!'

The possibility of overt nominative subjects with controlled purpose adjuncts is dubious. I cannot decide whether they are marginally acceptable:

(66) Péter a balkonon aludt. ??Bementem a hálószobába én is aludni.
   'Peter was sleeping on the balcony. I went in the bedroom to sleep too'

5.2 Inflected infinitives

Hungarian has a narrower range of infinitival complements than English, so not all examples that might come to the reader's mind can be tested. However, there is an important case to consider. Inflected infinitives in Portuguese take nominative subjects (Raposo 1987):

(67) Era importante [eles sairem].
   was important they.nom leave-inf-3pl
   'It was important for them to leave'
Hungarian has optionally inflected infinitives. The suspicion might arise that the nominative subjects in Hungarian infinitives are related to phonetically overt or covert infinitival inflection. But this is unlikely. Inflected infinitives in Hungarian occur only as complements of impersonal predicates that do not carry person-number agreement and, as Tóth (2000) discusses in detail, they always have dative subjects:

\[(68) \quad \text{Fontos volt} / \quad \text{Sikerült} \ldots \]

\begin{enumerate}
\item a. délre elkészül-ni / elkészül-n-öm. \\
\hspace{1cm} by.noon be.ready-INF be.ready-INF-1SG \\
\hspace{1cm} ‘to be ready / for me to be ready by noon’
\item b. nekem /* én is délre elkészül-ni / elkészül-n-öm. \\
\hspace{1cm} DAT-1SG I.NOM too by.noon be.ready-INF be.ready-INF-1SG \\
\hspace{1cm} ‘for me too to be ready by noon’
\item c. az ebédnek /* az ebéd délre elkészül-ni \\
\hspace{1cm} the lunch-DAT the lunch-NOM by.noon be.ready-INF \\
\hspace{1cm} / elkészül-n-i.e. be.ready-INF-3SG \\
\hspace{1cm} ‘for the lunch to be ready by noon’
\end{enumerate}

(Example (68b) is ambiguous: the dative DP ‘for me’ could be either the experiencer of the matrix predicate or the subject of the infinitive. In (68c) the dative DP ‘for the lunch’ cannot be an experiencer, only the subject of ‘to be ready by noon’.)

Tóth’s observations are important, because they show a crucial difference between Hungarian and Portuguese inflected infinitives. Even if inflected infinitives do license overt nominatives in Portuguese and in other languages, infinitival inflection cannot be the universal precondition for the existence of overt nominative subjects in infinitives. This supports the conclusion that the critical factor is agreement with a finite verb.

When the control or raising verb itself is an inflected infinitive, its own infinitival complement cannot have an overt nominative subject. (Adding a dative DP would not make a difference.)

\[(69) \quad *\text{Fontos volt [akar-n-om [én is jó jegyek-et kap-ni]].} \]

\hspace{1cm} intended: ‘It was important for me to want that I too get good grades’

\[(70) \quad *\text{Fontos volt [nem el-kezde-n-em [én is rossz jegyek-et kap-ni]].} \]

\hspace{1cm} intended: ‘It was important for me not to want that I too get bad grades’
intended: ‘It was important for me not to begin to get bad grades too’

This confirms that the verbal agreement must be of the kind that normally licenses nominative subjects; we have seen above that agreement on infinitives never does that.

The finite clause whose verb agrees with the infinitival subject need not be subjacent to that infinitival clause. In (71) the intervening infinitives *akarni* ‘want-inf’ and *elkezdeni* ‘begin-inf’ do not carry inflection, although they could agree with *én* if they were finite.9

(71) Nem fogok akarni elkezde-ni [én is rossz jegyek-et kap-ni].
    not will-1SG want-INF begin-INF I.NOM too bad grades-ACC get-INF
    ‘I will not want to begin [to get bad grades too]’

5.3 One finite verb, multiple overt subjects

Most of the examples discussed so far contained only one overt subject, either in the finite or in an infinitival clause. The examples were natural, because Hungarian is an Italian-type null subject language: unstressed subject pronouns are not pronounced. But notice that *pro* subjects occur in the same environments as overt subjects. Therefore not only the overt infinitival subject but also the null finite subject must agree with the finite verb. In other words, our control constructions require multiple agreement. The availability of multiple agreement is the default

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9. The “long-distance” character of indiscriminate subject agreement is reminiscent of indiscriminate long-distance object agreement in Hungarian. Hungarian verbs have two conjugations. One is selected when there is a direct object that is, roughly, definite (according to Bartos (1999), if it is a DP, as opposed to a smaller projection) and the other is selected elsewhere. The conjugation of a finite control or raising verb is always determined by the direct object of the lowest infinitival complement. The phenomenon is entirely independent of restructuring. Compare *fog-ok* ‘will-1SG subject’ in (71) with *utál-om* ‘hate-1SG subject.definite object’ in i., where the direct object is definite:

i. Utálom elkezde-ni [én is ezek-et a jegyek-et kap-ni].
   hate-1SG.DEF begin-INF I.NOM too these-ACC the grades-ACC get-INF
   ‘I hate to begin [to get these grades too]’

