Grammaticalization without Feature Economy: Evidence from the Voice Cycle in Hungarian*

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 likelier to be associated with a frequentative or habitual reading than actives, frequentative suffixes were susceptible to be reanalyzed as middle suffixes in the course of language acquisition. I will thus claim that in addition to Feature Economy (Gelderen 2011), reinterpretation based on correlation between featurally independent grammatical markers should also be regarded as a mechanism of grammaticalization.

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, we witness contextual allomorphy in the subject agreement suffix conditional on voice:

(1)	a. *tör-Ø*	b. *tör-ik*
	break-3SGINDEF[1]	break-3SGMID
	'sy breaks sg'	'sg gets broken'
	ACTIVE	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:

(2)	a. *old-Ø*	b. **old-ik*	c. *old-ód-ik*
	loosen-3SGINDEF	loosen-3SG	loosen-MID-3SG
	'sy loosens sg'	'sg gets loosened'	'sg gets loosened'
	ACTIVE	ANTICAUSATIVE	ANTICAUSATIVE

With some verbs, optional suffix stacking can be observed:

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

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1 Glosses are provided in adherence to the Leipzig Glossing Rules (Bickel, Comrie and Haspelmath 2008). The most important glosses are as follows: 1SG = first person singular, 3SG = third person singular, 3SGDEF = third person singular (definite conjugation), 3SGINDEF = third person singular (indefinite conjugation), 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).

I will argue that this picture reflects an intermediate stage in an ongoing grammaticalization process which can be characterized as a cycle. 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 reanalyzed 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* 'dissolve' in (2). The rise of suffix stacking (3) signals the weakening of the fragmented set of middle suffixes in Modern Hungarian and the need to reinforce them 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 and Kuteva 2002, Gelderen 2011, Ahn and Yap 2017, Gelderen 2018 a.o.). 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.

In addition to shedding light on a somewhat neglected corner of the grammaticalization landscape, the results in this paper also have broader implications concerning the general mechanisms underlying grammaticalization. As I will show below, the Voice Cycle cannot be described in terms of 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 (Gelderen 2004) or Late Merge (Chomsky 1995, Gelderen 2004). Rather, I will argue that what made reinterpretation possible was the relatively high correlation between middle voice and frequentative aspect (Section 4). Since language learners were exposed to a sample where 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 will thus claim that besides Feature Economy, reinterpretation based on correlation between featurally independent grammatical markers should also be regarded a mechanism of grammaticalization.

The paper is structured as follows: in Section 2, the Old Hungarian system of middle voice marking is introduced. The collapse of this system over the Middle Hungarian period is discussed in Section 3. In Section 4, I describe the Modern Hungarian system of overt middle suffixes, and provide a formal analysis for the grammaticalization process. Section 5 is dedicated to a discussion of the breakdown of Voice syncretism and the rise of middle suffix stacking. In Section 7, a conclusion is provided.

2 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) (cf. E. Abaffy 1992):

(4)	a. *szeg*	'sy cuts sg'	→	*szeg-ik*	'sg gets cut'	ANTICAUSATIVE
	b. *mos*	'sy washes sg'	→	*mos-ik*	'sy washes herself'	REFLEXIVE
	c. *gyón*	'sy confesses sg'	→	*gyón-ik*	'sy makes her confession'	ANTIPASSIVE

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.[2] Consider (the relevant suffixes are underlined, see Appendix 1 for a list of the suffixes in the two paradigms):

(5) a. *veuen* *aʒ* *o̧t* *kenèzekèt* … *m̄g-ald-a* ⁊ *meg-ʒeg-e̲*
taking the five breads … PRT-bless-IPST.3SGDEF and PRT-cut-IPST.3SGDEF
'Having taken the five loafs of bread, he blessed them and cut them up.'
Munich Codex (1466), 21a

b. *jstenÿ* *akaratbol* *harom* *rezre* *zeg-e̲k* *az* *ostÿa*
divine will.from three part.into cut-IPST.3SGMID the host
'By divine will, the host (sacramental bread) got cut into three parts.'
Érsekújvár Codex (1529-1531), 410

