AKADÉMIAI KIADÓ

Pushed out of arm's reach: Pronouns and spatial anaphora in Hungarian

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ABSTRACT

This paper investigates hitherto unnoticed variation in the linguistic coding of spatial anaphora in locative PPs in Hungarian. While Hungarian primarily employs reflexives in these configurations, it is well-known that pronouns are the default strategy in English, and the reflexive anaphor is allowed in locative PPs only in the presence of certain licensing factors. One such factor is the availability of body-oriented readings (Rooryck & Vanden Wyngaerd 2007, 2011), and we argue here that this plays an important role in Hungarian, too. The paper reports the findings of a corpus study and an online questionnaire study and shows that pronouns are not only acceptable in Hungarian spatial anaphora, but either outperform or form a viable alternative to reflexives when the location denoted by the PP is not close to the referent of the antecedent. A secondary effect of structure building is also observable in two configurations of the extended PP. We argue that the employment of a possessive structure in certain PPs, and moving a P-element to a CP_{PP} cap may also contribute to saving pronouns in contexts of spatial anaphora.

1. INTRODUCTION

Locative PPs represent a well-known construction type wherein the complementarity between pronouns and anaphors is not immediately apparent. In English, both pronouns and reflexives are grammatical in configurations of spatial anaphora (a.k.a. *snake sentences*), though the former have been claimed to be the unmarked or the preferred choice (see, among others, Faltz 1985, 100,

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Reinhart & Reuland 1993, 687 and Huddleston & Pullum 2002, 1489). Thus in the examples below, both the pronoun and the reflexive can be co-construed with the subject *John*:[1]

(1)   a.   John$_i$ saw a snake near him$_i$/himself$_i$.

       b.   John$_i$ placed the snake near him$_i$/himself$_i$.

A prominent licensing factor for the reflexive here is logophoricity, i.e., the dependence of the reflexive on antecedents whose point of view is described in the embedding piece of discourse (see especially Reinhart & Reuland 1993). The marked character of the reflexive follows from its discourse dependence, and, taken for granted, this supports the view that the PP is a binding domain in English and the pronoun is the natural choice for coding spatial anaphora.[2]

But, as Rooryck & Vanden Wyngaerd (2007, 2011) argue at length, the reflexive can be just as natural as the pronoun in snake sentences if the sentence supports a body-oriented reading. Consider their minimal pair for illustration (Rooryck & Vanden Wyngaerd 2011, 257):

(2)   a.   When he$_i$ woke up, John$_i$ found a rope around him$_i$.
             He had been tied up/It described a neat circle 4 m in diameter.

       b.   When he$_i$ woke up, John$_i$ found a rope around himself$_i$.
             He had been tied up/*It described a neat circle 4 m in diameter.

Both (2a) and (2b) are compatible with a scenario in which John is tied up and the rope is in close contact with his body. If, however, it is clear from the context that the rope is further removed from John, then only the pronoun is acceptable. Thus the nature of the location matters: the English reflexive requires a locative relation of close bodily proximity, and in cases like (2b), discourse factors do not play a role in its licensing.

Our central goal in this paper is to argue that this factor also plays an important role in Hungarian, a language where reflexives have been argued to be the obligatory choice in snake sentences (Marácz 1989; É. Kiss 1987). Hungarian has three types of spatial P-elements: case

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[1] We use referential indices in this paper to mark referential dependencies without making any particular commitment to the nature of the dependency involved. When it is important to distinguish between true bound variable interpretations and coreference-based or logophoric uses, we make appropriate comments in the running text.

[2] This interpretation of the data in (1) allows one to treat non-functional spatial PPs uniformly as binding domains, since a logophoric/exempt reflexive will typically have a non-local linguistic antecedent, if any. One alternative proposed in the literature (see Hestvik 1991 and Büring 2005) is to assume that there is an asymmetry between pronouns and reflexives in these configurations: the PP is a binding domain for the pronoun, but it is not a binding domain for the reflexive (the embedding clause is). Among other problems, this provides no account for the frequent discourse dependence of the reflexive in these contexts, nor for other interpretative differences between pronouns and reflexives that we discuss in this paper. Our account presented here does not share the assumption that the PP has the same structure both in the reflexive and the pronoun variety of snake sentences, and we will argue that the syntactic structure of the PP is more complex in the pronoun construction than in the case of the reflexive.

suffixes, case-like postpositions, and case-assigning postpositions.[3] Case suffixes and case-like postpositions bear agreement morphology if their non–case-marked complement is a (*pro*-dropped or overt) pronoun, and case-assigning postpositions take a case-marked complement. The pronoun strategy has been described as ungrammatical in each of the three types of spatial PPs in snake sentences in the syntactic literature. The following example with a case-like P is from É. Kiss (1987, 185–186).[4]

(3) János$_i$ letette a könyvet *{(ő)mellé$_i$} / maga$_i$ mellé.
     John down.put.3SG the book.ACC (he.)to.beside.3SG himself to.beside
     'John put down the book beside him/himself.'

While we essentially agree with É. Kiss's evaluation of this particular example, we will argue here that the pronominal strategy is a genuine option even in standard Hungarian. In fact, if the right configuration is available, pronouns may even fare better than reflexives in spatial anaphora.

   We take Rákosi (2010, 2012) as our starting point, where it is shown that pronouns are an alternative for the majority of speakers in non-third persons. Here we report the results of our corpus and questionnaire studies to provide solid evidence that pronouns are in fact acceptable across the board and may even be preferred if the right conditions are met. The major factor is the nature of the location denoted: while reflexives are the only option in body-oriented readings

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[3]We provide an example for each type of P below in (i–iii). Lexical noun phrase complements precede P-elements in Hungarian (the a-examples), and these complements bear case-morphology in the case of case-assigning Ps. The postposition *együtt* 'together', for example, requires its complement to be marked with comitative case (iiia). Pronominal complements are by default realized as agreement-morphology on the P head if it is a case suffix (ib) or a case-like P (iib). Case-assigning Ps take the pronominal form of the appropriate case suffix. The pronoun complement itself is usually *pro*-dropped.