   In contrast to the infinitival subject, the infinitival direct object does not require the presence of such a conjugation. It is perfectly happy in sentences without any definite conjugation:

ii. Fontos volt [elolvas-ni a könyv-et].
    important was [read-INF the book-ACC]
    ‘It was important to read the book’

So, while both a subject and an object may agree with finite verbs that they are not arguments of, in the former case it is the subject and in the latter case it is the definite-conjugated finite verb that seeks out its distant mate.
assumption in Minimalism. Support for this analysis comes from the fact that it is perfectly possible for multiple overt subjects to co-occur with a single agreeing finite verb. The sentences below require a contrastive context, but when it is available, they are entirely natural and indeed the only way the express the intended propositions. Imagine a situation where a group of people, including János, is faced with a crowded bus: some will certainly have to walk.\(^{10}\)

(72) János
\[\text{ nem akart} \ [\text{megpróbál-ni} \ [\text{csak} \ ő \ \text{men-ni busszal}]].\]
\begin{align*}
\text{János} & \text{ not} \ \text{wanted-3SG} \ \text{try-INF} \ \text{only he go-INF bus-with} \\
\text{‘John didn’t want to try to be the only one who takes the bus’}
\end{align*}

(73) Én
\[\text{ se} \ \text{akar-ok} \ [\text{csak} \ őn \men-ni busszal}.\]
\begin{align*}
\text{I} & \text{ neither want-1SG} \ \text{only I go-INF bus-with} \\
\text{‘Neither do I want to be the only one who takes the bus’}
\end{align*}

(74) Senki
\[\text{ nem akart} \ [\text{csak} \ ő \men-ni busszal].\]
\begin{align*}
\text{nobody not} \ \text{wanted-1SG} \ \text{only he go-INF bus-with} \\
\text{‘Nobody wanted to be the only one who takes the bus’}
\end{align*}

(75) Nem
\[\text{ akarok} \ [\text{én is} \text{ megpróbálni} \ [\text{csak} \ őn \men-ni busszal]].\]
\begin{align*}
\text{not want-1SG} & \text{ I too try-INF} \ \text{only I go-INF bus-with} \\
\text{‘I don’t want to be another person who tries to be the only one who takes the bus’}
\end{align*}

The status of multiple overt subjects in raising constructions is not clear to me:

(76) ? János
\[\text{ el-kezdett} \ [\text{csak} \ ő \kapni \ szerepek-et}.\]
\begin{align*}
\text{János} & \text{ prt-began-3SG} \ \text{only he get-INF roles-ACC} \\
\text{‘It began to be the case that only John got roles’}
\end{align*}

(77) ?* Nem
\[\text{ fog-ok} \ [\text{én is} \text{ el-kezdeni} \ [\text{nem} \ őn \kap-ni \ szerepek-et}].\]
\begin{align*}
\text{not will-1SG} & \text{ I too prt-begin-inf not I get-INF roles-ACC} \\
\text{‘It will not happen to me too that it begins to be the case that it is not me who gets roles’}
\end{align*}

Hungarian does not have overt expletives, and it is generally thought not to have phonetically null ones either. If this is correct then simple raising examples like (2) will not necessitate multiple agreement; only the overt infinitival subject wants to agree with the finite verb.

\(^{10}\) This generalization revises the judgment in Szabolcsi (2005), where multiple nominative examples were judged to be marginal. I maintain my judgment of those particular sentences, but I have since realized that it is possible to construct many better examples. I am grateful to Márta Abrusán and Huba Bartos for discussion.
To summarize, this section has shown that overt nominative infinitival subjects in Hungarian are strictly dependent on person-number agreement with the finite verb. This agreement is not only in-situ but truly long distance: it can skip intervening infinitival clauses. It may also involve a single inflection and multiple DPs.

6. De se pronouns and control

The most commonly recognized interpretations of overt pronouns are the bound, coreferential, and free ones. But there is a finer distinction between de re or de se readings. The coreferential or bound interpretations only pay attention to de re truth conditions. The de se reading arises when the antecedent is the subject of a propositional attitude and is “aware” that the complement proposition pertains to him/herself. The following example, modified from Maier (2006), highlights the de re – de se distinction. We tape the voices of different individuals, play the tapes back to them, and ask them who on the tape sounds friendly. Now consider the following description of John's response:

(78) John judged that only he sounded friendly.

(where he=John)

We are considering the case where he refers to John, i.e. the voice sample John picked out is John's own. But John may or may not recognize that the voice sample is his own. The plain de re truth conditions do not care about this distinction. But we may distinguish the special case where John is actually aware that the referent of he is identical to him, i.e. where he expresses an attitude towards himself (his own voice). This is the de se reading.

De se readings are relevant to us because, as Chierchia (1989) observed, infinitival control constructions are always de se. There is no way to construe (79) with John having the desire but not being aware that it pertains to him himself; (80) on the other hand can be so construed. As the standard demonstration goes, John may be an amnesiac war hero, who is not aware that the meritorious person he nominates for a medal is himself. In this situation (80) can be true but (79) is false.

