

Grammaticalization without Feature Economy

Evidence from the Voice Cycle in Hungarian

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The present paper is a corpus-based study of the Voice Cycle in Hungarian. Based on data from the Old Hungarian Corpus and the Hungarian Historical Corpus, I will argue that while in Old Hungarian, middle voice was encoded through a separate inflectional paradigm (contextual allomorphy in the subject agreement suffix conditional on the feature content of a silent Voice head), in Modern Hungarian, middle voice is encoded through dedicated middle voice suffixes (i.e., the Voice head is spelled out overtly). I will claim that the underlying grammaticalization process involved the reanalysis of frequentative suffixes (v heads) as middle voice suffixes (Voice heads). I will show that this reinterpretation was not based on shared abstract features, but rather, on a principled correlation between middle voice and frequentative aspect: since some types of middles (antipassives and dispositional middles) were more likely to be associated with a frequentative or habitual reading than actives, frequentative suffixes were susceptible to reanalysis as middle suffixes in the course of language acquisition. I will thus claim that in addition to Feature Economy (van Gelderen 2011), reinterpretation based on correlation between featurally independent grammatical markers should also be regarded as a mechanism of grammaticalization.

Keywords: grammaticalization, cycles, voice, middles, syntax, morphology, Hungarian

1. Introduction

Middle voice in Modern Hungarian (including anticausatives, reflexives, dispositional middles, mediopassives and antipassives) is encoded in a complex manner. With a handful of verbs, there is contextual allomorphy in the subject agreement suffix conditional on voice:

Modern Hungarian

- (1) a. *tör-Ø*
 break-3SGINDEF¹
 “somebody breaks something” ACTIVE
- b. *tör-ik*
 break-3SGMID
 “something gets broken” ANTICAUSATIVE

However, with the great majority of verbs, middles obligatorily involve a dedicated middle suffix, in addition to displaying the contextual allomorphy in the subject agreement suffix:

Modern Hungarian

- (2) a. *old-Ø*
 loosen-3SGINDEF
 “sb loosens sth” ACTIVE
- b. **old-ik*
 loosen-3SGMID
 “sth gets loosened” ANTICAUSATIVE
- c. *old-ód-ik*
 loosen-MID-3SGMID
 “sth gets loosened” ANTICAUSATIVE

With some verbs, optional suffix stacking can be observed:

Modern Hungarian

- (3) a. *lát-Ø*
 see-3SGINDEF
 “sb sees sth” ACTIVE
- b. **lát-ik*
 see-3SGMID
 “sth can be seen/is visible/ seems” DISP. MIDDLE
- c. *lát-sz-ik*
 see-MID-3SGMID
 “sth can be seen/is visible/ seems” DISP. MIDDLE
- d. *lát-sz-ód-ik*
 see-MID-MID-3SGMID
 “sth can be seen/is visible/ seems” DISP. MIDDLE

I will argue that this picture reflects an intermediate stage in an ongoing grammaticalization process which can be characterized as a cycle. Based on data from

1. Glosses are provided in adherence to the Leipzig Glossing Rules (Bickel, Comrie & Haspelmath 2008). For a list of the glosses and their meanings, see the Abbreviations section.

related languages and fossils attested in Old Hungarian, an overt middle suffix (-*v*-) has been reconstructed for Proto-Hungarian (see §3). This suffix was later lost, and in Old Hungarian, middle voice was encoded via a separate inflectional paradigm (contextual allomorphy in AgrS conditional on the feature content of a silent Voice head): verbs such as *tör* “break” in (1) are relics from this stage. As this separate paradigm collapsed, the functional load of encoding middle voice was taken over by other elements: frequentative suffixes (*v* heads) were reanalysed as middle voice suffixes (Voice heads). Crucially, this reinterpretation was not based on shared abstract features (Feature Economy), but rather on a principled correlation between middle voice and frequentative aspect. This reanalysis resulted in the currently dominant system, where middle voice is encoded via a separate middle voice suffix (an overt spellout of the Voice head), cf. *old* “loosen” in (2). To summarize:

Table 1. The stages of the Voice Cycle in Hungarian

	Middle voice suffix	Middle inflectional paradigm (AgrS allomorphy)
Proto-Hungarian	yes	yes
Old Hungarian	no (silent Voice head)	yes
Modern Hungarian	yes	no

The cyclical nature of this set of changes is clear. While Proto-Hungarian had a dedicated overt middle voice suffix, this was lost in the transition to Old Hungarian. However, moving from Old Hungarian to Modern Hungarian, frequentative suffixes were reanalysed as middle voice suffixes, and as a result, Modern Hungarian has overt middle suffixes again. This makes the cycle complete. Naturally, we are not in exactly the same position as when we started: while Proto-Hungarian had a single middle voice suffix, Modern Hungarian has several middle voice suffixes. This fragmentation gives rise to suffix stacking (3): the reinforcement of semi-productive middle suffixes with a productive and thus more transparent middle suffix.

While grammaticalization cycles concerning subject and object agreement, case, tense-mood-aspect and negation have been discussed extensively in the literature, cyclical diachronic changes of voice and argument structure in general have received comparatively less attention until recently (cf. Heine & Kuteva 2002; van Gelderen 2011, 2018; Ahn & Yap 2017 among others). The detailed study of the Voice Cycle in Hungarian offered here therefore has cross-linguistic relevance in terms of contributing to our understanding of linguistic cycles.

The results of this paper also have broader implications concerning the general mechanisms underlying grammaticalization. As I show below, the Voice

Cycle cannot be described in terms of van Gelderen's (2011) Feature Economy (since the reinterpretation is not based on shared abstract features), nor is it motivated by principles such as Head Preference (van Gelderen 2004) or Late Merge (Chomsky 1995, van Gelderen 2004). Rather, I will argue that what made reinterpretation possible was the relatively high correlation between middle voice and frequentative aspect (§6). Since language learners were exposed to a sample in which verbs in middle voice were very likely to also carry a frequentative suffix, these frequentative suffixes were in prime position to be reinterpreted as middle voice suffixes. I thus claim that besides Feature Economy, reinterpretation based on correlation between featurally independent grammatical markers should also be regarded as a mechanism of grammaticalization.

The paper is structured as follows: in §2, I clarify the exact sense in which I use 'middle voice' in this paper. In §3, the Old Hungarian system of middle voice marking is introduced. Section 4 is a more detailed discussion of the syntax and semantics of middle voice. The collapse of the Old Hungarian system of middle voice marking over the Middle Hungarian period is discussed in §5. In §6, I describe the Modern Hungarian system of overt middle suffixes, and provide a formal analysis for the grammaticalization process. Section 7 spells out the theoretical consequences of this analysis. Section 8 is dedicated to a discussion of the breakdown of Voice syncretism and the rise of middle suffix stacking. In §9, a conclusion is provided.

2. Middle voice: A note on terminology

Throughout this paper, I use 'middle voice' in a specific and somewhat restricted sense to refer to a particular systematic and morphologically marked transitive-intransitive alternation pattern. Consider the Modern Hungarian examples below:

Modern Hungarian

- | | | | |
|--------|--|-------------------|---------------|
| (4) a. | <i>János be-csuk-Ø</i> | <i>egy ajtót.</i> | TRANSITIVE |
| | John PRT-close-3SGINDEF a | door.ACC | |
| | "John closes a door." | | |
| b. | <i>Egy ajtó be-csuk-ód-ik.</i> | | ANTICAUSATIVE |
| | a door PRT-close-MID-3SGMID | | |
| | "A door gets closed. / A door closes." | | |
| (5) a. | <i>Anna épít-Ø</i> | <i>egy házat.</i> | TRANSITIVE |
| | Anne build-3SGINDEF a | house.ACC | |
| | "Anne builds a house." | | |

- b. *A ház épít-őd-ik.* MEDIOPASSIVE
 the house build-MID-3SGMID
 “The house is being built.”²
- (6) a. *Feri meg-mos-Ø egy almát.* TRANSITIVE
 Frank PRT-wash-3SGINDEF a apple.ACC
 “Frank rinses [*lit.* washes] an apple.”
- b. *Feri meg-mos-akod-ik.* REFLEXIVE
 Frank PRT-wash-MID-3SGMID
 “Frank washes himself.”
- (7) a. *Eszter lát-Ø minden csúcsot innen.* TRANSITIVE
 Esther see-3SGINDEF every summit.ACC here.from
 “From here, Esther sees all the summits.”
- b. *Minden csúcs lát-sz-ik innen.* DISPOSITIONAL MIDDLE
 every summit see-MID-3SGMID here.from
 “From here, all the summits are visible / can be seen.”
- (8) a. *András épít-Ø egy házat.* TRANSITIVE
 Andrew build-3SGINDEF a house.ACC
 “Andrew is building a house.”
- b. *András épít-kez-ik.* ANTIPASSIVE
 Andrew build-MID-3SGMID
 “Andrew is building. (Andrew is involved in an unspecified building project.)”

The phenomena in (4) to (8) share the following characteristics:

- i. there is a transitive-intransitive alternation;
- ii. the transitive form of the verb is identical to its stem form (both in Old Hungarian and in Modern Hungarian);
- iii. the intransitive form is derived by adding a suffix (MID) right after the stem (in Modern Hungarian);
- iv. the intransitive form follows a special inflectional paradigm (also known as the *ik*-paradigm after the allomorph of the 3SG subject agreement suffix).

It should be noted that the middle domain (the set of verbs involved in middle voice syncretism) is variable across languages. In many languages, some inherently unaccusative and inherently unergative verbs display middle voice morphology

2. While prescriptive grammars of contemporary Hungarian discourage the use of this mediopassive form (regarding it as an illicit use of the anticausative), it has in fact been well-established for a long time (cf. Simonyi 1878: 412).

and are classified as middles.³ However, as far as Hungarian is concerned, inherently unergative and unaccusative verbs never carry the dedicated middle voice suffixes (MID), which means that treating them as middles would be unjustified.