(i)   a. Peti-vel   b. vel-e   *case suffix*
          Pete-with   with-3SG
          'with Pete'   'with her/him/it'

(ii) a. Peti mellett   b. mellett-e   *case-like P*
          Pete beside   beside-3SG
          'beside Pete'   'beside her/him/it'

(iii) a. Peti-vel együtt b. vel-e együtt   *case-assigning P*
          Pete-with together   with-3SG together
          'together with Pete'   'together with her/him/it'

We follow É. Kiss & Hegedűs (2021) in the terminology we use here to describe Hungarian P-types. We refer the reader to É. Kiss & Hegedűs (2021), as well as to Asbury (2008), Bartos (1999), Dékány (2009, 2011), Dékány & Hegedűs (2015), É. Kiss (1998, 2002), Hegedűs (2013) and Marácz (1989) for detailed discussions of the morphosyntax of Hungarian PPs.

[4]Marácz (1989, 393–394) reports similar data and judgements. Two notes on the specific example in (3) are in order here. First, the reflexive and the reciprocal anaphor do not trigger agreement with the P-head. Essentially, anaphors pattern up with lexical noun phrases. Second, directional Ps that include the now obsolete lative case ending -é/-á have non-distinct 3SG and bare forms (see É. Kiss 1998, 128–129) for a discussion. Consequently, *mellé* is ambiguous between a 3SG agreeing form ('beside/next to him') and a bare P ('beside/next to'). The difference is visible elsewhere, see the examples in footnote 3.

in practically any syntactic context, the pronoun becomes a true alternative if the Figure is to be located at some distance away from the individual denoted by the complement of the P-element. With some extra structure added to the usual PP configuration, the pronoun actually is the better alternative for everyone.

The structure of the paper is as follows. Section 2 spells out the empirical background behind our questionnaire studies, including a discussion of previous work on pertinent variation in constructions of spatial anaphora in Hungarian, as well as the results of our corpus studies and pilot studies. In Section 3, we report the results of our main questionnaire study. We use these data in Section 4 to argue for a differential syntactic treatment of reflexive and pronominal spatial anaphora in Hungarian, and we present our respective analyses. We follow Rooryck & Vanden Wyngaerd (2007, 2011) in our analysis of the reflexive variety of snake sentences, but we will argue that the pronoun construction is only available to the extent that some extra syntactic structure is added to the default PP core. Section 5 concludes the paper.

2. THE EMPIRICAL BACKGROUND

2.1. The previous literature on variation within Hungarian

It has been noted in the pertinent literature that some Hungarian dialects prefer the pronoun to the otherwise standard reflexive in the following construction (see Hegedűs 2012, 180–181, den Dikken et al. 2001, footnote 9).

(4) Én nem viszek %velem / magammal esernyőt.
     I   not take   with.1SG myself.with umbrella.ACC
     'I do not take an umbrella with me.'

The pronoun version is found mainly in the western part of Hungary (mostly along the Austrian border), and in some archaic Hungarian dialects on the eastern slopes of the Carpathians in Romania. Note that (4) contains a case marker (comitative case), and Hungarian dialect studies do not offer a comprehensive discussion of spatial anaphora. This particular example is also a somewhat atypical specimen of spatial anaphora, since the pronoun is obligatorily co-construed with the subject.[5]

Rákosi (2010, 2012) is a first attempt aimed at probing into the scale of variation that is attested in standard colloquial Hungarian in the use of the pronominal strategy in snake sentences. Rákosi (2012) in particular reports the results of a questionnaire study which included

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[5]Such predicates require the pronoun in English, and the reflexive is ungrammatical, irrespective of the availability of body-oriented readings or of potentially favourable discourse conditions for logophoric uses (see Smith 2004).

(i)   Mary$_i$ brought her lunch with her$_i$/*herself$_i$.

(ii) He$_i$ looked about him$_i$/*himself$_i$.

(iii) The tramp$_i$ had a lot of money on him$_i$/*himself$_i$.

We did not include such examples in our current survey.

target examples with inflected spatial case markers (see (4) above) and case-like Ps (illustrated by (5) below) ($N = 45$). The sentence that received the highest rating (1.29 on the average on a 5-point scale from 2 to −2) is the following:

(5) Mi   láttunk   mellettünk   valamit   az   út   szélén.
     we   saw.1PL   beside.1PL   something.ACC   the   road   side.POSS.on
     'We saw something next to us at the side of the road.'

The dominant factor influencing the judgements was the agreement feature content of the P-element, and the level of acceptability correlated with the following scale: 1PL > 1 SG > 3PL > 3SG.[6] These results confirm the judgements on the 3SG example in (3), since an instance of this construction scored only −0.87 on the average in this survey. But these results also inform us that the pronominal strategy is a viable (though perhaps marked) option for many Hungarian speakers. To be precise, it is an option in PPs headed by case-like Ps – the pronoun version of (4) was barely acceptable for the participants of this survey (with mean judgements at −1.47 on the 5-point scale from 2 to −2). Thus while the pronoun in (4) is indeed a dialectal phenomenon with restricted scope, the relative acceptability of (5) is characteristic of a much wider population of speakers of standard colloquial Hungarian.

In our current inquiry, our aim is to dig deeper into this domain by the inclusion of case-assigning Ps and by paying special attention to the location factor mentioned in Section 1. Before concluding this subsection, we note that the pronominal coding of spatial anaphora was acceptable across the board in earlier stages of Hungarian, including even 3SG forms in Old Hungarian. The following example is from Hegedűs (2014, 137), and it contains both an inflected case marker (*nala*) and a case-like postposition (*mellette*) in a syntactic context where only the reflexive anaphor is grammatical in current Hungarian.