(6) a. *hanĕčac* *hog* *labait* *moſ-ſa*
rather:only that feet:his wash-3SGDEF
'Rather that he washes only his feet.'
Munich Codex (1466), 99vb

b. *meǵ-moſ-d-ik* *uala*
PRT-wash-FREQ-3SGMID be:IPST:3SG
'He washed himself.'
Vienna Codex (mid-15th C)

(7) a. *gy̋onn-y̋a* *megh* … *by̋neeth*
confess-3SGDEF PRT ... sins.his
'He confesses his sins.'
Jordányszky Codex (1516-1519), 100

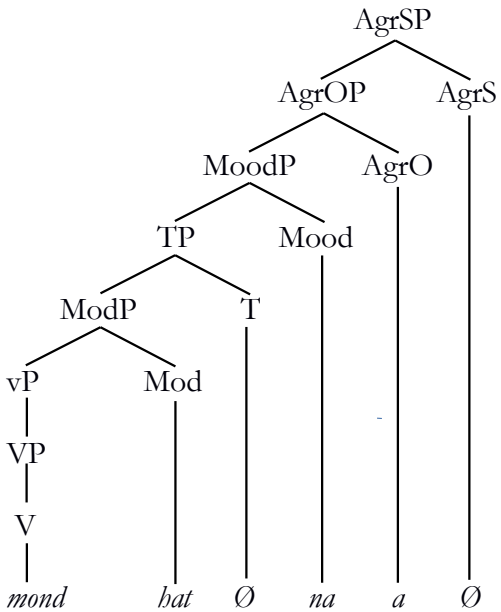
b. *mert* *pokol* *nem* *ǵovon-ik* *neked*
because hell not confess-3SGMID you.DAT
'Because hell does not make its confession to you.'

While the pattern above has been noted by historical linguists, no formal morphosyntactic analysis has been provided so far for the active-middle paradigm split in Old Hungarian. In the remainder of this section, I will propose such an analysis.

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) a.o., I assume the following structure for the vP and the inflectional domain:

2 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.

(8)



'sy would be able to say sg (definite object)'

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, I decided to use a right-branching structure in this paper, but nothing hinges on this choice. In what follows, I will explore and evaluate two possible ways to model the active-middle paradigm split: contextual allomorphy and sequential spanning.

The most straightforward way to analyze the pattern is to assume that what we witness is allomorphy of the AgrS head conditioned by the feature content of the lower silent[3] Voice head (ACT/MID) (i.e., I assume with Alexiadou, Anagnastopoulou and Schäfer 2015 and Schäfer 2008 that VoiceP is projected, but SpecVoiceP is crucially not, in so-called marked anticausatives, and in middles in general):

(9) a. *szeg-Ø-het-Ø-ne-Ø-Ø = szeghetne*
cut-ACT-POS-PRES-COND-INDEF-3SG
'sy would be able to cut sg (indefinite object)'

[[[[[[[[V VP] vP] ACT VoiceP] POS ModP] PRES TenseP] COND MoodP] INDEF AgrOP] 3SG AgrSP]
szeg Ø *-het-* Ø *-ne-* Ø Ø

b. *szeg-Ø-het-Ø-ne-e-Ø = szeghetné*
cut-ACT-POS-PRES-COND-DEF-3SG
'sy would be able to cut sg (indefinite object)'

[[[[[[[[V VP] vP] ACT VoiceP] POS ModP] PRES TenseP] COND MoodP] DEF AgrOP] 3SG AgrSP]

3 Interestingly, based partly on observations from related languages such as Mansi, Mordvin and Finnish, historical linguists claim 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) (Simonyi 1878:483-484, Simonyi 1905:5, D. Bartha 1991:96):
(i) (reconstructed Proto-Hungarian): *hall-v-ik*
hear-MID-3SGMID
'is audible, can be heard (dispositional middle)'
The evidence for this *-v-* middle suffix is only circumstantial (data from related languages and handful of fossils from Late Old Hungarian). If it did exist, it can be straightforwardly analyzed as the overt spellout of the Voice head.

szeg Ø *-het-* Ø *-ne-* *-e-* Ø

c. *szeg-Ø-het-Ø-ne-ik* = *szeghetnék*
cut-MID-POS-PRES-COND-3SG
'sg would be able to get cut'
[[[[[[[V $_{VP}$] $_{vP}$] MID $_{VoiceP}$] POS $_{ModP}$] PRES $_{TenseP}$] COND $_{MoodP}$] 3SG $_{AgrSP}$]
szeg Ø *-het-* Ø *-ne-* *-ik*

