

# **The evolution of finite temporal subordination**

## **From parataxis via correlatives to temporal and event relatives in Hungarian**

**Word count:** 8962

### **Abstract:**

This paper examines how Hungarian, originally a head-final language with non-finite subordination, shifted to finite temporal subordination. It is claimed that the source construction of complex sentences with a finite temporal subordinate clause was a paratactic pre-correlative structure, with an indeterminate pronoun in the initial clause. The next stage of the evolution was the emergence of a temporal correlative construction, with the indeterminate pronoun reinterpreted as a relative operator. Correlative clauses evolved into free, light-headed, and lexically headed relative clauses, which gradually supplanted non-finite temporal clauses. Temporal relative clauses introduced by *mikor* ‘when’ also assumed an alternative, event relativizing structure and interpretation, and later the set of event relativizers were extended by PPs like *mielőtt* ‘REL-before’ and *miután* ‘REL-after’. In event relativizing constructions, the string-vacuity of relative operator movement gave rise to the base-generation of the relativizer in the complementizer domain, and its recategorization as a head.

### **1. Introduction**

Since Hungarian split away from its SOV Ugric sister languages, it has undergone a drift to SVO syntax. The change in head directionality has also affected subordination; head-final non-finite subordinate clauses have given way to finite subordinate clauses with a clause-initial complementizer domain (Bacskai-Atkari & Dékány 2014). The aim of this paper is to explore this process by outlining the evolution of finite temporal clauses. The analysis contributes to the clarification of both diachronic and synchronic issues of temporal subordination. It is claimed that Hungarian finite adverbial clauses did not develop from non-finite ones. They can be traced back to the correlative construction, which is argued to be the descendant of a paratactic coordinate structure (contra e.g. Harris and Campbell 1995: Ch. 10.5, and supporting Heine and Kuteva 2007: Ch. 5.3.3). Temporal correlative constructions are shown to have evolved into free, light-headed and adnominal temporal relative clauses. The examination of the evolution of event relatives (introduced by *miután* ‘after what’, *mielőtt* ‘before what’, *miközben* ‘during what’, etc.), showing the loss of the clause-internal trace of the relative phrase, and the recategorization of the relative phrase as a head functioning as a complementizer, leads to a novel analysis of event relative clauses, supporting elements of Lipták’s (2005) derivation contra Ürögdi’s (2012) approach.

Section 2 of the paper introduces non-finite temporal subordination in the SOV Ob-Ugric sister languages of Hungarian and in Early Old Hungarian. Section 3 presents the first finite temporal subordinate clause type emerging in the Ugric languages, the temporal correlative construction, and argues for its paratactic origin. Section 4 discusses temporal correlatives in Old Hungarian. Section 5 documents the evolution of temporal correlatives into to headless, light-headed, and adnominal relative clauses. Section 6 discusses the structure of event relatives (the equivalents of English *before*, *after*, *until* clauses), and reconstructs their developmental path.

### **2. Non-finite subordination in Ob-Ugric and its relics in Old Hungarian**

Strictly SOV Uralic languages don’t use finite subordination; their subordinate clauses are non-finite (infinitival, participial, or gerundive) constructions. The Ob-Ugric Khanty and Mansi, the sister languages of Hungarian in the Ugric branch of the Uralic family, still preserve the SOV syntax of Proto-Uralic, and, as is typical of head-final languages, they use

non-finite subordination, where the subordinator is the non-finite suffix on the clause-final verb (see É. Kiss 2023a). Their temporal adverbial clauses are often prenominal relative clauses modifying a head noun meaning ‘time’:

- (1) [kəʃy-**el** v:ləm-m-**el**] lɛ:t-nə tɛ:səŋ qo: nʲaβmit<sup>1</sup>  
 knife-3SG raise-PSTPTCP-3SG time-LOC rich man said  
 ‘When he raised his knife, the rich man said.’  
 (Khanty, Csepregi 2011: 96, OUDB 737))

A non-finite clause can function as a time adverbial also without an overt temporal nominal. Sometimes the temporal import of the subordinate clause can be inferred from the type of the non-finite suffix. A converbial clause, for example, denotes an event that immediately precedes, or overlaps with, the time of the main clause event:

- (2) [qɑt-a lǎŋ-**min**] lüw t’et’i ɔjajt-əy.  
 house-LAT enter-CVB s/he grandfather find-PST.3SG  
 ‘[When] entering the house, she found her grandfather’  
 (Khanty, Csepregi and Gugán 2017: ex.24)

The temporal relation of the subordinate event and the main clause event is often indicated by a postposition (3), or an adverbial case suffix (4). A locative suffix indicates the simultaneity or overlapping of the two events (4a), whereas a lative suffix suggests that the main clause event follows the subordinate event (4b). The posteriority of the event of the subordinate clause can be expressed by the combination of a negative participle with a locative suffix (4c).

- (3) [ɬiw-m-aɭ jen’t’-**m-aɭ**] pyrnə  
 eat-PSTPTCP-3SG drink-PSTPTCP-3SG after  
 ‘after he has eaten and he has drunk’  
 (Khanty, Csepregi 2011: 28)

- (4)a. [ma kanək wǎnt’-t’ayə mən-**t-am**]-**nə** wičipə ənəl qynt wə-l-əm.  
 I berry gather-INF go-PRSPTCP-1SG-LOC always big basket take-PRS-1SG  
 ‘When I go to gather berries, I always take a big basket.’  
 (Khanty, Csepregi and Gugán 2017: ex. (92))

- b. [su:ltə-**m-em**]-**v** ʊlək nju:r mən kəʃəy-nət ɛβətəm-i.  
 slip\_in-PSTPTCP-1SG-LAT harness tether I-LOC knife-with cut-PASS.PST.3SG  
 ‘After my having slipped in [the water], the harness tether was cut by me.’  
 (Khanty, Csepregi 2011: 96, OUDB 730)

- c. ma [wǒnt-nam mən-**ləy-am**]-**nə** ar liwpəs lit’atə-l-əm.  
 I forest-APPR go-NEGPTCP-1SG-LOC lot\_of food prepare-PRS-1SG  
 ‘I prepare a lot of food before going to the forest.’  
 (Khanty, Csepregi and Gugán 2017: ex. (95))

Although the Old Hungarian sentence is basically verb-initial already, these patterns of non-finite temporal subordination are still common as relics of the SOV syntax of Proto-Hungarian, even if they are gradually losing ground to finite subordination. Thus we find

<sup>1</sup> I cite all examples as they are spelled in their sources. Thus the examples cited from the Ob-Ugric Database (OUDB) are presented in an IPA-transcription.

participial clauses associated with a head noun meaning ‘time’, as in (5), where the non-finite projection and the head noun form a possessive construction:

- (5) [poncius pilat<sup>9</sup> Iudea-ban birolkot-**t-a**]-**nac** idèi-e-bèn ... lot  
 Pontius Pilatus Judea-in reign-PTCP-POSS-DAT time-POSS-in happen-PST.3SG  
 vr-nac igè-iè ianos-hoz  
 lord-DAT word-POSS John-to  
 ‘the Lord’s word to John happened in the time of Pontius Pilatus’ reigning in Judea’  
 (*Müncheni C.* 1416: 56v)

Non-finite clauses may function as temporal adjuncts owing to the inherent aspectual meaning of the non-finite suffix. *-atte/-ette* converbs, for example, are progressive:

- (6) [9 az nep-è-t taneit-**atta** 7 a templom-ban euāgelizal-**atta**]  
 he the people-POSS-ACC teach-CVB and the temple-in evangelize-CVB  
 egbè gòlèkez-e-n<sup>c</sup> a papoc-nac fèiedèlm-e 7 az iraftudoc  
 together assemble-PST-3PL the priests-DAT prince-POSS and the scribes  
 ‘[while] he was teaching his people and evangelizing them in the temple, the head  
 of priests and the scribes assembled’  
 (*Müncheni C.* 1416: 78v)

The temporal relation of the non-finite projection and the main clause can be indicated by a case suffix (7a) or a postposition, which assigns dative case to its complement in (7b):