(6) Az   eleuen   zent   kereztfat   myndenkoron [PP   ev   nala]
     the   living   saint   cross.ACC   always   she   at.3SG
     vagy [PP   ev   mellette]   targya   vala.
     or   she   beside.3SG   keep.3SG   past
     'She always kept the saint cross at or beside her(self).' (Margaret Legend, 14th century)

One possible reason behind the variation that we see in modern Hungarian in pronoun acceptability might actually stem from differing historical paths of development: more archaic dialects might have preserved this older stage of the language. Thus the easternmost dialects that prefer the pronoun in (4) may simply do so because they are archaic.[7] In Section 4, we return to this issue to argue that variation in current standard Hungarian may also be related to a potentially uneven spread of PP grammaticalization across the Hungarian speaking community in a way that affects judgements concerning examples like (5).

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[6] 2SG or 2PL examples were not included in the survey, but such examples would pattern up with 1SG and 1PL snake sentences, respectively.

[7] For the westernmost dialects, the presence of the pronominal strategy in (4) may be a contact phenomenon, a feature adopted or maintained under German influence. German has pronoun/reflexive syncretism in first and second persons.

2.2. Background data collection

To get a firmer grip on the data, we conducted a corpus study and two pilots, and we used the results of these inquiries in setting up the design for our main questionnaire. The corpus study was performed on version v2.0.5 of the Hungarian National Corpus (Oravecz et al. 2014), and it produced the following major results.

First and foremost, the corpus data provide clear evidence that the pronoun strategy is available in Hungarian snake sentences even if it is infrequent in comparison to the reflexive strategy. Table 1 contains some illustrative data involving four case-like and two case-assigning postpositions. The case-assigning postposition *szemben* 'in front of me' requires comitative case on its complement, whereas the complement of *keresztül* 'through' is in superessive case.

For this set of data, we used search expressions to get hits which contain the 1SG form of either the pronominal or the reflexive PP in the vicinity of a 1SG verb form. The results were then manually checked and selected to include only the target examples, that is, only cases where the PP and the verb are indeed in the same clause. It is evident that the pronoun version is an existing, albeit less frequent alternative to reflexives in Hungarian, and thus the construction that we are investigating in this paper is a learnable trait of Hungarian, and not an experimental artefact.

The pronoun hits frequently include some extra material on top of the target PP: another VP-internal PP, a particle on the verb, or the locative adverbials *itt* 'here' or *ott* 'there'. Example (7) below illustrates this latter construction, and it is one of our test items from the main questionnaire:

(7)   Köszöntöm   itt   velem   szemben   Kovács Péter   közgazdászt.
        greet.1SG   here   with.1SG   opposite   Kovács Péter   economist.ACC
        'I welcome the economist Kovács Péter here opposite me.'

The corpus search also provided evidence for the relevance of the location factor that Rooryck & Vanden Wyngaerd (2007, 2011) show to be a key determining factor in the grammar of spatial anaphora. The pronoun hits typically describe situations in which the Figure is located at some distance away from the referent of the antecedent, as in the case of

Table 1. 1SG pronominal and reflexive complements of Ps in the local context of 1SG verbs in the HNC

P type	1SG *pro*(noun)	N_P	reflexive + P	N_R	$N_R{:}N_P$
case-like	*mellettem* 'next to me'	19	*magam mellett* 'next to myself'	441	23:1
	mögöttem 'beyond me'	8	*magam mögött* 'beyond myself'	953	119:1
	mellém '(to) next to me'	8	*magam mellé* '(to) next to myself'	511	69:1
	fölém '(to) above me'	3	*magam fölé* '(to) above myself'	45	15:1
case-assigning	*velem szemben* 'in front of me'	6	*magammal szemben* 'in front of myself'	271	45:1
	rajtam keresztül 'through me'	1	*magamon keresztül* 'through myself'	10	10:1

watching something in the sky above one's head, or in the case of looking at things at the bottom of the sea while one is swimming. Following the literature on the cognitive aspects of the linguistic coding of the near/far distinction, we define being far as being out of arm's reach (see Kemmerer 1999 for an overview). Thus (7) instantiates our far condition since the public event it describes will typically involve the two participants located at a distance that reaches beyond the personal space around either individual. Our body condition involves situations in which this distance is either within arm's reach (as in laying a towel under one's body to sleep on it, or pulling somebody else's hand close to oneself), or when the event described directly targets the body of the referent of the antecedent (for example, when one runs low tension current through one's body in an experiment, or when looks down on one's own body).

Some of the corpus hits describe situations in which the referent of the pronoun and the referent of the antecedent are referentially distinct or, in the terminology of Heim (1998), they spell out different guises of the same individual. (8) is one such example:

(8)   Rajtam   kívül   éltem.
        on.1SG   outside   lived.1SG
        'I was living outside of me.'

The predicate here is anti-reflexive and it only supports coreference-based interpretations. We avoided such examples in our questionnaire study, and included only items where both coreferential and bound variable readings are possible (see Subsection 4.3 below for more on this).

The literature on spatial anaphora reports restrictions on the thematic type of the PP. In Hebrew, for example, the reflexive is obligatory if the PP describes a path, but not when it describes a place (Bassel 2018). We found no particular evidence for such thematic restrictions in our corpus study, since the pronoun hits instantiate all types of PPs, including places, paths, sources and goals. Our pilot questionnaires did not reveal an obvious sensitivity to this issue in Hungarian, and we therefore did not include this parameter in our study.