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, Svenonius 2012), locality within the same maximal projection (Bobaljik 2012, Bobaljik and Harley 2017) or linear adjacency/concatenation in single spellout domain (Embick 2010, Arregi and 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.[4] Thus, these data from Hungarian support the alternative hypothesis, i.e., that morphosyntactic features remain intact and are retained after vocabulary insertion (Halle and Marantz 1993, Noyer 1997).

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. (On non-terminal spellout, cf. Weerman and Evers-Vermeul (2002), Williams (2003), Neeleman and Szendrői (2007), Ramchand (2008), Newson (2010), Dékány (2011) and Márkus (2015) a.o.). This would naturally require that Voice^0 be adjacent to AgrS^0. Since whether or not AgrOP is projected at all depends on the feature content of Voice^0, 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^0 and AgrS^0 is technically possible as long as one is willing to contemplate a structure where vP is separated from VoiceP by the TAM layer:

(10) a. *szeg-het-Ø-ne-Ø-Ø-Ø* = *szeghetne*
cut-POS-PRES-COND-ACT-INDEF-3SG
'sy would be able to cut sg (indefinite object)'
[[[[[[[V $_{VP}$] $_{vP}$] POS $_{ModP}$] PRES $_{TenseP}$] COND $_{MoodP}$] ACT $_{VoiceP}$] INDEF $_{AgrOP}$] 3SG $_{AgrSP}$]
szeg *-het-* Ø *-ne-* Ø Ø Ø

b. *szeg-het-Ø-ne-Ø-e-Ø* = *szeghetné*
cut-POS-PRES-COND-ACT-INDEF-3SG
'sy would be able to cut sg (indefinite object)'
[[[[[[[V $_{VP}$] $_{vP}$] POS $_{ModP}$] PRES $_{TenseP}$] COND $_{MoodP}$] ACT $_{VoiceP}$] INDEF $_{AgrOP}$] 3SG $_{AgrSP}$]
szeg *-het-* Ø *-ne-* Ø *e* Ø

c. *szeg-het-Ø-né-ik* = *szeghetnék*
cut-POS-PRES-COND-MID.3SG
'sy would be able to get cut'
[[[[[[V $_{VP}$] $_{vP}$] POS $_{ModP}$] PRES $_{TenseP}$] COND $_{MoodP}$] MID $_{VoiceP}$] 3SG $_{AgrSP}$]
szeg *-het-* Ø *-ne-* *-ik*

4 The precise claim of Bobaljik (2000) is that inward-sensitive allomorphy is possible in case it is conditioned by syntactically irrelevant morphophonological features (such as class marking), but impossible in case 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.

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.

3 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 and 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 Section 3). In the first intermediate stage, some (inherently) unaccusative verbs started to follow middle paradigm (optionally at first):

(11) a. *az en ellensegímnec kemeń tǫre alath fekʒ-ǫk*
the I enemy:my:PL:DAT hard dagger:his under lie-1SGIND
'I am lying under the hard dagger of my enemies.'
Nagyszombat Codex (1512-1513), 67

b. *mert eeth alkolmas tÿztesseeg nelkÿl fekʒ-óm*
because here appropriate propriety without lie-1SGMID
'Because I am lying here lacking all appropriate dignity.'
Érdy Codex (1526), 300a

(12) a. *megh feketÿle nekǫm az nap*
PRT blacken:PST:3SGIND I:DAT the sun
ees ez velagh megh fogÿ-a
and this light PRT diminish-PST:3SGIND
'My sun has darkened and the light has diminished.'
Winkler Codex (1506), 217

b. *wr Isten keresǫknek nem fog-ÿk megh mÿnden ÿo*
lord God seeker:PL:DAT not diminish-3SGMID PRT all good
'For those who seek the Lord God, nothing good will diminish.'
Érsekújvár Codex (1529-1531), 108r

(13) a. *Felec raita, hogy hazânknac ez kichin maradekia is*
fear:1SGIND it:on that homeland:our:DAT this little leftover:its too
az tõbi utan chuſz-Ø
the rest after slip-3SGIND
'I am afraid that what little is left of our country will slip after the rest.'
Telegdi Miklós: Az evangéliumoknak magyarázatja (1577-1580), I 109

b. *Hamar csusz-ik és szörnyen esik gyarlóságunk…*
soon slip-3SGMID and terribly fall:3SGMID frailty:our
'Our frailty slips soon and falls terribly.'
Faludi Ferenc: Szent ember vagyis szent életre vezető istenes oktatások (1773), 550

This change can be analyzed 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).