(79) John wanted to get a medal. (only de se)
(80) John wanted only him to get a medal. (de re or de se)

Both de re and de se readings occur with quantificational antecedents as well:

(81) Every guy wanted to get a medal. (only de se)
(82) Every guy wanted only him to get a medal. (de re or de se)
The standard assumption is that coreferential/bound pronouns in propositional attitude contexts are ambiguous between de re and de se; only controlled PRO is designated as a de se anaphor. This view is initially confirmed by the interpretation of those subjunctives that are exempt from obviation, i.e. where they can be bound by the matrix subject.

In Hungarian, subjunctive complements of volitional verbs are exempt from obviation in at least two cases (Farkas 1992). One is where the matrix subject does not bear a responsibility relation to the event in the complement proposition. For Farkas (1992), responsibility is the hallmark of canonical control.

(83) \textit{Nem akar-ja, hogy pro rossz jegy-et kap-j-on.}  
not want-3sg that pro bad grade-ACC get-SUBJ-3SG  
‘(Why does Peter study so hard?) He doesn’t want that he get a bad grade’

The person who gets the grade does not bear full responsibility for what grade he/she gets, since someone else assigns the grade. The subjunctive in (83) has a null subject, but it could be made overt if it bears stress. If such pronouns bear stress, even the non-agentic predicate in the complement is not necessary. I believe the reason is that the responsibility relation is necessarily impaired. One may be fully responsible for whether he/she takes the bus, but not for whether he/she is the only one who does so:

(84) \textit{Nem akarja, hogy ő is rossz jegyet kapjon.}  
‘He doesn’t want that he too get a bad grade’

(85) \textit{Nem akarta, hogy csak ő menjen busszal.}  
‘He didn’t want that only he take the bus’

It is important to observe now that the coreferential/bound non-obviative overt subject of the subjunctive in Hungarian can be interpreted either de re or de se. E.g.,

(86) \textit{A(z amnéziás) hős nem akarta, hogy csak ő kap-j-on érdemrend-et.}  
the amnesiac hero not wanted-3sg that only he get-SUBJ-3SG medal-ACC  
‘The (amnesiac) hero did not want that only he get a medal’

de re or de se

This contrasts sharply with the interpretation of the overt infinitival subject of control complements, as observed by Márta Abrusán (p.c.):

(87) \textit{A(z amnéziás) hős nem akart csak ő kap-ni érdemrend-et.}  
the amnesiac hero not wanted-3sg only he get-INF medal-ACC  
‘The (amnesiac) hero did not want it to be the case that only he gets a medal’

only de se
The interpretation of (87) differs from that of the run-of-the-mill control construction (88) just in what the operator csak ‘only’ attached to the subject contributes.

(88) A(z amnéziás) hős nem akart pro érdemrend-et kap-ni.
the amnesiac hero not wanted-3SG medal-ACC get-INF
‘The (amnesiac) hero did not want to get a medal’
only de se

The same observations hold for all the other Hungarian control verbs, including utál ‘hate’, elfelejt ‘forget’, etc. So,

(89) Abrusán’s Observation About De Se Pronouns
The overt pronoun in the subject position of infinitival control complements is interpreted exclusively de se.

The standard assumption is that the de se interpretation of PRO is a matter of the lexical semantics of PRO. What we see, however, is that an obligatorily controlled infinitival subject is always interpreted de se, irrespective of whether it is null (PRO) or an overt pronoun. There are two possibilities now. One is that our overt pronouns are simply phonetically realized instances of PRO, the de se anaphor. The other is that de se interpretation is forced on any pronominal by the semantics of the infinitival control relation. This latter position seems preferable. Descriptively, it fits better with the fact that in other, non-control propositional attitude contexts the overt pronouns are optionally interpreted de re or de se, and that non-de se PRO is perfectly possible in non-controlled contexts (viz., arbitrary PRO). This position also holds out the hope that once the semantics of infinitival control is better explicated, the obligatoriness of the de se reading is explained. The lexical de se anaphor proposal would simply stipulate that control constructions only accept lexical de se anaphors as subjects.

Languages differ in exactly what exemptions from obviation they allow in subjunctives, but the de se interpretation of overt infinitival control subjects is a diagnostic to look for when one wishes to ascertain whether a language exhibits the same phenomenon as Hungarian.

7. Conclusion

This paper has argued that infinitival complements of subject control and subject-to-subject raising verbs in Hungarian can have overt nominative subjects. It was proposed that simple assumptions of Minimalism, such as long-distance Agree and multiple Agree, together with standard Binding Theoretic considerations, suffice to explain their availability and distribution. It was pointed out that it seems
neither necessary nor advantageous to invoke inflected infinitives, government of the subject from C, or backward control.

If overt nominative subjects in infinitives come so cheap, the question arises why we do not find them in language after language. Szabolcsi (2007) argues that we actually do find them in various languages, although the most intensively studied ones, English, German, Dutch, and French are not among them. What controls this cross-linguistic difference is probably the most interesting research question here. The present paper hopes to facilitate that research by providing a careful description of the Hungarian data and offering a preliminary analysis.

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