In sum, the results of our preliminary corpus and questionnaire studies were incorporated in the design of our main questionnaire as follows. First, we tested only case-like and case-assigning postpositions in clauses whose predicate is neither obligatorily reflexive (*I brought the umbrella with me*), nor anti-reflexive (*I lived outside of me*). Second, we paid special attention to the location parameter by carefully separating what we call here the body condition from the far condition. Third, we only used 1SG test items, since non-third person snake sentences fare much better for native speakers in the pronoun condition (see the previous subsection). Thus if we want to investigate the relevance of the location factor in Hungarian, we may expect more solid judgements with 1SG test items. Four, we only used *pro*-dropped pronominal examples. This is the usual case in Hungarian, the pronoun itself is only overt in PPs if it has an obvious discourse function. Overt pronouns are also a better fit for coreference-based interpretation, but since our focus was on testing whether pronouns may function as a true alternative to reflexives in snake sentences, we selected only *pro*-dropped examples. If judged acceptable, such examples provide a stronger case for the genuine availability of the pronominal strategy in snake sentences in Hungarian.

3. THE EXPERIMENT

3.1. The design

The aim of the online questionnaire was to test the overall assumption that besides reflexives, pronominals are also acceptable in snake sentences. Participants saw contrastive pairs of sentences on the screen, and the items in each pair were identical except for the choice of the PP-complement (*pro*-dropped pronoun vs. reflexive). Their task was to rate each sentence separately on a 5-point Likert scale from 1 (totally unacceptable) to 5 (totally acceptable). The underlying intention here was to force the subjects to be aware of the competition between pronouns and reflexives. If pronouns receive high ratings even in the obvious presence of the reflexive alternative, then that provides a strong case for the availability of the pronoun construction in snake sentences. The hypotheses tested are given below:

H1   Pronouns are more acceptable than reflexives when the location denoted by the PP is not close to the referent of the antecedent.[8]

H2   Pronouns are more acceptable with case-assigning Ps than with case-like Ps.

The rationale behind Hypothesis 2 is that, other things being equal, we expect a visible increase in the complexity of PP structure (the case-assigning P head *plus* the case suffix on its complement) to correlate with extra structure building in the syntax. This extra structure may help avoid a Principle B violation in case the pronoun is used.

We used a mixed design in the experiment, we tested two within-subjects factors with two levels each: pronoun type: pronoun vs. reflexive, and location: body vs. far. To minimize the chance of participants' being accustomed to structures which have been described as marginal before and to avoid a decline in performance due to fatigue, we also had a between-subjects variable: one group of participants rated examples with case-like postpositions, while the other group saw test items only with case-assigning postpositions (P-type: case-like Ps vs. case-assigning Ps).

In both conditions of P-type, the questionnaire contained 12 test items (6 pairs of sentences), and there were 4 pairs of fillers. Two of the latter contained sentences that were totally unacceptable, while the other two pairs consisted of fully acceptable sentences. These were inserted to check whether participants were paying attention or were just clicking randomly while filling in the test. As a result of this screening procedure, we had to exclude eight subjects out of 103 in the case-like P condition, and three out of 108 in the case-assigning P condition, since they provided controversial judgements in the fillers. Tables 2 and 3 summarize the gender, age and typical childhood location data of the remaining participants.[9]

3.2. The results

The overall results are shown in Table 4. Preliminary findings indicate that the highest average rating occurred with case-like Ps in the reflexive, body condition, while the lowest average rating

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[8]Being far is taken to be anywhere in the zone which is beyond arm's reach, see Subsection 2.2.

[9]In both groups of subjects there were participants who failed to provide information on their regional background, i.e., they did not specify where they spent their childhood.

Table 2. Participants in the case-like P condition

SEX	Male	Female		TOTAL
	22	73		95
AGE	19–29 years	30–39 years	40+ years	
	37	23	35	95
REGION	Tiszántúl (east)	Duna-Tisza köze (mid)	Dunántúl (west)	
	59	16	9	84 (11 missing)

Table 3. Participants in the case-assigning P condition

SEX	Male	Female		TOTAL
	27	78		105
AGE	19–29 years	30–39 years	40+ years	
	26	24	55	105
REGION	Tiszántúl (east)	Duna-Tisza köze (mid)	Dunántúl (west)	
	51	37	16	104 (1 missing)

can be found with case-assigning Ps in the pronoun, body condition.[10] It is also revealed that reflexives received higher ratings with case-like Ps, and pronouns fared better in the far condition in general.

We carried out a mixed design ANOVA to analyse the results. There was a significant two-way interaction between pronoun type and location: $F(1, 198) = 531.006$, $P < 0.001$, $\eta^2 = 0.73$. This means that pronouns got higher ratings when the location is far (i.e., beyond arm's reach) from the referent of the antecedent, while reflexives received higher ratings when the location denoted by the PP is close (within arm's reach, our body condition). Hence, our first hypothesis has been confirmed.

We also found a significant three-way interaction: $F(1, 198) = 37.975$, $P < 0.001$, $\eta^2 = 0.16$. The interaction is represented in Fig. 1.

Fig. 1 shows that with case-assigning Ps, pronouns are more acceptable in the far condition than in the body condition ("near"), while reflexives show just the opposite pattern. In fact, pronouns outcompeted reflexives in the far condition in this case. With case-like Ps,

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[10]In principle, one would expect pronouns in the body condition to be slightly better with case-assigning Ps than with case-like Ps (see section 4 for a discussion). The reason why our actual data show the inverse of this expected pattern is probably due to the fact that two of our test items strongly evoked the body schema in the case-assigning P condition (*running low tension current through one's body in an experiment* and *looking down on one's own body*). We did not have such examples in the case-like P condition, and this lack of balancing across these two conditions is most probably the factor that is responsible for this result. Note that reflexives in the body condition were somewhat better in the case-like P construction (4.86) than in the case-assigning P construction (4.47) as expected, even with the biasing factor just described.