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, irregular (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').

In the second intermediate stage, some unergative verbs started to follow the middle paradigm (optionally at first):

(13) a. *es dauid … ʒoc-Ø vala telles ereyeuel,*
and David jump-3SGIND be:PST:3SG full force:his:with
'And King David was jumping around with full force.'
Teleki Codex (1525-1531), 171

b. *egÿhaztoknak kenczet mÿnd el lopa*
church:your:DAT treasure:its:ACC all PRT steal:PST:3SG
Es wele el ʒok-ek
and it:with PRT jump-PST:3SGMID
'He stole all the treasures of your church and escaped with it.'
Érsekújvár Codex (1529-1531), 523:

(14) a. *ɼ è ſɼaſſal a palotanac aitayhoz maz-a*
and this crying.with the palace:DAT door:its:to climb-PST3SGINDEF
'And with such wailing, she climbed to the door of the palace.'
Vienna Codex (mid-15th C), 57

b. *másʒ-Ø*
climb-3SGINDEF
'She/he/it climbs.'
Miklós Révai: Elaboratior grammatica Hungarica (1803) 953, 1029

c. *másʒ-ik*[5]
climb-3SGMID
'She/he/it climbs.'
Miklós Révai: Elaboratior grammatica Hungarica (1803) 953, 1029

5 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, külömböz-ik. *Horum forma genuina est nuda.*
> '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* ('wither-3SGMID'), *külömböz-ik* ('differ-3SGMID'). The genuine form of these is the bare one.

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.

Note that this change can also be modelled as a reinterpretation of the conditioning factor: instead of the presence or absence of Spec,VoiceP, the condition factor is reanalysed as the presence or absence of the AgrOP projection (in other words, whether we have a single-argument predicate or a two-argument predicate).

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

This stepwise reinterpretation of the AgrS allomorphy had two characteristics: i) the structural distance between the morpheme affected by the allomorphy and the trigger was getting shorter and shorter and ii) the class of verbs following the middle paradigm broadened with each step (Table 1):

	Allomorphy trigger	**Verb classes following middle conjugation**
Initial stage	Voice^0	middles
Intermediate stage 1	Spec,VoiceP	middles and certain unaccusatives
Intermediate stage 2	AgrO^0	middles and certain unaccusatives and certain unergatives

Table 1

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 can also be observed: the spread of the middle paradigm to a handful of transitive verbs such as *esz* 'eat' and *isz* 'drink'. In Old Hungarian, *esz* 'eat'and *isz* 'drink' exhibited the regular active-middle alternation:

(15) a. *a'ki engemet esz-en*[6]*, él-Ø is az én általam*
who I:ACC eat-3SGINDEF live-3SGINDEF too that I through:my
'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

(15b) 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:

(16) a. *aki engem esz-ik, él-Ø én általam*
who I:ACC eat-3SGMID live-3SGINDEF I through:my
'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':

(17) a. *Mari esz-ik* $Ø_{OBJ}$.

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

Mary eat-3SGMID n[7]
'Mary is eating.'

b. *János* *isz-ik* $Ø_{OBJ}$.
John drink-3SGMID n
'John is drinking.'

In fact, such null object constructions may well have been the actual locus where the reinterpretation took place:

(18) a. *János* *esz-ik*. (antipassive, middle voice, theme object suppressed)
John eat-3SGMID.
'John is eating.'

b. *János* *esz-ik* $Ø_{OBJ}$ (transitive, active voice, prototypical null object)
John eat-3SGMID n
'John is eating.'