- (7)a. [Zent fferencz Sena-nal lakoz-**t-a**]-**ban** yew hoz-za nemy  
 Saint Frances Sena-at live-PSTPTCP-3SG-INE came to-3SG some  
 predicatorok-nac zerzet-e-bel-y doctor  
 ecclesiastes-DAT convent-POSS-INE-ADJ doctor  
 ‘While Saint Frances lived at Sena, a doctor from order of ecclesiastes came to him.’  
 (*Jókai C.* 1370: 95)
- b. ivdith ... ez-t kéré az olofernes-től, hoğ ky me-heet-ne  
 Judith this-ACC ask-PST.3SG the Olofernes-from that out go-POSSIB-COND.3SG  
 az ymadsagra, ... méégh [wyrrat-**t-a**]-**nak** elött-e es  
 the prayer-for still dawn-PTCP-3SG-DAT before-POSS also  
 ‘Judith asked Olofernes if she could also go out for praying still before it dawned’  
 (*Székelyudvarhelyi C.* 1526: 37v)

In sum: the SOV Ugric languages display non-finite subordination. A non-finite clause can assume temporal function as the modifier or specifier of a head noun meaning ‘time’. Sometimes the temporal import of the non-finite clause is inferable from the type of the non-finite suffix. The temporal relation of the non-finite clauses to the main clause is often encoded by an adverbial case suffix or a postposition.

### 3. The paratactic pre-correlative construction in Ob-Ugric and its relics in Old Hungarian

The drift to head-initial syntax, beginning more than a thousand years ago in Hungarian, and a couple of decades ago in the Ob-Ugric languages, has brought about the appearance of finite subordination. Finite adverbial clauses have not developed from non-finite projections (thus the Ugric languages did not follow the developmental path outlined for Udi by Harris and

Campbell (1995: 311-322)). We can observe the embryonic stage of their emergence in Khanty and Mansi texts recorded before the majority of Khanty and Mansi speakers became Russian-dominant bilinguals. Whereas these texts show the prevalence of non-finite subordination, they already contain a complex sentence type that appears to involve two finite clauses in an asymmetric relation. Dékány et al. (2020) identified this structure as a correlative construction. A canonical correlative construction consists of a free relative clause (in square brackets in the examples below) and a subsequent main clause. The relative clause is introduced by a relative expression (spelled in bold), and the main clause contains an overt or pro-dropped/implicit definite expression that is anaphorically related to the relative expression of the initial clause. (Overt main clause correlates are underlined in the examples below). *Wh*-based correlatives (as opposed to demonstrative-based correlatives) always have a *whatever, whoever, whenever* type universal reading, and they may also have a definite reading (Belyaev and Haug 2020).<sup>2</sup> Correlative clauses introduced by a temporal relative phrase function as temporal adverbial clauses, as shown by the Khanty examples in (8), and the Mansi examples in (9). In temporal correlative constructions, the main clause correlate of the relative phrase is usually implicit.

- (8) a. [βɔːjəx quːl kənt-min **kəʃ** aŋquɫ-əl] əj mət-l əntem.  
 game fish search-CVB as go-PRS.3SG one something not.exist  
 ‘As he goes around hunting and fishing, [then] there is nothing.’  
 (Khanty, Paasonen 1901, OUDB 1313)
- b. [kəːt kət-γən-nət **quːntə** kəːt-l-təm] kəːt tɔrəs-γən puːt vːləm-l-əm  
 two hand-DU-COM when hold-PRS-1SG two thousand pot-DU lift-PRS-1SG  
 ‘When I hold with two hands, [then] I can lift two thousand pots.’  
 (Khanty, Paasonen 1901, OUDB 1316)
- (9)a. [pær **kʷæʃ** aŋkeæt-i] jɔp kuli jeæjənt-i.  
 back when glance-PRS.3SG and devil come-PRS.3SG  
 ‘When he glances back, [then] the devil is coming.’  
 (Pelym Mansi, Kannisto 1955, OUDB 1268)
- b. [**kʷæʃ** ʃunʃ-i] jɔp toːrəm tujm-əs alkuːnɪ.  
 when look-PRS.3SG and time become\_summer-PST.3SG somehow  
 ‘When she looks around, [then] it has somehow become summer.’  
 (Pelym Mansi, Kannisto 1955; OUDB 1335)