Table 4. Overall results

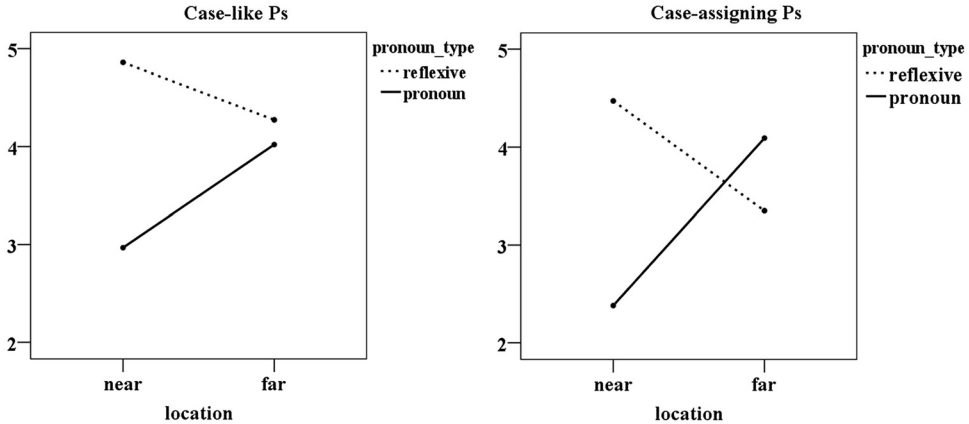| P-TYPE	PRONOUN TYPE	LOCATION	MEAN	SD
case-like P	reflexive	body	4.86	0.31
		far	4.27	0.68
	pronoun	body	2.97	0.95
		far	4.02	0.76
case-assigning P	reflexive	body	4.47	0.58
		far	3.35	0.99
	pronoun	body	2.38	0.77
		far	4.09	0.85

Fig. 1. The significant three-way interaction

pronouns do not outperform reflexives in the far condition, nevertheless they represent an alternative, since the average ratings are almost the same for pronouns and reflexives in the far condition. This means that the second hypothesis has been partially confirmed.

We illustrate the empirical landscape behind these data with two quartets of test items, one from the far condition, and one from the body condition. Consider this set from the far condition first, with the mean judgements given after the respective items:

(9)   Köszöntöm   itt   ………………   Nagy József   közgazdászt.
         greet.1SG   here   Nagy József   economist.ACC
         'I welcome the economist Nagy József next to/opposite me.'

(a)   P/Case-like_P   mellettem   4.04
                      next.to.1SG
      R/Case-like_P   magam   mellett   3.91
                      myself   next.to

(b)   P/Case-assign_P   velem   szemben   4.66
                        with.1SG   opposite
      R/Case-assign_P   magammal   szemben   2.50
                        myself.with opposite

The pronoun was the more acceptable choice in both the case-like P condition and in the case-assigning P condition, but whereas the gap is minimal in the former, it becomes much more pronounced in the latter case. The next two pairs illustrate our body condition.

(10)   A   törölközőt   is   ……………   terítem, (…).
       the   towel.ACC   too   lay.1SG
       'I lay the towel too under myself.'

       P/Case-like_P   alám   2.89
                              to_under.1SG
       R/Case-like_P   magam alá   4.89
                              myself   to_under

(11)   A   kísérlet   során   áramot   vezetek   ……………
       the   experiment during   current.ACC run.1SG
       'During the experiment, I run electric current through myself.'

       P/Case-assign_P   rajtam   keresztül.   2.18
                         on.1SG   through
       R/Case-assign_P   magamon   keresztül   4.38
                         myself.on through

As is clear, the pronoun is a weak competitor in this case, and it fared much worse in both construction types than the reflexive.

3.3. Some notes on individual variation

We have also tried to interview individual native speakers on several occasions on how they react to Hungarian snake sentences, and the following two trends have emerged. First, speakers tend to be divided in their judgements pertaining to pronouns in case-like P constructions: many find such examples marked or "weird", whereas other speakers may accept them without reservation. Second, even the rejecters tend to find pronouns in case-assigning P constructions more or totally acceptable. The weight of these observations is also detectable in our questionnaire data. In Fig. 2 below, we illustrate individual variation in terms of the individual ratings for each participant, i.e. the variable represented in the figure shows the
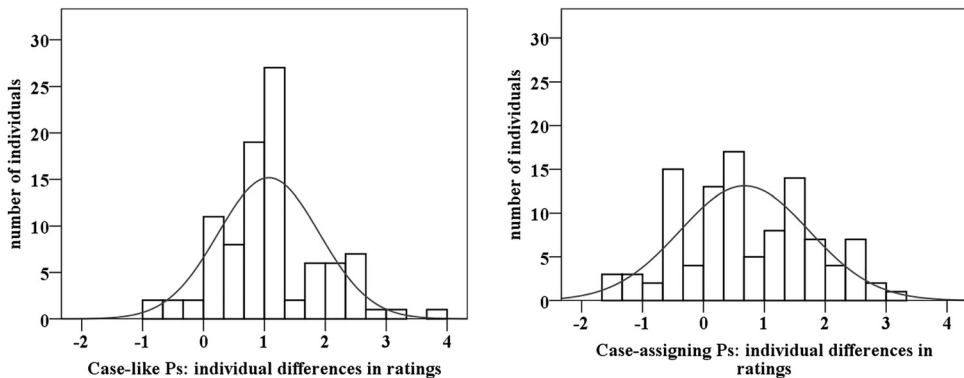
Fig. 2. Individual variation, represented variable: mean of reflexive ratings – mean of pronoun ratings

respective value of the calculated difference between the mean of reflexive and pronoun ratings.[11]

In the case of those participants who provided higher average ratings in the pronoun condition than in the reflexive condition, the value in question is below zero (collapsing the results of the body and far conditions). As Fig. 2 shows, only 6 subjects gave higher ratings for pronouns than for reflexives in the case-like P condition (out of 95), whereas in the case-assigning P condition this number raised to 27 subjects (out of 105). In visual terms, this is represented by a slight shift to the left in the case of case-assigning Ps in the figure. This gives at least partial confirmation to our second experimental hypothesis, namely, more subjects gave higher ratings to pronouns in the case-assigning P condition.

We add finally that we tried to find statistical correlations between the individual ratings and the social variables that we collected, but none of these were significant. In absolute terms, the lowest ratings for pronouns (and the highest ratings for reflexives) come from the youngest generation (19–29) and from subjects from the eastern part of Hungary (the Tiszántúl region). Further data collection of a much wider scale is needed to test whether these tendencies are real.