While middle voice in Hungarian always involves detransitivization, an important distinction is to be made between anticausatives, mediopassives, reflexives and dispositional middles, which all involve the suppression of the external argument; and antipassives, which involve the suppression of the internal argument (see §4).⁴

3. Late Old Hungarian: AgrS allomorphy conditional on voice

Old Hungarian had two verbal conjugation paradigms: the active paradigm (which survives in Modern Hungarian as the regular paradigm) and the middle paradigm (which survives in Modern Hungarian as the irregular *-ik* paradigm, so named after the allomorph of the 3SG suffix characteristic of this paradigm, see (11b)). As has been noted by historical linguists (see E. Abaffy 1992: 213–237 and references therein), verbs followed the active paradigm in active voice and the middle paradigm in middle voice.⁵ Consider the following (the relevant suffixes are underlined; see Appendix 1 for a list of the suffixes in the two paradigms):

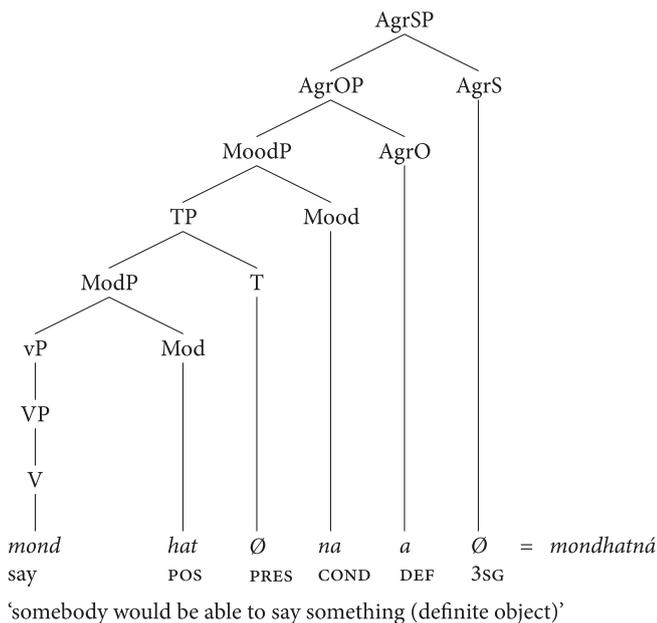
3. In her monograph on middle voice, Kemmer (1993) points out that in many languages, (many) verbs concerning a change of body posture, verbs of motion, of cognition and of speech and verbs describing spontaneous events carry middle marking. In her work on voice mismatch phenomena in Indo-European languages, Grestenberger (2014) characterizes (non-alternating) statives, (some) verbs of motion and (some) verbs of cognition as canonical cases of middle (or non-active) voice.

4. The antipassive is syncretic with anticausatives/reflexives/reciprocals/dispositional middles in various other languages such as Chukchi (Kozinsky et al. 1988), Halkomelem (Gerdtts & Hukari 2005, 2006), Kiowa (Watkins 1984) and several Pama-Nyungan languages (Dixon 1972, 1977; Austin 1981; Terrill 1997) (cf. Polinsky 2017 for an overview).

5. E. Abaffy (1992) claims that the original function of the middle paradigm was the morphological marking of anticausatives, and its function of marking reflexives and antipassives is a later development. I believe this assumption is not supported by the available data: it is not the case that anticausatives following the middle paradigm are attested earlier than reflexives or antipassives following the middle paradigm (see E. Abaffy 1992: 218–220). Also, voice syncretism (the situation where anticausatives, reflexives, antipassives etc. have identical morphological marking) is cross-linguistically widely attested: this means that in the absence of any supporting evidence, it would be purely speculative to assume that anticausative use is somehow more original than the reflexive or antipassive use.

The inflectional domain of the verb has been remarkably stable since the Old Hungarian period up until today: while a number of tenses disappeared, the basic order and function of suffixes has remained mostly unchanged. Therefore, the models proposed for Modern Hungarian can be straightforwardly applied to the Old Hungarian data too. Following Bartos (1999), den Dikken (1999), É. Kiss (2002) among others, I assume the following structure for the vP and the inflectional domain:⁸

(12)



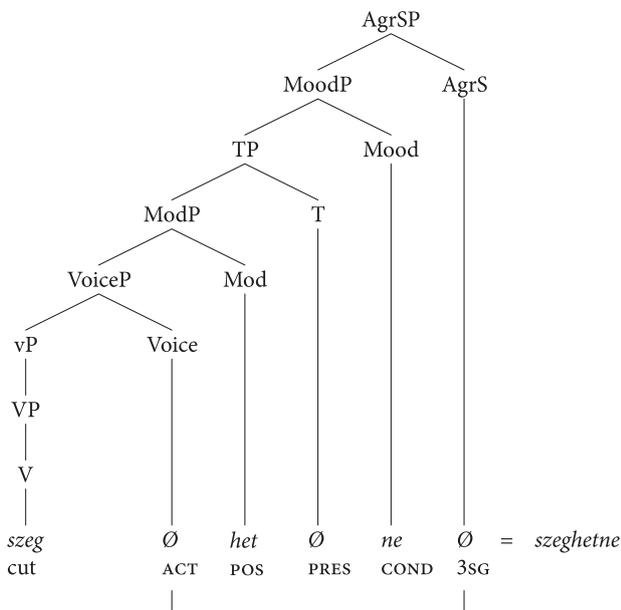
Bartos (1999) in fact assumes a left-branching structure and derives the surface order of suffixes by assuming that the functional heads are joined to V via an operation called morphosyntactic merge, with the result that the surface order of the suffixes is the mirror image of the morphosyntactic order (Baker 1985). For ease of presentation, these are presented here as right-branching structures, but nothing hinges on this choice. In what follows, I explore and evaluate two possible ways to model the active-middle paradigm split: contextual allomorphy and sequential spanning.

The most straightforward way to analyse the pattern is to assume that the allomorphy of the AgrS head is conditioned by the feature content of the lower silent Voice head (ACT/MID). That is, I assume with Alexiadou, Anagnostopoulou

8. AgrOP is only projected in transitives with a definite object, it is not projected in unergatives, unaccusatives and transitives with an indefinite object, cf. Bartos (1999: 91–118).

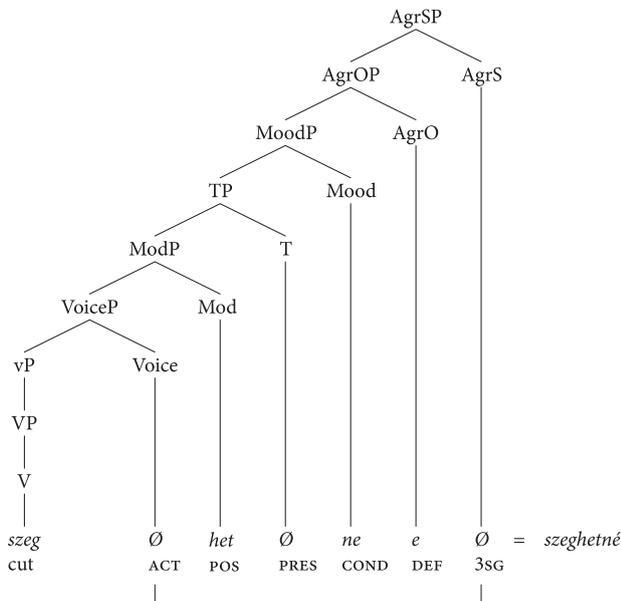
& Schäfer (2015) and Schäfer (2008) that VoiceP is projected, but SpecVoiceP crucially is not, in so-called marked anticausatives, nor in middles in general. Consider:

(13) a.



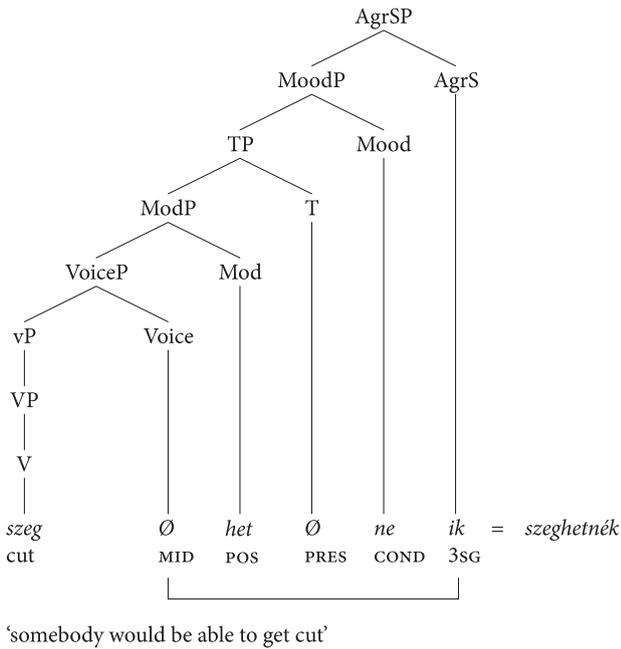
‘somebody would be able to cut something (indefinite object)’

b.



‘somebody would be able to cut something (definite object)’

c.



This analysis is compatible with several current proposals on the nature of contextual allomorphy, such as Merchant’s (2015) Span Adjacency Hypothesis, where allomorphy is conditioned by an adjacent span (i.e., a sequence of heads in a single extended projection; see Svenonius 2012), locality within the same maximal projection (Bobaljik 2012; Bobaljik & Harley 2017) or linear adjacency/concatenation in single spellout domain (Embick 2010; Arregi & Nevins 2012).