(18a) represents the original Old Hungarian parsing of *János eszik*.: an antipassive construction with the theme object suppressed. However, it is quite conceivable that language learners might have reinterpreted this as an active transitive sentence with a phonologically null prototypical object (18b). 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 later):

(19) a. *A* *lányok* *esz-nek*. (antipassive, middle voice, theme object suppressed)
the girl:PL eat-3PLMID
'The girls are eating.'

b. *A* *lányok* *esz-nek* $Ø_{OBJ}$ (transitive, active voice, prototypical null object)
the girl:PL eat-3PLACT n
'The girls are eating.'

This change has been slow and incremental: the first sporadic examples of the middle conjugation of transitive *esz* 'eat' date from the 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 (*fekü̈sz-ik* lie-3SGMID 'lies'), some unergatives (*mász-ik* climb-3SGMID 'climbs') 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 outsize 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 has lost its original function of encoding middle voice, and was reinterpeted 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 $Voice^0$, 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

7 Ruda (2017) argues that in sentences such as (17), 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).

and the archaic imperfect past singular (see appendix). 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 and 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[0]. 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 and Roussou 2003, Faarlund 2008).

4 THE EMERGENCE OF MIDDLE VOICE SUFFIXES

In modern Hungarian, mediality is overtly encoded by middle suffixes (note that middles obligatorily follow the original 'middle' inflectional paradigm: i.e., following the middle inflectional paradigm is a necessary but insufficient condition of mediality in Mod. Hungarian):

(20)	a.	*-sz:*	*lát-sz-ik*	(see-MID-3SGMID)	'it seems'	DISP. MIDDLE
	b.	*-d:*	*mos-d-ik*	(wash-MID-3SGMID)	'she washes herself'	REFLEXIVE
	c.	*-(V)kVz:*	*imád-koz-ik*	(worship-MID-3SGMID)	'she prays'	ANTIPASSIVE
	d.	*-(V)kVd:*	*ver-eked-ik*	(beat-mid-3SGMID)	'she fights'	ANTIPASSIVE
	e.	*-Vdik:*	*kever-ed-ik*	(mix-MID-3SGMID)	'it gets mixed'	ANTICAUSATIVE
	f.	*-V:dik:*	*üt-őd-ik*	(hit-MID-3SGMID)	'it gets hit'	ANTICAUSATIVE[8]

As has been noted by historical linguists, these middle suffixes are all derived from originally frequentative-iterative suffixes (Simonyi 1878, E. Abaffy 1978, D. Bartha 1991, 1992). However, as far as Modern Hungarian is concerned, these suffixes lost the function of encoding a frequentative-iterative reading.[9] In other words, in the Middle Hungarian period, a systematic reanalysis took place: several frequentative-iterative suffixes were reinterpeted as markers of middle voice.

What is the morphosyntactic position of frequentative suffixes? The (productive) frequentative suffix *-gat/-get* in Modern Hungarian has functions related to causativity alternations and the verb-formation from category-neutral roots:[10]

(21)	a.	*for-og*	b.	*for-gat*
		√turn-FREQ		√turn-FREQ
		'turn-inchoative'		'turn-causative'

Based on this, I assume that frequentatives in Hungarian are merged in little v (cf. Harley 1995, Marantz 1997, Harley and 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[0]).

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8 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 and Törkenczy (2015).

9 The original frequentative-iterative function of these suffixes is still visible in Modern Hungarian in some isolated fossils:

(i)	a.	*köp-Ø*	b.	*köp-köd-Ø*
		spit-3SG		spit-FREQ-3SG
		'She spits. (single event)'		'She spits (repeatedly). (iterated, series of spitting events)'
(ii)	a.	*bök-Ø*	b.	*bök-öd-Ø*
		poke-3SG		poke-FREQ-3SG
		'She pokes sg/sy. (single event)'		'She pokes sg/sy (repeatedly). (iterated, series of poking events)'

10 Note also that the improductive frequentative suffixes *-kod/-ked/-köd* and *-od/-ed/-öd* also have a verbalizing function:

(i)	*erős-köd-ik*	(ii)	*erős-öd-ik*
	strong-FREQ-3SG		strong-FREQ-3SG
	'keeps on insisting strongly'		'gains strength'

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. In antipassives, the theme argument (which could measure out the event) is demoted (Polinsky 2017): this means that an unbounded, habitual reading is more readily accessible:

(22) a. *János házat épít-Ø.*
John house:ACC build-3SGINDEF
'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.)'