4. SYNTACTIC DIFFERENCES

4.1. Interim summary

The most important result of our empirical data collection is the evidence that pronouns are acceptable in snake sentences in Hungarian. Nevertheless, they represent a true alternative to reflexives only in our far condition, i.e., when the Figure is beyond the reach of the referent of the pronoun. There is no real competition when it is not, since reflexives tend to be the only acceptable option in our body condition. We also see a secondary effect of syntactic structure: reflexives are somewhat worse in case-assigning P constructions, and pronouns are somewhat

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[11]The histograms in Fig. 2 show the number of those participants (indicated by the height of each bar) whose calculated difference of average ratings fall into the ranges given.

better in the self-same context at least in the far condition, with substantial variation in individual judgements.

In this section, we discuss what these results mean for the syntactic analysis of snake sentences in Hungarian. We adopt Rooryck & Vanden Wyngaerd's (2007, 2011) analysis for the reflexive cases, but we present an alternative analysis for the pronoun construction. Our account rests on the assumption that PPs in the pronoun condition can have a more complex syntactic structure than in the reflexive condition, and this structural variation is also supported by factors independent of our current concerns.

4.2. Reflexives and the body

As discussed in the introduction, Rooryck & Vanden Wyngaerd's (2007, 2011) analysis of snake sentences aims at, among other goals, capturing the interpretive difference between pairs of the following kind:

(12)   a.   Mary kept her childhood dolls close to her.   (= proximity/vicinity)

        b.   Mary kept her childhood dolls close to herself.   (= against her body)

They note that the choice of the pronoun allows for a relatively abstract understanding of the space denoted (Rooryck & Vanden Wyngaerd 2011, 235). The doll could be kept, for example, at Mary's home. The reflexive (12b), however, requires a situation in which the doll is kept close to Mary's body.

They draw on work that incorporates spatial axes or *axial parts* in the grammatical representation of nominal expressions and spatial prepositions.[12] They argue in particular that the *-self* morpheme of English reflexives "is semantically rich enough to provide the semantics of axial dimensions in the appropriate syntactic context", and it comes with a valued dimensional feature (op. cited 247). It can thus value the unvalued dimensional feature in the AxPartP layer of the decomposition of the PP. (12b) is analysed in this system as follows, using their notation (op. cited 254):

(13)   Mary kept her childhood dolls
        $[_{\text{PlaceP}}$ close $[_{\text{AxPartP}}$ {DIM: prox*} $[_{\text{KP}}$ to $[_{\text{D}}$ herself {DIM: prox, dist}]]]]

They assume that the axial dimension that the reflexive provides accounts for the body-oriented interpretation which we see attested in (12b). The PP is not a binding domain in their analysis (as they explicitly claim, it is not a phase) in (13), and the reflexive can straightforwardly enter a local referential dependency with its subject antecedent.

We adopt this account for Hungarian under the assumption that (i) the PP is not phasal in Hungarian in the default case (but see Subsection 4.3 for more on this), and that (ii) the Hungarian reflexive *magam* 'myself' is also lexically equipped with axial features. This second assumption is especially motivated in Hungarian, since the Hungarian reflexive is a grammaticalized possessive

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[12]See Svenonius (2006) and subsequent work. For arguments supporting the postulation of AxPartP in Hungarian PPs, see Asbury (2008) and Dékány (2011). We use the term PP informally as a shorthand for any syntactic variant of full-fledged adpositional phrases.

structure with a nominal head that probably meant 'body' in the period preceding Old Hungarian (see Rákosi 2011 for an overview discussion). We use one of our test items from the case-like P condition for illustration, focusing on the essentials:

(14)   Állandóan   hallottam
            constantly   heard.1SG
            [[[magam {DIM: prox, dist} $_{DP}$] {DIM: prox*} $_{AxPartP}$] mögött $_{PlaceP}$] a   mocorgását.
              myself   behind   the fidgeting.POSS.ACC
            'I could constantly hear his fidgeting behind myself.'

Since the reflexive is the default case in Hungarian snake sentences, we do not claim that it always contributes axial dimensional features, but when it does so, the body-oriented interpretation is positively there. Irrespective of this question, the Hungarian PP is not phasal by default, and the binding domain for the reflexive is thus the embedding clause. The pronoun construction, however, is different. We present our arguments for the differential syntactic treatment of pronominal snake sentences in the next subsection.

4.3. Pronouns and syntactic complexity in snake sentences

Rooryck & Vanden Wyngaerd (2007, 2011) argue that pronouns, unlike reflexives, lack axial dimensions in English, and they are thus unable to value the features of AxPart. Here therefore AxPart enters the derivation with valued features. They assume furthermore that AxPart also hosts a Speaker-variable in this case, which is bound by the structural representation of the speaker in Evid(ential)P in the left periphery of the clause. The emerging structure is as follows (focusing again, on the relevant details, op. cited 254):

(15)   Mary kept her childhood dolls close to her.
            [$_{EvidP}$ **Sp**$_{1sg}$ [$_{TP}$ Mary kept her dolls … [$_{Place}$ close [$_{AxPart}$ {DIM: prox}[$_K$ to [$_D$ her]]]]]]

On the one hand, this analysis accounts for the semantic difference between (12a = 15) and (12b). An observer-centered interpretation arises from the binding of the speaker variable in AxPart, which is concomitant with a broader and more abstract construal of space, lacking the body-oriented focus that the reflexive structure in (12b) manifests. On the other hand, they argue that (15) involves two occurrences of the speaker (in EvidP and in AxPart), and it creates a structure which is "identical to […] two consecutive sentences in the discourse" (op. cited 248). They explicitly claim that the PP here is a phase, and therefore the dependency between the pronoun and the subject antecedent is not local.[13]

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[13]Their major empirical argument for this is that the pronoun in snake sentences behaves like an E-type pronoun in cross-sentential anaphora. Compare the following two examples.