In terms of directionality, this is an instance of inwardly-sensitive allomorphy: the allomorphy of AgrS is conditioned by the feature content of a head situated between AgrS and V. Note that on the assumption that vocabulary insertion eliminates the morphosyntactic features of a head (Halle 1990; Noyer 1992), such inwardly sensitive allomorphy triggered by a syntactically relevant feature has been predicted to be impossible by Bobaljik (2000): if the morphosyntactic features are used up upon vocabulary insertion, then they are no longer available as potential triggers of allomorphy.⁹ Thus, these data from Hungarian support the

9. The precise claim of Bobaljik (2000) is that inward-sensitive allomorphy is possible if it is conditioned by syntactically irrelevant morphophonological features (such as class marking), but impossible if it is conditioned by syntactically relevant morphosyntactic features (such as tense or agreement). Since Voice is clearly a morphosyntactically relevant feature, the pattern exhibited in Old Hungarian represents a counterexample to Bobaljik’s (2000) claim.

alternative hypothesis, i.e., that morphosyntactic features remain intact and are retained after vocabulary insertion (Halle & Marantz 1993; Noyer 1997).¹⁰

Interestingly, while Late Old Hungarian does not have an overt voice suffix, it has been argued that Proto-Hungarian probably had a middle suffix *-v-*, which, however, was lost by the time of the earliest written sources (the Late Old Hungarian period):

Reconstructed Proto-Hungarian

- (14) *tör-v-ik*
 break-MID-3SGMID
 “gets broken (anticausative)”

10. A potential alternative to the analysis above would be to assume that the Voice head is spelled out together with the AgrS head in a non-terminal spellout configuration (as a portmanteau morpheme). (On non-terminal spellout, cf. Weerman & Evers-Vermeul 2002; Williams 2003; Neeleman & Szendrői 2007; Ramchand 2008; Newson 2010; Dékány 2011; Márkus 2015 among others). This would naturally require that Voice^o be adjacent to AgrS^o. Since whether or not AgrOP is projected at all depends on the feature content of Voice^o, VoiceP needs to be projected earlier than AgrOP. This means that minimally AgrOP has to intervene between VoiceP and AgrSP in active transitive sentences such as (10ab); however, in middles, due to the absence of AgrOP, adjacency of Voice^o and AgrS^o is technically possible as long as one is willing to contemplate a structure where vP is separated from VoiceP by the TAM layer:

- (i) a. [[[[[[V VP] vP] POS ModP] PRES TenseP] COND MoodP] ACT VoiceP] 3SG AgrSP]
szeg *-het-* \emptyset *-ne-* \emptyset \emptyset
 “sb would be able to cut sth (indefinite object)”
- b. [[[[[[V VP] POS PRES COND ACT INDEF 3SG
 vP] ModP] TenseP] MoodP] VoiceP] AgrOP] AgrSP]
szeg *-het-* \emptyset *-ne-* \emptyset *e* \emptyset
 “sb would be able to cut sth (definite object)”
- c. [[[[[[V VP] vP] POS ModP] PRES TenseP] COND MoodP] MID VoiceP] 3SG AgrSP]
szeg *-het-* \emptyset *-ne-* *-ik*
 “sb would be able to get cut”

While technically, both contextual allomorphy and non-terminal spellout can be used to account for the relevant facts, there are strong arguments for the former and against the latter. In order for the non-terminal account to work, one would need to assume that VoiceP is merged unusually late, so that the whole tense-mood-modality layer intervenes between vP and VoiceP. Such a configuration is crosslinguistically very atypical. Also, as we will see later on, in addition to capturing the Old Hungarian facts, conditional allomorphy can also be straightforwardly used to describe the situation in Modern Hungarian (where the AgrS allomorphy is conditional on either V or v) and the grammaticalization process affecting the middle paradigm (which is, in essence, a series of changes in the conditioning factors of AgrS allomorphy). Therefore, in what follows, I will adopt the contextual allomorphy analysis.

The evidence for this *-v-* middle suffix comes from data from related languages such as Mansi, Mordvin and Finnish, and a handful of fossils from Late Old Hungarian (Simonyi 1878: 483–484, 1905: 5; Budenz 1884: 252–269; D. Bartha 1991: 96). This reconstructed suffix can be straightforwardly analysed as the overt spellout of the Voice head.

4. Excursion: A finer-grained syntax and semantics

Thus far I have implicitly assumed that the Voice head has a single feature with two possible values. If the value is [ACT], no valency reduction takes place, if the value is [MID], the valency of the transitive predicate denoted by the verb is reduced. This is a simplification in two respects: it glosses over the question whether valency reduction is interpreted in syntactic terms (i.e., whether the position housing the external argument is projected or not) or semantic terms (whether an external argument is present in the semantic interpretation); and it also neglects the difference between those middles where the external argument is suppressed (anticausatives, mediopassives, dispositional middles and reflexives) and those where the internal argument is suppressed (antipassive). In this section, I briefly address these questions.

In anticausatives, mediopassives, dispositional middles and reflexives,¹¹ the external argument is syntactically suppressed: this can be modelled by assuming

11. Hungarian has two reflexive constructions: in addition to morphologically marked intransitive reflexives (our main concern here), it is also possible to create a reflexive with a transitive predicate with a reflexive pseudo-object. The fact that there is only one syntactic argument position in the morphologically marked reflexives can be easily shown using the standard tests of Sells, Zaenen & Zec (1987): the comparative ellipsis test and the statue test (whether an event of John washing his own statue can be jokingly described using a reflexive):

- (i) a. *János alaposabban meg-mos-sa magá-t mint az édesanyja.*
 John more.thoroughly PRT-wash-3SGDEF himself-ACC than the mother.3SG
 “John washes himself more thoroughly than his mother washes herself.”
 “John washes himself more thoroughly than his mother washes him.”
- b. *János alaposaban meg-mos-akod-ik mint az édesanyja.*
 John more.thoroughly PRT-wash-MID-3SGMID than the mother.3SG
 “John washes himself more thoroughly than his mother washes herself.”
 * “John washes himself more thoroughly than his mother washes him.”

that Spec,VoiceP is not projected (cf. Alexiadou, Anagnostopoulou & Schäfer 2015). In terms of semantics, however, there are crucial differences. While with mediopassives, there is typically an understood agent which can actually be overtly reintroduced as an oblique argument (a *by*-phrase), this is not the case with anticausatives: these fully lack an agent role. Dispositional middles on the other hand are understood as modal-generic statements: (7b) means that generally speaking, everyone can see all the summits from here. In reflexives, there is an implicit external argument which is coreferential with the internal argument (cf. Alexiadou 2014). These differences can be formally modelled by assuming that the Voice head has features which affect whether (i) the agent role is suppressed in the semantic representation and (ii) if not, how the argument slot associated with the agent role is valued (e.g., in dispositional middles, it is straightforward to assume that the argument slot is filled with a variable which is bound by a possibility modal operator, cf. Alexiadou & Doron 2012). In antipassives, on the other hand, it is the internal argument which is syntactically suppressed, while in terms

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- (ii) a. *János mos-sa magá-t.*
 John wash-3SGDEF himself-ACC
 “John is washing himself.”
 “John is washing a statue which depicts John.”
- b. *János mos-akod-ik.*
 John wash-MID-3SGMID
 “John is washing himself.”
 *“John is washing a statue which depicts John.”

As Rákosi (2008: 434–439) has shown, the single argument position which is syntactically realized in morphologically marked reflexives is the internal position: these reflexives systematically pattern with anticausatives in the following tests: association with a resultative predicate, availability in attributive perfect participles, availability in stative participles:

- (iii) *A katoná-k száraz-ra töröl-köz-t-ek.*
 the soldier-PL dry:onto towel-MID-PST-3PLMID
 “The soldiers towelled themselves dry.”
- (iv) *az alaposan meg-töröl-köz-ött katoná-k*
 the thoroughly PRT-towel-MID-PTCP soldier-PL
 “The soldiers who have towelled themselves thoroughly.”
- (v) *A katoná-k meg van-nak töröl-köz-ve.*
 the soldier-PL PRT be-3PL towel-MID-PTCP
 “The soldiers have towelled themselves.” [*lit.* “The soldiers are in the state of having towelled themselves.”]

of semantics, there is typically an understood object which can often be overtly introduced as an oblique argument.¹²

To summarize, instead of having a simple feature with the two values ACT/MID, it is more realistic to assume a bundle of features which encode (i) whether it is the external or internal argument that is syntactically suppressed and (ii) to what extent the syntactically suppressed argument is semantically available and how it receives its value (see §7).

Discussing the formal semantics of middles is beyond the scope of this paper (cf. Alexiadou & Doron 2012 and references therein). In terms of syntax, I will assume that anticausatives, mediopassives, dispositional middles and reflexives can be analysed along the lines of Alexiadou, Anagnostopoulou & Schäfer (2015): the feature content of the Voice head specifies that Spec,VoiceP, the structural position of the agent, should not be projected.

There is less consensus in the literature on the syntax of antipassives (see Polinsky 2017 for an overview and evaluation of the various proposals). In addition to lexicalist models, the syntactic accounts fall into broadly two camps. It has been proposed (cf. Baker 1988 and subsequent work) that in antipassives, the internal argument position is saturated by a syntactically abstract and semantically vacuous nominal element which absorbs accusative case. Because of this, the true object of the predicate cannot receive accusative case and is therefore either left unrealized or is reintroduced as an oblique argument with lexical case. The major analytical alternative, explored mainly in the context of ergative languages, is to assume that transitive objects and antipassive objects have different licensing positions (cf. Bok-Bennema 1991 and subsequent work). There are two reasons why the facts from Hungarian favour the first type of analysis. Both object drop and the possibility of reintroducing the internal argument as an oblique are hallmarks of the antipassive in Hungarian, and as Polinsky (2017) points out, these phenomena receive a better explanation in the case absorption approach. A third possibility would be to analyse antipassives in a similar fashion to so-called deponent verbs known from various Indo-European languages (verbs which have an agent subject but obligatorily surface with non-active morphology). Gresten-

12.