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

Dispositonal 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:

(23) *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.'

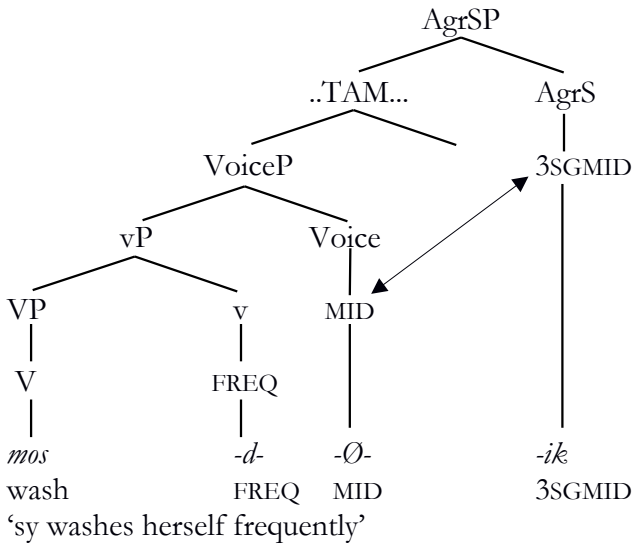
This means that verbs in middle voice were likely to carry these frequentative suffixes (or at least significantly likelier than their active counterparts). As a result, as the middle paradigm collapsed and AgrS allomorphy was no longer a reliable marker of middle voice, it was easy for language learners to reanalyze these frequentative suffixes as the markers of middle voice. This can be related to the notion of stability (Clark and 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.

Crucially, grammaticalization in this case was not driven by feature economy (i.e., based on shared abstract features), but rather, it came about because of a principled statistical correlation between middle voice and habitual / frequentative aspect. Interestingly, such a development is probably not unique to Hungarian, e.g. the middle suffix *-śk-* in Udmurt has been tentatively analyzed as etymologically related to a frequentative suffix, and the antipassive in Udmurt is associated with a habitual reading (Orsolya Tánczos pc).

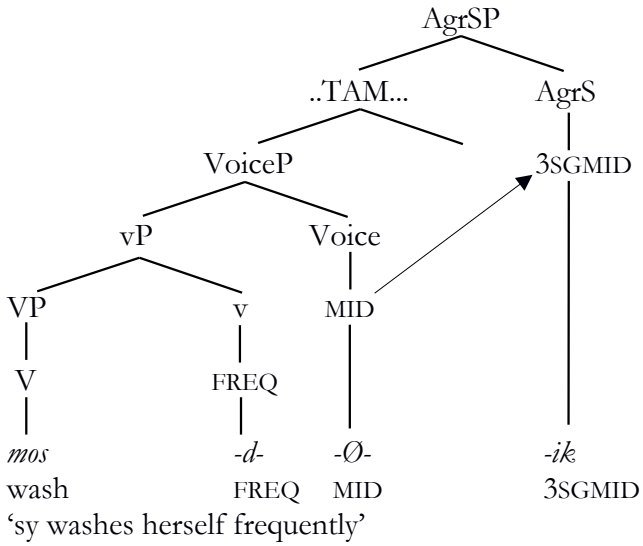
The reanalysis proceeded as follows. At the starting stage, the middle paradigm was stable: there was a one-to-one (bidirectional) correspondence between the $AgrS^0$ allomorph and the feature content of $Voice^0$:

(24)