(i) Every boy saw a snake near them/*him.

(ii) Everyone came in. They/*He sat down.

Hungarian is different in this respect, see (18) below.

The syntactic structure in (15) comes, so to say, for free. This is welcome inasmuch as it is indeed the pronoun strategy that is the default in English snake sentences both in terms of frequency and in terms of its less specific semantics in comparison to reflexives. The Hungarian facts are, however, different. Pronouns are only a marked alternative in snake sentences in Hungarian, and their use shows substantial inter-speaker variation. We therefore do not adopt Rooryck & Vanden Wyngaerd's (2007, 2011) analysis for Hungarian. We argue instead that there are two, independently motivated, structure-building strategies for Hungarian PPs that help save the pronoun, at least in the far condition. The logic of the argument is that the Hungarian PP is not phasal by default, but it may become so equipped if there is a need to express the beyond-arm's-reach readings that are incompatible with the reflexive strategy.

The first of these structure-building processes is the employment of a possessive structure in certain PPs. Many of the Hungarian P-elements originate from possessive structures historically, and as Hegedűs (2014) shows, they have lost their possessive character gradually during the grammaticalization process. Some of their possessive traits are in fact still available synchronically, and Rákosi (2010, 2012) argues that this is what makes pronouns in snake sentences acceptable. In particular, he postulates a silent PLACE predicate in an LFG-based syntactic analysis in the structure of these PPs, so that *mellettem* 'beside me' essentially is equivalent both syntactically and semantically to 'beside my place'. This possessive structure is a marked alternative to a more run-of-the-mill, non-possessive PP configuration, and it can be seen as a late fossil of the possessive diachrony available for those speakers who are more permissive towards pronouns in snake sentences.

Dékány (2011, 2018) provides a list of arguments for the synchronic possessive analysis of *all* Hungarian PPs.[14] She assumes in particular that they contain a silent light noun PLACE, which is "less lexical and referential than ordinary nouns and depend[s] on a higher functional head for licensing and interpretation" (op. cited 384). This silent noun is the possessum inside the complement of the PP, and the pronominal "possessor" is also spelled out in this domain:

(16)   [FP [DPposs én] [F' [PP [NP [PLACE] [DP ~~én~~]]   mellett]   -em]]
                      I   beside   1.SG
         'beside me'

The pronoun then moves to an FP cap at the top, where the agreement morphology of the postposition is also spelled out. The pronoun itself can also be *pro*-dropped, as happens with the examples cited in this paper.

Since Dékány (2011, 2018) accounts successfully for the morphosyntactic linearization facts, among other things, we have no reasons to reject it. At the same time, we intend to maintain the spirit of Rákosi's (2010, 2012) account in assuming that some PPs can be less grammaticalized possessive constructions for some speakers at least. We suggest therefore that the silent PLACE predicate has a (more) referential version that is in fact detectable. Consider the following minimal pair for illustration:

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[14]We refer the reader to Dékány (2011, 2018) for a comprehensive discussion of the literature that postulates a possessive structure for PPs.

(17)   a.   Minden   hétvégén   partikat   tartok   nálam. Az   a   legjobb   hely.
            every   weekend.on parties.ACC keep.1SG at.1SG   that the   best   place
            'I have parties at my place every weekend. That is the best place.'

         b.   Mindig   tartok   ollót   magamnál.   #Az   a   legjobb   hely.
            always   keep.1SG   scissors.ACC myself.at   that the   best   place
            'I always keep scissors with me. #That is the best place.'

(17a) contains a PP that has this referential PLACE predicate, which can be referenced in discourse. (17b) has a PP with the run-of-the-mill, non-referential variety of this silent noun. Note that the PP in (17) is headed by a case suffix, but the referential possessive structure is still available. We assume that it is even more available for case-like and case-assigning Ps in the right context, which is our far condition. Some of these PPs may be stored lexically as idiomatic units (as is probably the case for (17a)), but this more referential possessive PP structure can also be created on the fly. The speakers who avail themselves of this option more readily are the speakers who are more permissive towards the pronoun strategy in snake sentences.[15]

     If these (*pro*-dropped) pronouns find themselves buried in possessive phrases inside the PP structure, then we expect them to license both bound-variable and coreferential readings.[16] This is indeed the case, the speakers who accept (18), tend to accept both interpretation (i) and (ii):

(18)   Csak   én   láttam   előttem   szellemet   az   úton.
         only   I   saw.1SG   in_front_of.1SG ghost.ACC   the   road.on
         'Only I saw a ghost in front of me on the road.'

         (i)   'Nobody else saw a ghost in front of me.'   *coreference*

         (ii)   'Nobody else saw a ghost in front of the self.'   *binding*

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[15] Admittedly, the referential contrast manifest between (17a) and (17b) is not always as pronounced as here with each potential pronoun-reflexive minimal pair in the domain of snake sentences. We believe nevertheless that it is often there, and when it is, then it is the pronoun version wherein the silent place noun is more referential.

[16] *Pro*-dropped possessors generally license both bound-variable and coreference-based readings, see (i). The reflexive anaphor in the complement position of PPs can only be interpreted as a bound variable for the majority of speakers, see (ii).

 (i) Csak én   etetem   a   tyúk-ja-i-m-at   napraforgóval.
      only I   feed.1SG the   hen-POSS-PL-1SG-ACC   sunflower_seed.with

     (a)   'Nobody else feeds my chickens with sunflower seeds.'   *coreference*
     (b)   'Nobody else feeds their chickens with sunflower seeds.'   *binding*

(ii) Csak én   láttam   magam előtt   szellemet   az úton.
      only I   saw.1SG   myself   in_front_of ghost.ACC   the road.on

     (a)   *'Nobody else saw a ghost in front of me on the road.'   *coreference*
     (b)   'Nobody else saw a ghost in front of them on the road.'   *binding*

We therefore conclude that a referential possessive structure inside the PP is an available option in Hungarian, and it serves to protect the pronoun, avoiding a Principle B violation.