- (i) *János ki-próbál-Ø egy új megközelítés-t.*
 John PRT-try-3SGINDEF a new approach-ACC
 “John tries out a new approach.”
- (ii) *János próbál-koz-ik (egy új megközelítés-sel).*
 John try-MID-3SGMID a new approach-INS
 “John is trying. / John is trying out a new approach.”

berger (2014, 2018) argues that the subjects of deponents are introduced lower than agents in general, in a position below the Voice layer. Proposing a similar structure to antipassives would certainly have a major advantage: one could maintain that Spec,VoiceP in general is not projected in middles in Hungarian. Note, however, that in contrast with middles in Hungarian, deponents can be transitive with an accusative-marked object. In other words, while in Hungarian, middle voice signals a transitive-intransitive alternation, this is not in general the case with deponents. This suggests that using a deponency-style analysis for Hungarian may be problematic. In this paper, we follow a Baker-style analysis of antipassives in Hungarian, but more research is needed into this issue.

5. The collapse of the middle paradigm

The collapse of the Old Hungarian middle paradigm as the reliable marker of middle voice (ongoing by the time of our earliest written sources and virtually complete by the beginning of the 19th century) can be reconstructed as follows (cf. Simonyi 1878, 1905; D. Bartha 1992; E. Abaffy 1992).

In the initial stage, the middle paradigm was strictly associated with middle voice: AgrS allomorphy was conditioned by the feature content of the silent Voice head (see §3). This association between middle voice and the middle paradigm gradually loosened, however, as a result of three simultaneous changes: (i) the spread of the middle paradigm onto some inherently unaccusative verbs, (ii) the spread of the middle paradigm onto some inherently unergative verbs and (iii) the spread of the middle paradigm onto a handful of transitive verbs.

The spread of the middle paradigm onto unaccusatives is illustrated below:

Old Hungarian ((15a) to (17a)) and Middle Hungarian (17b)

- (15) a. *az en ellensegímnec kemeń tőre alath feksz-ők*
 the I enemy.PL1SGDAT hard dagger.3SG under lie-1SGINDEF
 “I am lying under the hard dagger of my enemies.”

Nagyszombat Codex (1512–1513), 67

- b. *mert eeth alkolmas tőztesseeg nelkyl feksz-óm*
 because here appropriate propriety without lie-1SGMID
 “Because I am lying here lacking all appropriate dignity.”

Érdy Codex (1526), 300a

- (16) a. *megh feketjle nekom az nap ees ez velagh megh*
 PRT blacken.PST.3SGIND I-DAT the sun and this light PRT
fogy-a
 diminish-PST.3SGIND
 “My sun has darkened and the light has diminished.”
 Winkler Codex (1506), 217
- b. *wr Isten keresoknek nem fog-yk megh mynden jo*
 lord God seeker.PLDAT not diminish-3SGMID PRT all good
 “For those who seek the Lord God, nothing good will diminish.”
 Érsekújvár Codex (1529–1531), 108r
- (17) a. *Felec raita, hogy hazanknac ez kichin maradekia is az*
 fear.1SGIND it.on that homeland.1PLDAT this little leftover.3SG too the
töbi utan chufz-Ø
 rest after slip-3SGIND
 “I am afraid that what little is left of our country will slip after the rest.”
 Telegdi Miklós: *Az evangéliumoknak magyarázata* (1577–1580), I 109
- b. *Hamar csusz-ik és szörnyen es-ik gyarlóságunk...*
 soon slip-3SGMID and terribly fall-3SGMID frailty.1PL
 “Our frailty slips soon and falls terribly.”
 Faludi Ferenc: *Szent ember vagyis szent életre vezető istenes*
oktatások (1773), 550

This change can be analysed as a reanalysis of the conditional allomorphy: for those speakers who started to conjugate unaccusatives in the middle paradigm, the conditioning factor was no longer whether the Voice head had the feature MID, but rather, whether Spec.VoiceP was projected or not (independently of whether the non-projection of VoiceP is due to the inherent unaccusativity of the verb or the MID value of the Voice head). This change was probably due to the similarity of certain middles (anticausatives and dispositional middles) and inherent unaccusatives: since all of these verb classes lacked a syntactically realizable external argument, it was easy for language learners to reinterpret the conditioning factor of allomorphy (‘suppression of external argument due to middle voice’ → ‘lack of external argument (no matter the reason)’).

As can be seen from the examples, unaccusative verbs following the middle paradigm can be attested in the earliest available written sources. In other words, our earliest available picture already shows the system in motion: while the original paradigm is still functional (the middle paradigm encodes middle voice), an innovation to this original system (unaccusatives following the middle paradigm) is starting to spread. That this is indeed an innovation is indicated by the following: the conjugation of unaccusatives in the middle paradigm is optional, irregu-

lar (i.e., only attested with some unaccusative verbs but not others) and subject to strong dialectal variation (e.g., *fogy* “diminish” does not follow the middle paradigm in most dialects of Modern Hungarian). Note also that this change was slow and gradual: some unaccusative verbs that follow the middle paradigm in Modern Hungarian are attested as such as early as the start of the 16th century (*feküsz* “lie”), whereas others are first attested as such as late as the end of the 18th century (such as *csúsz* “slip”).

The spread of the middle paradigm onto unergatives is illustrated below:

Old Hungarian (18a) to (19a) and Middle Hungarian (19b) and (19c)

- (18) a. *es dauid ... zq̄c-Ø vala telles ereyeuel,*
and David jump-3SGIND be.PST3SG full force.3SGINS
“And King David was jumping around with full force.”
Teleki Codex (1525–1531), 171
- b. *egyhaztoknak kenczet mj̄nd el lopa Es wele el*
church.2PLDAT treasure.3SG.ACC all PRT steal.PST3SG and it.INS PRT
zq̄k-ek
jump-PST3SGMID
“He stole all the treasure of your church and escaped with it.”
Érsekújvár Codex (1529–1531), 523
- (19) a. *ees magamnak een magamrol hazwd-ýak*
and myself.DAT I myself.from lie (deceive)-SUBJ.1SGINDEF¹³
“and that I should lie to myself about myself”
Festetich Codex (1492–1494)
- b. *hazud-Ø*
lie (deceive)-3SGINDEF
“She/he/it lies (gives false information knowingly).”
Miklós Révai: *Elaboratio grammatica Hungarica* (1803) 953, 1029
- c. *hazud-ik¹⁴*
lie (deceive)-3SGMID
“She/he/it lies (gives false information knowingly).”
Miklós Révai: *Elaboratio grammatica Hungarica* (1803) 953, 1029

13. The subjunctive is morphologically identical to the imperative. For the imperative paradigm, see Appendix 1.

14. Révai (1803: 953) notes that both variants are attested, however, in prescriptive fashion, he opines that the active conjugation is the original and correct usage, whereas the middle conjugation is an unwarranted innovation:

Aliqua recentiorum vitio augentur ik pronomine, nullo prorsus veterum exemplo: foly-ik, hazud-ik, úsz-ik, tsúsz-ik, mász-ik, asz-ik, különböz-ik. Horum forma genuina est nuda.

This change was probably due to the similarity of antipassives and inherent unergatives: since both of these verb classes lack a syntactically realizable internal argument, it was easy for language learners to reinterpret the conditioning factor of allomorphy ('suppression of internal argument due to middle voice' → 'lack of internal argument (no matter the reason)').

The spread of the middle conjugation onto unergatives has been a slow and incomplete process. E.g., while in Modern Hungarian, *hazud* "lie" follows the middle conjugation, the first such attestations are relatively late (from the end of the 17th century) and the active conjugation of *hazud* has been dialectally attested up until at least the end of the 19th century (see Simonyi 1905: 341–349).

In addition to the two general changes described above (spread of the middle paradigm to unaccusatives and unergatives), a more isolated but still significant change is also to be noted: the spread of the middle paradigm to a handful of transitive verbs such as *esz* "eat" and *isz* "drink". Simonyi (1905: 9–10) argues that in Old Hungarian and Early Middle Hungarian, *esz* "eat" and *isz* "drink" exhibited the regular active-middle alternation:

Early Middle Hungarian

- (20) a. *a'ki engemet esz-en,¹⁵ él-Ø is az én általam*
 who I.ACC eat-3SGINDEF live-3SGINDEF too that I through.1SG
 "Whoever eats me shall also live by me." Károli Bible (1589), John 6:57
- b. *Ha valaki esz-ik e' kenyérben, él-Ø örökké.*
 If someone eat-3SGMID this bread.in live-3SGINDEF forever
 "Whoever eats of this bread shall live forever."
 Károli Bible (1589), John 6:51

Example (20b) is an antipassive construction: the verb is in middle voice and the demoted theme argument is reintroduced as an oblique argument. In Modern Hungarian, however, *esz* "eat" follows the middle paradigm in the active transitive sentence too:

"Some of these are latterly erroneously augmented with the suffix *ik*, even though such usage is not supported by earlier examples: *foly-ik* ('flow-3SGMID'), *hazud-ik* ('lie-3SGMID'), *úsz-ik* ('swim-3SGMID'), *tsúsz-ik* ('slip-3SGMID'), *mász-ik* ('climb-3SGMID'), *asz-ik* ('with-3SGMID'), *külömböz-ik* ('differ-3SGMID'). The genuine form of these is the bare one."