Although the translations of these sentences in present-day databases represent them as correlative constructions, there are reasons to believe that their original interpretations were different. First, Khanty and Mansi had no relative pronouns at the time when these texts were recorded; they used prenominal participial gap relatives. The pronouns in the initial clauses of (8)–(9), occupying a clause-internal position in the majority of cases, must have been indeterminate pronouns, i.e., expressions denoting sets of alternatives bound by the nearest overt or covert (e.g., interrogative or existential) operator. Their likely interpretation in these examples was an existentially bound indefinite reading, corresponding to ‘once’, or ‘sometime’. Second, in Pelym Mansi constructions of type (9a,b), the *kʷæʃ* ‘when’ clause is regularly linked to the subsequent clause by a coordinating conjunction, which is evidence of

<sup>2</sup> Demonstrative-based correlatives always have a definite reading and may also have a universal reading (Belyaev and Haug 2020).

a coordinate relation between them.<sup>3</sup> Third: the universal reading typical of correlative clauses can be absent; e.g. it is clearly absent in (9b). Sentences (8a,b) and (9a,b) must have been understood originally as follows:

- (8') a. 'Once he goes around hunting and fishing, there is nothing.'  
 b. 'Once I hold with two hands, I can lift two thousand pots.'  
 (9') a. 'He glances back once, and the devil is coming.'  
 b. 'Once she looks around, and it has somehow become summer.'

In the past decades, Khanty and Mansi have developed finite relativization. As shown by Dékány et al. (2020), the language of the Khanty-Russian bilingual generations has both free and postnominal relative clauses introduced by a relative pronoun/proadverb identical with the corresponding interrogative pronoun/proadverb. For these speakers, sentences like (8a,b) are presumably correlative constructions. Gulya (1966) already contains clear examples of the canonical correlative pattern:

- (10) a. [kojji əntə ropiltə-wəl] pro əntə li-wəl  
 who not work-PRS.3SG not eat-PRS.3SG  
 'Who doesn't work, [he] doesn't eat.'  
 (Khanty, Gulya 1966: 86)  
 b. [kol-əpa kit-l-im] toy-əpa mən-äti.  
 where-all send-PRS-SG<1SG there-all go-IMP.SG2  
 'Wherever I send him, there he shall go.'  
 (Khanty, Gulya 1966: 142)

In Old Hungarian we find an abundance of canonical correlative constructions, but there are also relics of the pre-correlative stage. In (11), for example, the predicate-phrase-internal position of the indeterminate pronoun suggests that it functions as an indefinite rather than a relative operator. The reading of the clause is not universal, which also argues against the correlative analysis:

- (11) [Wr-onk x̄p̄c samar hat-a-n J̄hrl̄mba ha men-th]  
 lord-1PL Christ donkey back-3SG-on Jerusalem when go-PST.3SG  
 ew samar-a megh santul-th val-a.  
 he donkey-3SG PRT lame-PST.3SG be-PST.3SG  
 'Once our Lord went to Jerusalem on the back of his donkey; his donkey was lamed.'  
 (*Bagonyai ráolvasások* 1488)

The indeterminate pronominal stem is often supplied with the *vala-* 'some-' prefix of indefinite pronouns – see (12). This is as expected according to Belyaev and Haug (2020), who claim on the basis of semantic considerations that the source of the correlative construction is a paratactic structure with an indefinite pronoun in the initial clause, and an implicit conditional relation between the two clauses.