Our findings also indicate that there is possibly another structure building option which may contribute to the same effect, but this is on the left edge of the PP, rather than in the inside. Reflexives are worse, and pronouns are somewhat more acceptable in case-assigning P constructions or when there is some other PP-material present, like the locative adverbial *itt* 'here'. These effects also include the so-called prepositional use of certain case-assigning postpositions, first described by Dékány & Hegedűs (2015). Consider the following set of examples from one of our pilot studies (we used the same 5-point Likert scale as in the main study):

(19) Odahúztam   a   babakocsit   ………………
      to_there.pulled.1SG the pram.ACC
                         hozzám közel   3.06
                         to.1SG   near
                         magamhoz közel   4.16
                         myself.to   near
                         közel   hozzám   3.12   *prepositional use*
                         near   to.1SG
                         közel   magamhoz   3.06   *prepositional use*
                         near   myself.to
      'I drew the pram close to me/myself.'

The acceptability of the reflexive decreases in the prepositional construction (4.16→3.06), and the pronoun is rated somewhat better (3.06→3.12) to the extent that it actually fares better again than the reflexive. This is important because (19) represents our body condition, where reflexives should consistently be better than pronouns.

We follow Dékány & Hegedűs (2015) and assume that the P-head may move to a functional projection CP_{PP} on the left edge as in (20a), and that results in the prepositional order.[17] We postulate furthermore that the locative adverbial *itt* 'here' can also occupy the head of CP_{PP} and form a constituent with the rest, as in (20b), one of our corpus examples. We simplify the structure to the essentials in both cases.

(20) a. [$_{CPpp}$ közel [$_{PlaceP}$ hozzám]
                    near   to.1SG
          'near myself'

      b. Megkapod az   országot [$_{CPpp}$ itt   [$_{PlaceP}$ körülötted]].
          PRT.get.2SG the land.ACC   here   around.2SG
          'You'll get the land here around you.'

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[17]See Koopman (2010) and den Dikken (2010) for the claim that a CP layer analogous to clausal CPs can be projected in the extended PP. We thank an anonymous reviewer for calling our attention to this literature.

What our experimental data show is that this kind of structure building is secondary to the main effect obtained in our far condition. The extra structure possibly helps in licensing the referential PLACE predicate that triggers the possessive core needed to protect the pronoun, but it may also have a direct effect of its own. This latter assumption implies that the movement of a P-element to the head of CP_{PP} (20a), or the insertion of a P-element in that position (20b) makes the extended projection of the PP a phase. Whether this is indeed the case is an issue that merits further data collection and research.

4.4. And what about 3SG?

We started this paper with a 3SG example (3), which was judged to be ungrammatical, and our survey focused on non-third person data therefore. But now, equipped with what we have learnt on the way, we are at a vantage point to view this issue from another perspective. If we create a context that includes the factors that favour pronouns in snake sentences in general, then pronouns become an option for speakers that we have consulted specifically on this issue:

(21)   János$_i$ is   látta   ott   vele$_i$ szemben   a   szellemeket.
        John   too   saw.3SG   there   with.3SG   opposite   the   ghosts.ACC
        'John too saw the ghosts opposite him.'

The restriction against 3SG instances of pronominal anaphora in snake sentences may thus only be epiphenomenal, possibly driven by the functional pressure on the system to avoid a fundamental referential ambiguity (which does not arise in first and second persons, since speech participants are kept constant in a given speech situation). If this is the right interpretation of the data, then there is actually no ban against 3SG, or at least any such restriction is not internal to the computational system itself.

5. CONCLUSION AND OUTLOOK

The default strategy in contexts of spatial anaphora is the employment of reflexives in Hungarian. Though dialect studies note some specific instances of pronouns used in locative PPs in some varieties of Hungarian, standard Hungarian has been mostly described in the pertinent syntactic literature to lack the pronoun strategy. Our aim in this paper has been to show that there is in fact more extensive variation in this domain, and the pronoun becomes an available option for all speakers in some syntactic configurations, and in some cases pronouns even outcompete reflexives. The paper describes the finer details of this variation, building on the results of our corpus and questionnaire studies.

We discuss two important licensing factors. First, building on Rooryck & Vanden Wyngaerd (2007, 2011) on spatial anaphora in English, we argue that in Hungarian, too, the nature of the location matters. The pronoun strategy is available in Hungarian when the Figure is located at some distance away from the Ground, and the reflexive is the only choice in the case of body-oriented readings. Second, we argue that this variation in meaning is concomitant with two different kinds of structure building in the PP in Hungarian, which are available to save pronouns in these configurations, and which possibly render the extended PP a phase and thus a

local domain for the purposes of binding theory. These are the employment of a referential possessive structure in certain locative PPs, and the projection of a CP_{PP} cap in others (see Dékány 2018, and Dékány & Hegedűs 2015 for independent arguments that such structure building is available in Hungarian PPs). Our experimental results also indicate that there is substantial variation across speakers in the extent to which they tolerate the pronoun strategy. We propose that this variation correlates with variation in the syntax of the PP in terms of the availability of the two structure building operations that we have described here.

We tested first person examples, because the effects we describe are strongest in first and second person. We concluded nevertheless that the pronoun strategy may become an option in spatial anaphora if all the possible licensing factors are present, but generally it is still a marked option in contrast to reflexives. Further investigations are required to understand the finer details of variation in each person and number, but the factors we have identified here play a crucial role across the board.

In addition to the factors we have studied, there are also other possible licensing factors. These include focusing of the PP or a part of it, or the potential effect of an extra verbal particle, if one is present. Our preliminary investigations did not reveal an obvious influence of these factors, but here too, further data collection is required to arrive at a better understanding of the facts.

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SUPPLEMENTARY MATERIAL

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