(Translation courtesy of Kristóf Keglevich.)

This shows that in Révai's time, the two paradigms were in competition as far as these verbs were concerned, with the middle paradigm gaining ground.

15. *-en* is an archaic overt form of the 3SGINDEF suffix.

Modern Hungarian

- (21) a. *aki engem esz-ik, él-Ø én általam*
 who I.ACC eat-3SGMID live-3SGINDEF I through.1SG
 “Whoever eats me shall live by me.” Revised Károli Bible (1905), John 6:57
- b. *Ha valaki esz-ik e’ kenyér-ből, él-Ø örökké.*
 If someone eat-3SGMID this bread-from live-3SGINDEF forever
 “Whoever eats of this bread shall live forever.”
 Revised Károli Bible (1905), John 6:51

It is probably no coincidence that the handful of transitive verbs which follow the middle conjugation in Modern Hungarian all happen to exhibit prototypical object drop:

Modern Hungarian

- (22) a. *Mari esz-ik Ø_{OBJ}*
 Mary eat-3SGMID n¹⁶
 “Mary is eating.”
- b. *János isz-ik Ø_{OBJ}*
 John drink-3SGMID n
 “John is drinking.”

That is, following Ruda (2017) and others, I assume that in Modern Hungarian, apparently object-less sentences such as (22) in fact have a null object. In other words, *esz* “eat” is a strictly transitive verb in Modern Hungarian, even though it follows the middle conjugation.

Interestingly, such null object constructions may well have been the actual locus where the reinterpretation took place. Consider:

Old Hungarian

- (23) *Mire ez-ic ti mestertec a bünösöckel?*
 what.to eat-3SGMID 2PL master.2PL the sinner.PLINS
 “Why does your master eat with sinners?” (antipassive, middle voice, theme object suppressed) Munich Codex (1466), 15ra [Matthew 9:11]

Example (23) displays the canonical transitive-intransitive alternation typical of Old Hungarian: the middle conjugation signals that this is an antipassive construction, that is, the internal argument has been suppressed. However, because of the existence of prototypical null objects in Hungarian, (23) may in fact be parsed in a different fashion too:

16. Ruda (2017) argues that in sentences such as (22), the non-anaphoric indefinite null object is an indefinite which is either closed existentially (in an episodic context) or bound by a generic operator (in a generic context), and its interpretation is restricted pragmatically by the verb and the actual context. For an overview of alternative proposals, cf. Ruda (2017: 4–21).

Old Hungarian

- (24) *Mire ez-ic Ø_{OBJ}ti mestertec a bünöföckel?*
 what.to eat-3SGMID n 2PL master.2PL the sinner.PLINS
 “Why does your master eat with sinners?” (transitive, active voice, prototypical null object – hypothetical reanalysis)
 Munich Codex (1466), 15ra [Matthew 9:11]

It is quite conceivable that language learners might have reinterpreted (23) as (24): an active transitive sentence with a phonologically null prototypical object. Such a reanalysis was made especially easy by the fact that the active and the middle paradigms were surface-identical in all plural forms (and in fact, also in the singular forms in many tenses and moods, see Appendix 1):

Old Hungarian

- (25) a. *foc ieles bünöföc es-nec uala egbe iezuffal*
 many notorious sinner.PL eat-3PLMID be.PST together Jesus.INS
 “Many notorious sinners ate together with Jesus.” (antipassive, middle voice, theme object suppressed)
- b. *foc ieles bünöföc es-nec uala Ø_{OBJ}egbe iezuffal*
 many notorious sinner.PL eat-3PLACT be.PST n together Jesus.INS
 “Many notorious sinners ate together with Jesus.” (transitive, active voice, prototypical null object – hypothetical reanalysis)
 Munich Codex (1466), 15ra [Matthew 9:10]

This change has been slow and incremental: the first examples of the middle conjugation of transitive *esz* “eat” date from the Late Old Hungarian period, and the active conjugation of transitive *esz* “eat” is still attested in Modern Hungarian (especially with 1SG and 2SG objects and indefinite objects).

As a result of these changes, the connection between the middle paradigm and middle voice became increasingly blurred. While the middle paradigm retained its function of encoding middle voice on transitive verbs (*tör-ik* break-3SGMID “gets broken”), it also spread to some unaccusatives (*feküsz-ik* lie-3SGMID “lies”), some unergatives (*hazud-ik* lie-3SGMID “lies (gives false information knowingly)”) and a few transitives (*esz-ik* eat-3SGMID “eats”). While only a handful of transitives started to follow the middle paradigm, these all had a high frequency of use (e.g., *esz* “eat” or *isz* “drink”) and thus had an outsized influence in the linguistic input of language learners. The endpoint of these developments was that by the end of the 18th century, the middle paradigm had lost its original function of encoding middle voice, and was reinterpreted as an irregular conjugation paradigm (Simonyi 1905; R. Hutás 1972). In other words, the AgrS contextual allomorphy was no longer morphosyntactic (i.e., dependent on some morphosyntactic feature such as the feature content of Voice^o, or the presence/

absence of SpecVoiceP or AgrOP), rather, it has become a function of V, with some verbs specified in the lexicon as following the active paradigm and other verbs as following the middle paradigm.

This collapse of the Old Hungarian active-middle paradigm system as a reflex of active vs. middle voice was facilitated by two factors. Firstly, the active and the middle paradigms contrasted only in the following moods / tenses: the present singular, the present conditional singular, the imperative singular and the archaic imperfect past singular (see Appendix 1). In all plural persons and in all persons in the perfect past, the two paradigms were surface-identical: this meant that the paradigm split was unstable in terms of learnability (Clark & Roberts 1993). Also, middle voice had no separate marker: it was only visible through the allomorphy of AgrS which, in addition to subject phi-features, also (indirectly) encoded the feature content of Voice^o. Such ‘feature syncretism’, where one lexical item spells out the features of more than one head, has been argued to be especially susceptible to reanalysis (Roberts & Roussou 2003; Faarlund 2008).

6. The emergence of middle voice suffixes

In Modern Hungarian, mediality is overtly encoded by middle suffixes:¹⁷

Modern Hungarian¹⁸

(26)	a. -sz-	<i>lát-sz-ik</i>	(see-MID-3SGMID)	“it seems”	DISP. MIDDLE
	b. -d-	<i>mos-d-ik</i>	(wash-MID-3SGMID)	“she washes herself”	REFLEXIVE
	c. -(V)kVz-	<i>imád-koz-ik</i>	(worship-MID-3SGMID)	“she prays”	ANTIPASSIVE
	d. -(V)kVd-	<i>ver-eked-ik</i>	(beat-MID-3SGMID)	“she fights”	ANTIPASSIVE
	e. -Vd-	<i>kever-ed-ik</i>	(mix-MID-3SGMID)	“it gets mixed”	ANTICAUSATIVE
	f. -V:d-	<i>üt-őd-ik</i>	(hit-MID-3SGMID)	“it gets hit”	ANTICAUSATIVE

As has been noted, these middle suffixes are all derived from originally frequentative-iterative suffixes (Simonyi 1878; E. Abaffy 1978; D. Bartha 1991, 1992).

17. In addition to having an overt middle suffix, middles also obligatorily follow the original ‘middle’ inflectional paradigm.

18. V stands for ‘short vowel’ and V: for ‘long vowel’. The actual realization of the vowel depends on the vowel quality of the stem. For a recent overview of vowel harmony in Hungarian, cf. Rebrus & Törkenczy (2015).

Old Hungarian (27a) and Modern Hungarian ((27b) and (c))

- (27) a. *ki von-sz-on*¹⁹ *le engemet földre?*
 who draw-FREQ-3SGINDEF PRT me ground.onto
 “Who drags me down to the ground?”
 Vienna Codex (mid-15th C), 235 [Obadiah 1:3]
- b. *A kutya az orrával bök-öd-t-e a kezemet.*
 the dog the nose.3SG.INS poke-FREQ-PST-3SGDEF the hand.1SGACC
 “The dog kept poking my hand with its nose.”
- c. *Le-köp-köd-t-e rajongóit tampai koncertjén Miley*
 PRT-spit-FREQ-PST-3SGDEF fans.3SGACC Tampa.ADJ concert.3SG.on Miley
Cyrus.
 Cyrus
 “Miley Cyrus repeatedly spat at her fans during her performance in Tampa.”

However, as far as Modern Hungarian is concerned, these suffixes lost the function of encoding a frequentative-iterative reading; their original function only survives in few isolated fossils such as *bök-öd* “poke repeatedly” and *köp-köd* “spit repeatedly” (27b–c). In other words, in the Middle Hungarian period, a systematic reanalysis took place: several frequentative-iterative suffixes were reinterpreted as markers of middle voice (this also affected the structural position of the elements concerned, see later).

Concerning the morphosyntactic position of frequentative suffixes, it is noteworthy that the (productive) frequentative suffix *-gat/-get* in Modern Hungarian has functions related to causativity alternations and verb-formation from category-neutral roots:

Modern Hungarian

- (28) a. *for-og*
 $\sqrt{\text{turn-FREQ}}$
 “turn-INCHOATIVE”
- b. *for-gat*
 $\sqrt{\text{turn-FREQ}}$
 “turn-CAUSATIVE”

Note in addition that the unproductive frequentative suffixes *-kVd-* and *-Vd-* also have a verbalizing function:

19. Modern Hungarian *vonz* “attract” derives from *von-sz* “draw regularly, repeatedly, continuously” (cf. Simonyi 1880: 243–244).