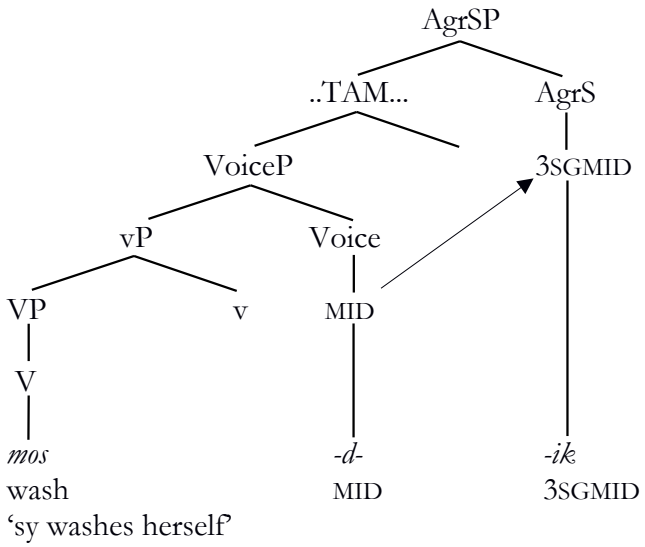
As the middle paradigm collapsed, the one-to-one correspondence between the AgrS allomorph and Voice^0 was lost: while it was the case that middles followed the middle paradigm, not all verbs that followed the middle paradigm were middles:

(25)



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:

(26)



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'.

(27) a. *az ő derekanac is őue meg nem óld-ic* Károli (1589)
the he waist:his:DAT too girdle:its PRT not loosen-3SGMID

b. *és meg nem óld-ik az ö derekának öve* K. Csipkés (1678)
and PRT not loosen-3SGMIDthe he waist:his:DAT girdle:its

c. *derekának öve sem old-ód-ik meg* Revised Károli (1905)
waist:his:DAT girdle:its nor loosen-MID-3SGMID PRT
'the girdle around his waist shall not be loosened' (Isaiah 5:27)

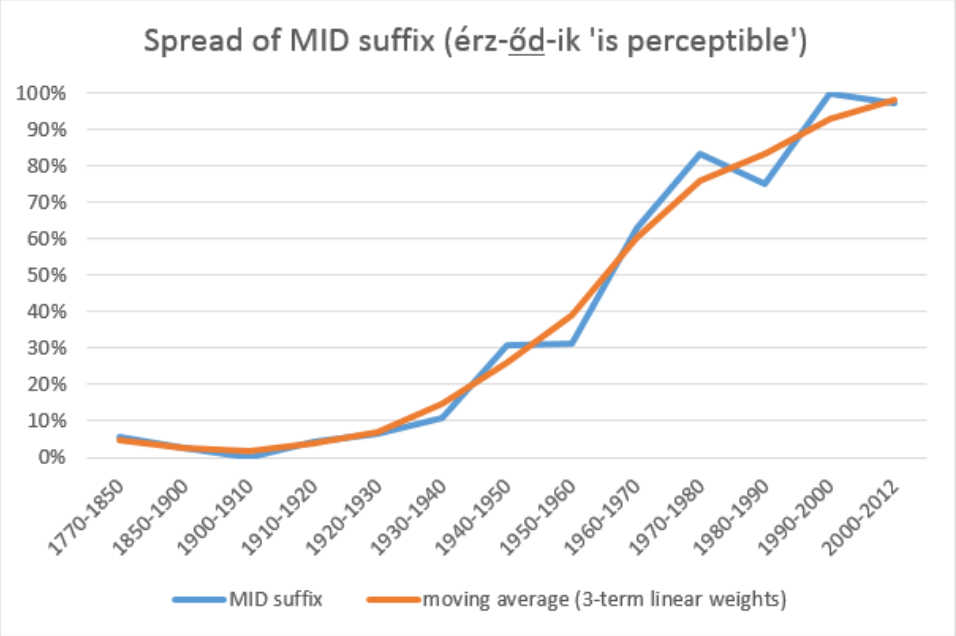
Note that Kassai (1817), in his otherwise rather prescriptive grammar, mentions both forms (*old-ik* and *old-ód-ik*) as attested and acceptable, which indicates that by the beginning of the 19th century, the form with the overt middle suffix was on course of taking over the older form. By the beginning 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 (27c).

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:

(28) a. *a' ſzobában a' méſznek vagy penéſznek büdöſsége érz-ik*
the room:in the lime:DATor mould:DAT odour:its 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 and Berwick 1997):



Graph 1[11]

While the form with 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.