Modern Hungarian

- (29) a. *erős-köd-ik*
 strong-FREQ-3SGINDEF
 “keeps on insisting strongly”
- b. *erős-öd-ik*
 strong-FREQ-3SGINDEF
 “gains strength”

Based on this, I assume that frequentatives in Hungarian (Old Hungarian as well as Modern Hungarian) are merged in little *v* (cf. Harley 1995; Marantz 1997; Harley & Noyer 2000 for similar proposals for other languages). This is also supported by the fact they are positioned between the stem (verbal, nominal or adjectival) and the lowermost element of the inflectional domain (Mod^o).²⁰

The intriguing question is why it was frequentative suffixes which were reinterpreted as markers of middle voice. Note that cross-linguistically, middles are often associated with frequentative/habitual readings.²¹ In antipassives, the theme argument (which could measure out the event) is demoted: this means that an unbounded, habitual reading is more readily accessible:

- (30) a. *János épít-Ø egy házat.*
 John build-3SGINDEF a house.ACC
 “John is building a house.”
- b. *János épít-kez-ik.*
 John build-MID-3SGMID
 “John is building. (John is involved in an unspecified and temporally unbounded building project.)”

20. As pointed out by a reviewer, an alternative would be to assume that frequentative suffixes are merged higher up, as Asp heads (cf. Cinque 1999). While various authors have assumed an AspP projection in Hungarian (cf. É. Kiss 2002: 62–71), it is clear that it cannot be the home of frequentative suffixes. Firstly, AspP is clearly outside the inflectional domain, and as such, cannot house a suffix. Also, the frequentative suffix is always placed between the stem and the lowermost element of the inflectional domain (Mod^o). This, together with its functions related to causativity alternations and verbalization, clearly shows that it is to be analysed as a spellout of *v*.

21. The antipassive in particular (see footnote 22) and middle voice in general (cf. Klaiman 1991: 47–48 on Greek and Fula) has been cross-linguistically associated with an imperfective (stative, durative-habitual or iterative) interpretation. I would like to thank an anonymous reviewer for calling my attention to the relevance of Klaiman’s (1991) remarks on this matter.

In (30a), the theme argument measures out the event: once the house is built, the event is terminated. In (30b), the event is not measured out due to the lack of a theme argument and an unbounded, habitual reading is more accessible.²²

Dispositional middles often ascribe a stable generic property to their argument, and because of this, they are often used to describe situations with a habitual flavour:

Modern Hungarian

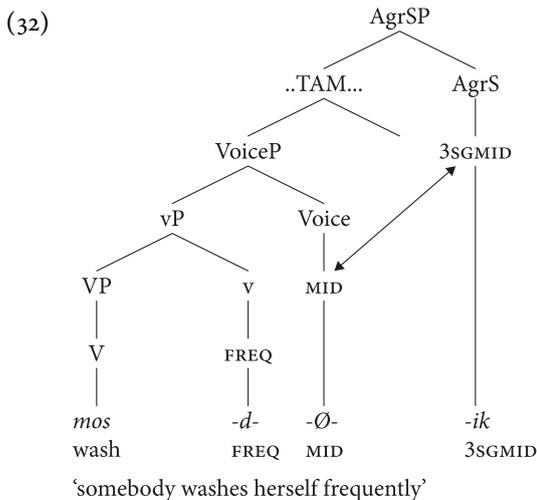
- (31) *Jó időben innen általában lát-sz-ik a Triglav.*
 good weather.in from.here in.general see-MID-3SGMID the Triglav
 “In good weather, Triglav is usually visible from here.”

This means that verbs in middle voice were likely to carry these frequentative suffixes (or at least more likely to do so than their active counterparts). As a result, as the middle paradigm collapsed and AgrS allomorphy was no longer a reliable marker of middle voice, it was easy for language learners to reanalyse these frequentative suffixes as the markers of middle voice. This can be related to the notion of stability (Clark & Roberts 1993): the expression of middle voice in AgrS morphology was highly ambiguous and unstable in terms of learnability.

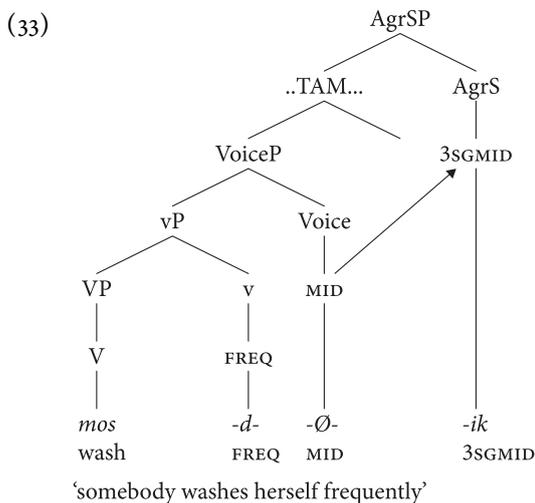
In structural terms, this reanalysis was equivalent to the spellout of a frequentative *v* head being reinterpreted as the spellout of a middle Voice head. The new system had a significant learnability advantage: middle voice was now transparently encoded in all moods, tenses and persons.

The reanalysis proceeded as follows. At the starting stage, the middle paradigm was stable: there was a one-to-one (bidirectional) correspondence between the AgrS^o allomorph and the feature content of Voice^o:

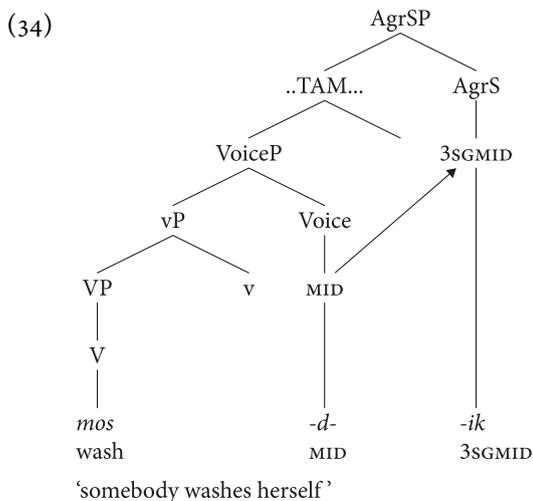
22. The correlation of antipassives with habitual/iterative readings has been reported from various languages such as Chamorro (Cooreman 1988), Chukchi (Comrie 1979; Polinskaja & Nedjalkov 1987), West Greenlandic (Fortescue 1984: 86), Warrungu (Tsunoda 1988), Dyrbal (Dixon 1972: 91), Quiché (Mondloch 1982) and Inuktitut (Spreng 2012) (cf. Cooreman 1994; Polinsky 2017 for an overview).



As the middle paradigm collapsed, the one-to-one correspondence between the AgrS allomorph and Voice^o was lost: while it was the case that middles followed the middle paradigm, not all verbs that followed the middle paradigm were middles (this is symbolized by the one-headed arrow below):



The final stage was the reanalysis of frequentative v heads as overt middle voice heads, leading to increased transparency (visible in all tenses and moods) and better learnability:



This reanalysis was a slow and gradual process, taking place over the course of centuries. Consider two examples: *old* “dissolve_{transitive} loosen_{transitive}” and *érez* “feel, perceive”.

Middle Hungarian (35a) and (b) and Modern Hungarian (35c)

- (35) a. *az ő derekanac is öue meg nem öld-ic* Károli (1589)
 the he waist.3SGDAT too girdle.3SG PRT not loosen-3SGMID
- b. *meg nem öld-ik az ő derekának öve* K. Csipkés (1678)
 PRT not loosen-3SGMID the he waist.3SGDAT girdle.3SG
- c. *derekának öve sem old-ód-ik meg*
 waist.3SGDAT girdle.3SG nor loosen-MID-3SGMID PRT
 “the girdle around his waist shall not be loosened” Revised Károli (1905)
 (Isaiah 5:27)

In the Károli Bible (representative of Early Middle Hungarian) as well as in the Komáromi Csipkés Bible (Middle Hungarian), we find the older form (*old-ik*) (35ab). In the Early Modern Hungarian period, Kassai (1817), in his otherwise rather prescriptive grammar, mentions both forms (*old-ik* and *old-ód-ik*) as attested and acceptable, which indicates that by the beginning of the 19th century, the form with the overt middle suffix was on course for taking over the older form. By the beginning of the 20th century, this process was complete, as even the linguistically conservative Reformed Protestant Bible started to use the variant with the overt middle suffix (35c).

This process can be mapped even more accurately with the verb *érez* (“feel, perceive”), due to the fact that the emergence of the overt suffix took place later,

in a period from which we have more data in the Hungarian Historical Corpus. Consider:

Middle Hungarian (36a) and Modern Hungarian (36b)

(36) a. *a' szobában a' mésznek vagy penésznek büdössége érz-ik*
 the room.in the lime.DAT or mould.DAT odour.3SG feel-3SGMID
 “the smell of lime or mould can be felt in the room”

Mindenes Gyűlytemény (1789)

b. *mindvégig érz-őd-ik valami szkepticizmus*
 throughout feel-MID-3SGMID some scepticism
 “a certain scepticism can be felt throughout”

Poszler György; Szerb Antal (1973)

Data drawn from the Hungarian Historical Corpus shows that the spread of the new form (overt middle suffix) followed the typical logistic curve (or S-curve, cf. Kroch 1990; Niyogi & Berwick 1997):

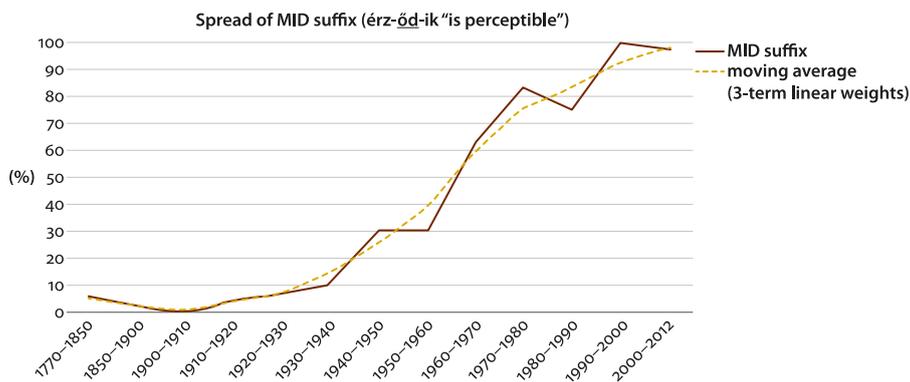


Figure 1. The spread of the MID suffix²³

While the form with the overt middle suffix is attested as early as the beginning of the 19th century, its spread is initially slow, gathering speed around the 1930s, and then slowing somewhat around the 1970s until the old form becomes practically unattested by the 1990s. Note that due to the nature of the texts it includes (literature, science), the Hungarian National Corpus represents a very conservative written register: in colloquial Hungarian, the spread of the overt middle suffix was probably faster.

23. See tabulated data in Appendix 2.

7. Reinterpretation based on correlation between middle voice and frequentative aspect

In this section, I develop the argument that the Voice Cycle in Hungarian cannot be described in terms of Feature Economy. Instead, I propose that the reinterpretation of frequentative suffixes as middle voice suffixes was due to the correlation of (certain flavours of) middle voice with frequentative/habitual aspect.

Feature economy has been proposed by van Gelderen (2004, 2011) as a general principle of both language acquisition and language change. The basic observation is that the reanalysis of elements in the course of language change typically involves (i) the reanalysis of semantic features as interpretable formal features and (ii) the reanalysis of interpretable formal features as uninterpretable formal features. This often goes hand in hand with a change of the syntactic status of the element concerned. Consider for example a schematic model of the subject agreement cycle (van Gelderen 2011: 41, slightly modified for clarity):

(37) Feature Economy in the Subject Agreement Cycle

Adjunct	Specifier	Head	affix
emphatic pronoun	> full pronoun	> head pronoun	> agreement
[semantic phi]	[i-phi]	[u-1/2][i-3]	[u-phi]
		[u-1/2/3]	

Emphatic or topic pronouns have semantic phi-features (person and number features). In the course of grammaticalization, these are first reinterpreted as interpretable formal features and then as uninterpretable formal features. Feature economy can also involve the complete loss of a feature, as in the case of the copula cycle, where a demonstrative pronoun is reinterpreted as a copula, and in the process, it loses its case feature [uT], while its deictic feature [i-loc] is preserved and its phi-features are reinterpreted as uninterpretable (van Gelderen 2011: 130, slightly modified):

(38) Feature Economy in the Copula Cycle

Specifier	Head
demonstrative	> copula
[i-loc]	[i-loc]
[i-phi]	[u-phi]
[u-T]	

Consider now what features are involved in the two stages of the Voice Cycle in Hungarian. While I do not wish to firmly commit myself to a very specific formal featural analysis of frequentative suffixes, I think it is safe to assume that they affect the aspectual interpretation of the predicate so that it ends up as denot-

ing a plurality of non-overlapping events. Van Geenhoven (2004) analyses West Greenlandic frequentative suffixes along these lines, proposing that frequentative suffixes denote a verb-level pluractional operator (see also Lasersohn 1995 for a similar approach). In addition to this, we have seen that frequentative suffixes in Hungarian can act as verbalizers, that is, they can attach to category-neutral roots, adjectives or nouns to create verbs. This suggests that frequentative suffixes carry event-related features with values such as [+plural, +distributive] and category-related features with the value [+V] or [+V,-N].

As far as the feature content of the Voice head is concerned, we can assume following Schäfer (2008) that it has two features: one which encodes the syntactic import of the head (whether Spec,VoiceP is projected or not) and another one which encodes the semantic import of the head (whether a semantic external argument position is introduced and how the argument slot is satisfied). In other words, the Voice suffix has features related to the syntactic and semantic valency of the predicate (see §4 for a more detailed discussion).

Recall that in the cases characterized in terms of Feature Economy, the sets of features available in subsequent stages are not disjoint. In the Subject Agreement Cycle, the element under reinterpretation has phi-features in each stage (except the last). In the copula cycle, phi-features and deictic features are available in both the demonstrative and in the copula stage. In the case of the Voice Cycle in Hungarian, however, no such overlap of features can be detected: the suffixes concerned carry event structure and category related features in the 'frequentative' stage and valency-related features in the 'Voice' stage. Because of this, I believe this change cannot be characterized in the terms of Feature Economy.²⁴

As I argued in §4, what made frequentative suffixes susceptible to be reanalysed as voice suffixes was not a set of shared abstract features but rather, the principled correlation between middle voice and frequentative/habitual aspect. Interestingly, such a development is probably not unique to Hungarian, e.g. the middle suffix *-sk-* in Udmurt has been tentatively analysed as etymologically related to a frequentative suffix, and the antipassive in Udmurt is associated with a habitual reading (Orsolya Tánzos pc).

24. A reviewer notes that since Voice heads are higher than v heads, the Late Merge principle of grammaticalization might be relevant here. The idea of Late Merge is that it is more economical to (i) base-generate an element in position X than to (ii) base-generate it in a lower position Y and then move it to position X. This principle often leads to heads being reanalysed as higher heads. Note, however, that there is no movement of the heads concerned in any stage of the Voice Cycle in Hungarian, therefore, I would argue that Late Merge does not play a role here.

8. The breakdown of voice syncretism and the rise of suffix stacking

After the reanalysis of frequentative suffixes as middle suffixes, a fragmented landscape of semi-productive middle suffixes emerged:

Modern Hungarian

(39)		-sz-	-(V)kVz-	-Vd-	
a.	<i>lát-Ø</i>	<u>lát-sz-ik</u>	<u>*lát-koz-ik</u>	<u>*lát-od-ik</u>	DISP. MIDDLE
	see-3SGINDEF “sb sees sth”		see-MID-3SGMID “sth can be seen / is visible”		
b.	<i>imád-Ø</i>	<u>*imád-sz-ik</u>	<u>imád-koz-ik</u>	<u>*imád-od-ik</u>	ANTIPASSIVE
	worship-3SGINDEF “sb worships sth”		worship-MID-3SGMID “sb is engaged in an act of worship”		
c.	<i>kever-Ø</i>	<u>%kever-sz-ik²⁵</u>	<u>*kever-kez-ik</u>	<u>kever-ed-ik</u>	ANTICAUSATIVE
	mix-3SGINDEF “sb mixes sth”		mix-MID-3SGMID “sth gets mixed”		

This state of affairs is similar to Stage 2 of the Negative Cycle in French (see Foulet 1990; Déprez 2000; Roberts & Roussou 2003), where several words were grammaticalized as neg-words: *point* “point”, *pas* “step”, *mie* “crumb” or *goutte* “drop”. There is no one-to-one correspondence between flavours of middle voice and different middle suffixes. Note e.g., that the same suffix -(V)k(V)z- can appear in a reflexive, an antipassive and a reciprocal:

Modern Hungarian

(40)	a.	<i>szépít-kez-ik</i>	REFLEXIVE
		beautify-MID-3SGMID “do makeup” [lit. “beautify oneself”]	
	b.	<i>épít-kez-ik</i>	ANTIPASSIVE
		build-MID-3SGMID “is building around, is involved in an unspecified building project”	
	c.	<i>vitat-koz-ik</i>	ANTIPASSIVE/RECIPROCAL
		dispute-MID-3SGMID “is involved in a debate, are debating with one another”	

25. Dialectally attested.

There is one exception to this pattern of irregularity: with anticausatives (and mediopassives), *-V:d-* emerged as a productive suffix (Komlósy 2000; Márkus 2015):

Modern Hungarian

- (41) *töm-Ø* → *töm-ód-ik* / **töm-sz-ik* / **töm-d-ik* / **töm-kez-ik* / **töm-öd-ik*
 fill-3SGINDEF fill-MID-3SGMID
 “sb fills sth” “sth gets filled”

Anticausatives are not correlated with frequentative readings (unlike antipassives or dispositional middles), so the appearance of *-V:d-* in anticausatives was probably a later development²⁶ based on analogy with other middles such as the antipassive shown in (42):

- (42) *csúfol-ód-ik*
 mock-MID-3SGMID
 “is engaged in mocking”

The latest, ongoing development in the Voice Cycle is that some of these semi-productive suffixes are being reinforced with the productive anticausative / mediopassive suffix *-V:d-*, resulting in the rise of stacking (the combination of a semiproductive suffix and a productive voice alternation suffix, cf. Kozinsky et al. 1988: 661; Gerdts & Hukari 2005; Polinsky 2013).

This process affects dispositional middles, while reflexives and antipassives appear to be immune:

Modern Hungarian

- | | | | |
|---------------------------------|--|--------------------------------------|-----------------|
| (43) a. <i>lát-Ø</i> | <i>lát-sz-ik</i> | <i>lát-sz-ód-ik</i> | DISP.
MIDDLE |
| see-3SGINDEF
“sb sees sth” | see-MID-3SGMID
“sth can be seen / sth is visible / sth seems as” | see-MID-MID-3SGMID | |
| b. <i>hall-Ø</i> | <i>hall-atsz-ik</i> | <i>hall-atsz-ód-ik</i> ²⁷ | DISP.
MIDDLE |
| hear-3SGINDEF
“sb hears sth” | hear-MID-3SGMID
“sth can be heard / sth is audible / sth sounds as” | hear-MID-
MID-3SGMID | |

26. Simonyi (1905: 5–7) lists 35 verbs where the middle form lacks a dedicated middle suffix (cf. (1)), and out of these, 28 are anticausatives (2 are disp. middles, 2 are reflexives and 3 are antipassives).