5 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:

(29)		*-sz-*	*-(V)kVz-*	*-Vd-*	
a.	*lát-Ø*	*lát-sz-ik*	**lát-koz-ik*	**lát-od-ik*	
	see-3SGINDEF		see-MID-3SGMID		
	'sy sees sg'		'sg can be seen / is visible'		DISP. MIDDLE
b.	*imád-Ø*	**imád-sz-ik*	*imád-koz-ik*	**imád-od-ik*	
	worship-3SGINDEF		worship-MID-3SGMID		
	'sy worships sg'		'sy is engaged in an act of worship'		ANTIPASSIVE
c.	*kever-Ø*	*%kever-sz-ik*[12]	**kever-kez-ik*	*kever-ed-ik*	
	mix-3SGINDEF		mix-MID-3SGMID		
	'sy mixes sg'		'sg gets mixed'		ANTICAUSATIVE

This state of affairs is similar to Stage 2 of the Negative Cycle in French (see Foulet 1990, Déprez 2000, Roberts and 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

11 See tabulated data in the Appendix.
12 Dialectal.

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:

(30)	a.	*szépít-kez-ik*	REFLEXIVE
		beautify-MID-3SGMID	
		lit. 'beautifies herself', meaning: 'does her makeup'	
	b.	*épít-kez-ik*	ANTIPASSIVE
		build-MID-3SGMID	
		'is building around, is involved in an unspecified building project'	
	c.	*vitat-koz-ik*	ANTIPASSIVE/
		dispute-MID-3SGMID	RECIPROCAL
		'is involved in a debate, are debating with one another'	

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

(31)	*töm-Ø*	→ *töm-őd-ik / *töm-sz-ik / *töm-d-ik / *töm-kez-ik / *töm-öd-ik*	
	fill-3SG	fill-MID-3SG	
	'sy fills sg'	'sg gets filled'	

Anticausatives are not correlated with frequentative readings (unlike antipassives or dispositional middles), so the appearance of *-:Vd-* in anticausatives was probably a later development based on analogy with other middles such as the antipassive shown in (32):

(32)	*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 and Hukari 2005, Polinsky 2013))

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

(32)	a.	*lát-Ø*	*lát-sz-ik*	*lát-sz-ód-ik*	DISP. MIDDLE
		see-3SGINDEF	see-MID-3SGMID	see-MID-MID-3SGMID	
		'sy sees sg'	'sg can be seen / sg is visible / sg seems as'		DISP. MIDDLE
	b.	*hall-Ø*	*hall-atsz-ik*	*hall-atsz-ód-ik*[13]	
		hear-3SGINDEF	hear- MID-3SGMID	hear-MID-MID-3SGMID	
		'sy hears sg'	'sg can be heard / sg is audible / sg sounds as'		
	c.		*tet-sz-ik*	*?tet-sz-őd-ik*	DISP. MIDDLE
			see.archaic- MID-3SGMID	see.archaic-MID-MID-3SGMID	
			'sg appears favourable, sg is likeable'		
	d.	*ölel-Ø*	*ölel-kez-ik*	**ölel-kez-őd-ik*	REFLEXIVE
		embrace-3SGINDEF	embrace-MID-3SGMID	embrace-MID-MID-3SGMID	
		'sy embraces sg'	'sy embraces one another'		
	e.	*csodál-Ø*	*csodál-koz-ik*	**csodál-koz-ód-ik*	ANTIPASSIVE
		admire-3SGINDEF	admire-MID-3SGMID	admire-MID-MID-3SGMID	
		'sy admires sg'	'sy is astonished'		

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

A natural explanation for this pattern is that dispositional middles and anticausatives involve agent supression / demotion, whereas reflexives and antipassives do not. (Note that reflexives and antipassives often display syncretism, cf. Polinsky 2017.) 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.

6 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 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.

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.[14]	middle
present			
1SG	*-V͡k*	*-Vm*	*-Vm*
2SG	*-(V)sz͡*	*-Vd*	*-Vl*
3SG	*-Ø*	*-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	*-jV͡k*	*-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 praeterite 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 where the separate middle paradigm is stable is the present tense 3rd singular. Very conservative speakers and some dialects to some extant 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.

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

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

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.nytud.hu/en-descr.html
Hungarian Historical Corpus: http://clara.nytud.hu/mtsz/run.cgi/first_form

CODICES:
Érdy Codex (1526)
Érsekújvár Codex (1529-1531)
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.nytud.hu/en-texts.html.)

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