27. Dialectal *hall-ik* / *hall-ód-ik* (also *hall-sz-ik* / *hall-sz-ód-ik*).

c.	<i>tet-sz-ik</i>	? <i>tet-sz-őd-ik</i>	DISP. MIDDLE
	see.archaic- MID-3SGMID	see.archaic-MID- MID-3SGMID	
	“sth appears favourable, sth is likeable”		
d. <i>űrít-Ø</i>	<i>űrít-kez-ik</i>	* <i>űrít-kez-őd-ik</i>	REFLEXIVE
	empty _V -3SGINDEF	empty _V -MID-3SGMID	
	“sb empties sth” “sb empties (i.e., relieves) oneself”		
e. <i>csodál-Ø</i>	<i>csodál-koz-ik</i>	* <i>csodál-koz-őd-ik</i>	ANTIPASSIVE
	admire-3SGINDEF	admire-MID-3SGMID	
	“sb admires sth” “sb is astonished”		

A natural explanation for this pattern is that dispositional middles and anti-causatives form a natural class in the sense of involving agent suppression / demotion, while there is no agent suppression with reflexives and antipassives.²⁸ (Note that cross-linguistically, reflexives and antipassives often display syncretism, cf. Kozinsky et al. 1988 on Chukchi; Dixon 1972, 1977, Austin 1981 and Terrill 1997 on various Pama-Nyungan languages.) The spread of *-V:d-* onto more and more flavours of middles is a step into the direction of the full restoration of voice syncretism.

9. Conclusion

In this paper, I have shown that the current picture of middle voice in Hungarian reflects several overlapping stages of an ongoing grammaticalization process which can be characterized as a cycle. A handful of verbs still preserve the Old Hungarian system, where middle voice was encoded through a separate inflectional paradigm (contextual allomorphy in AgrS conditional on the feature content of a silent Voice head). With most verbs, middle voice is encoded through a dedicated middle voice suffix (an overt spellout of the Voice head). I have claimed that these two stages are connected by a grammaticalization process taking place over the course of centuries, which involved the reinterpretation of frequentative suffixes (v heads) as middle voice suffixes (Voice heads). Crucially, this reinterpretation was not based on shared abstract features, but rather, on a principled correlation between middle voice and frequentative aspect.

28. More precisely: the agent in reflexives is SEMANTICALLY represented (and coreferential with the internal argument), even though it is SYNTACTICALLY suppressed.

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Abbreviations

1SG	first person singular
2SG	second person singular
3SG	third person singular
3SGDEF	third person singular definite conjugation (=third person singular subject, definite object)
3SGINDEF	third person singular indefinite conjugation (=third person singular subject, indefinite object or no object)
3SGMID	third person singular (middle conjugation)
ACC	accusative
ACT	active voice
COND	conditional
DAT	dative
IPST	imperfective past
MID	middle voice
PRES	present
PST	past
POS	modal possibility
PRT	verbal particle (telicizing/directional)
SUBJ	subjunctive

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Appendix 1. The active and the middle paradigm

The difference of the middle paradigm from the standard paradigm manifested itself in different AgrS suffix forms. In its fullest known form, the middle paradigm differed from the standard paradigm only in the following moods/tenses: the present singular, the present conditional singular, the imperative singular and the archaic imperfect past singular. Consider:

	Active INDEF./no OBJ.	Active DEF. OBJ. ²⁹	Middle
Present			
1SG	-Vk	-Vm	-Vm
2SG	-(V)sz	-Vd	-Vl
3SG	-∅	-ja/-i	-ik
Present conditional			
COND.1SG	-nV:k	-nV:m	-nV:m
COND.2SG	-nV:l	-nV:d	-nV:l
COND.3SG	-nV	-nV:	-nV:k
Imperative			
IMP.1SG	-jVk	-jVm	-jVm
IMP.2SG	-j(V:l)	-jVd	-j(V:l)
IMP.3SG	-jVn	-jV	-jV:k
Imperfect past (archaic)			
PAST.1SG	-V:k	-V:m	-V:m
PAST.2SG	-V:l	-V:d	-V:l
PAST.3SG	-V	-V:	-V:k

Crucially, in the preterite past tense (which is the only past tense in Modern Hungarian), the middle paradigm and the standard paradigm have never been different (since as far as our written sources stretch back).

The erosion of the separate middle paradigm has been ongoing since the 16th century; today, the only form in which the separate middle paradigm is stable is the present tense 3rd singular. Very conservative speakers and some dialects to some extent retain the difference in the 1st and 3rd person present, present conditional and imperative forms; however, the difference in 2nd person forms has completely collapsed.

29. On differential object marking (DOM) in Hungarian, see Bárány (2017) and references therein.

Appendix 2. ÉRZ-IK → ÉRZ-ŐD-IK

Period	No mid suffix	Mid suffix	Total
1770–1850	17	1	18
1850–1900	35	1	36
1900–1910	13	0	13
1910–1920	23	1	24
1920–1930	29	2	31
1930–1940	42	5	47
1940–1950	27	12	39
1950–1960	35	16	51
1960–1970	10	17	27
1970–1980	8	40	48
1980–1990	7	21	28
1990–2000	0	5	5
2000–2012	1	38	39

(source: Hungarian Historical Corpus)

Appendix 3. Corpora, codices, Bible translations and other data sources

Corpora:

Old Hungarian Corpus: <http://omagyarkorpusz.nyttud.hu/en-descr.html>

Hungarian Historical Corpus: http://clara.nyttud.hu/mtsz/run.cgi/first_form

Codices:

Döbrentei Codex (1508)

Érdy Codex (1526)

Érsekújvár Codex (1529–1531)

Festetich Codex (1492–1494)

Jordányszky Codex (1516–1519)

Munich Codex (1466)

Nagyszombat Codex (1512–1513)

Teleki Codex (1525–1531)

Vienna Codex (mid-15th C)

Winkler Codex (1506)

Bible translations:

Károli Bible (1589)

Komáromi Csipkés Bible (1678)

Revised Károli Bible (1905)

(For a description of codices and Bible translations, see: <http://omagyarkorpusz.nyttud.hu/en-texts.html>.)

Other data sources:

Faludi, Ferenc. 1773. Szent ember vagyis szent életre vezető istenes oktatások. [The holy man, or: Godly instructions for a holy life.]

Kassai, József. 1817. Magyar nyelv-tanító könyv [...]. [A study book of Hungarian.]

Révai, Miklós. 1803. Laborator Grammatica Hungarica.

Telegdi, Miklós. 1577–1580. Az evangéliumoknak [...] magyarázatja. [Gospel commentaries.]

Résumé

Le présent article est une étude basée sur un corpus du Cycle de la Voix en hongrois. D'après des données provenant de corpus du hongrois ancien et du corpus historique hongrois, je soutiendrai que, en hongrois ancien, la voix moyenne était codée selon un paradigme flexionnel distinct (allomorphie contextuelle dans le suffixe d'accord sujet subordonné au contenu de trait d'une tête silencieuse), tandis qu'en hongrois moderne, la voix moyenne est codée par des suffixes dédiés (c'est-à-dire que la tête de la voix est épelée ouvertement). Je soutiendrai que le processus de grammaticalisation sous-jacent impliquait la réanalyse de suffixes fréquentatifs (têtes *v*) en tant que suffixes de voix moyennes (têtes de la voix). Je montrerai que cette réinterprétation ne reposait pas sur des caractéristiques abstraites communes, mais sur une corrélation de principe entre voix moyenne et aspect fréquentatif: certains types de voix moyenne (antipassifs et moyens de disposition) risquant davantage d'être associés à une interprétation fréquente ou habituelle que les actifs, les suffixes fréquentatifs étaient susceptibles d'être réanalysés comme suffixes de la voix moyenne au cours de l'acquisition du langage. J'affirmerai donc qu'en plus d'exemplifier l'économie de traits (*Feature Economy*) (Gelderen 2011), une réinterprétation basée sur la corrélation entre des marqueurs grammaticaux réellement indépendants devrait également exemplifier un mécanisme de grammaticalisation.

Zusammenfassung

Die vorliegende Arbeit bildet eine korpusbasierte Studie zum Zyklus der Diathese im Ungarischen. Auf der Grundlage von Daten aus dem Altungarischen Korpus und dem Ungarischen Historischen Korpus werde ich dafür argumentieren, dass das Medium im Altungarischen durch ein separates Flexionsparadigma kodiert wurde (kontextuelle Allomorphie im Subjektkongruenzsuffix abhängig vom Merkmalsinhalt eines stillen Diathesenkopfes); dagegen wird es im modernen Ungarisch durch spezielle Mediumsuffixe kodiert (d.h. der Diathesekopf ist overt). Ich vertrete die Position, dass der zugrunde liegende Grammatikalisierungsprozess die Reanalyse von frequentativen Suffixen (*v*-Köpfen) als Mediumsuffixe (Diatheseköpfe) beinhaltete. Diese Neuinterpretation beruht nicht auf gemeinsamen abstrakten Merkmalen, sondern eher auf einer prinzipiellen Korrelation zwischen Medium und frequentativem Aspekt: Da einige Arten von Medium (Antipassivum und dispositionelles Medium) eher mit einer frequentativen oder habituellen Interpretation in Verbindung gebracht wurden als das Aktivum, waren frequentative Suffixe anfällig für die Reanalyse als Mediumsuffixe im Verlauf des Spracherwerbs. Ich zeige daher, dass neben Merkmalsökonomie (van Gelderen 2011) auch eine Neuinterpretation auf der Grundlage der Korrelation zwischen merkmalsunabhängigen grammatikalischen Markern als Mechanismus der Grammatikalisierung angesehen werden sollte.

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