- (12) a. [vala-ha eggic a· masik-nac èngèd ual-a] ... mēgagg-a ual-a

<sup>3</sup> Basque has a similar correlative construction, displaying an optional coordinating conjunction between the correlative clause and the main clause (Lipták and Rebuschi 2009). A connective particle appearing between the relative clause and the main clause in Hittite has been claimed to be a relic of a coordinating relation between the clauses (Hahn 1945; Motter 2023; É. Kiss to appear).

some-when one the other-DAT give\_way.3SG be-PST loosen-3SG be-PST  
 az ember ő sari-a-t 7 ő rokon-a-nac agg-a ual-a  
 the man he sandal-3SG-ACC and he relative-3SG-DAT give-3SG be-PST  
 ‘(If) sometime one gave way to the other, he loosened his sandal and gave it to his relative.’  
 (Bécsi C. 1416: I/9)

- b. [vala-mikor akar-iatoc] iól te-het-tec ő vęlec.  
 some-when want-2PL well do-POSSIB-2PL he with-3PL  
 ‘(If) you want it sometime, you can do well by them.’  
 (Károli 1590: 45v)

In sum: the SOV Ob-Ugric languages, similarly to early Old Hungarian, have a pre-correlative construction consisting of two – mostly paratactically linked – coordinate clauses, with an indefinite temporal pronoun/proadverb in the initial clause. In present-day Ob-Ugric languages, such sentences are interpreted as correlative constructions already.

#### 4. Old Hungarian temporal correlatives

The emergence of the correlative construction attested in 20th century Ob-Ugric had taken place in Hungarian by the beginning of the documented period of the language, i.e., by the late 12th century. Old Hungarian abounds in full-fledged temporal correlative structures.

The underspecified temporal indeterminate pronoun was originally *ha* (see (11)), as preserved in the indefinites *né-ha* ‘sometimes’ and *vala-ha* ‘once’ and in the negative indefinite *so-ha* ‘never’. Examples with a relative *ha* are rare in Old Hungarian though as *ha* soon evolved into a conditional complementizer. The function change must have taken place in correlative constructions similar to that in (13a), where the universal reading of the temporal relative *ha* is non-distinct from that of a conditional complementizer. There is no way to test whether *ha* occupies the specifier or the head position of CP in such constructions. In (13b), which contains both *ha* and the temporal wh-phrase *mikoron* ‘when’, however, *ha* must already be a conditional complementizer in C.

- (13)a. [ha az sororok kevzzvl valamelyk-nek aty-a any-a vagy rokonsag-a  
 if the sisters from some-DAT father-3SG mother-3SG or relative-3SG  
 meg hal val-a] tahat ez zent zvz vele evzve siratya val-a  
 PRT die.3SG be-PST then this saint virgin with-3SG together mourn-3SG be-PST  
 ‘Whenever/if the father, mother, or a relative of any of the nuns died, then this saint virgin was mourning together with her.’  
 (Margit legenda 1510: 18v)

- b. [Ha mykoron ez zent zvz az zokot jmadzag-y-t be nem  
 if when this saint virgin the usual prayer-POSS.PL-ACC PRT not  
 tellesseht-het-y val-a] ... tahat igen bankod-yk val-a  
 complete-POSSIB-3SG be-PST then very\_much grieve-3SG be-PST  
 ‘If sometime this saint virgin could not complete her usual prayers, she grieved very much’  
 (Margit legenda 1510: 5r)

As is common in correlatives, the temporal relative phrase may contain the relativized noun. The very first surviving temporal relative from 1195 is of this type:

- (14) ysa [kí nopu-n e-md-ul oz gimils-twł] halal-nec halal-á-ál  
indeed what day-on eat-FUT-2SG that fruit-ABL death-DAT death-POSS-INS  
holz.  
die-2SG  
‘Indeed on which day you eat from that fruit, [on that day] you die a deadly death.’<sup>4</sup>  
(*Halotti beszéd* 1195)

The temporal *wh*-adverbs replacing *ha* evolved from *wh*-phrases with a lexical head. *Mikor* ‘when’, used both as an interrogative and as a relative adverb, started out as an expression involving the *wh*-determiner *mi* ‘what’, and the lexical head *kor* ‘time’ supplied with a superessive (15a) or an accusative case suffix (15b). (The accusative can have an adverbial role in some contexts, e.g., *egy kicsi-t* lit. a little-ACC ‘for a little while’.) Later the case suffix of *kor* disappeared; the determiner *mi* ‘what’ came to be reanalyzed as the nominal head, and *kor* was recategorized as a temporal adverbial case marker (15c). Although the *-kor* suffix, called the marker of temporalis case in Hungarian grammars, is still productive, occurring in expressions like *öt-kor* ‘at five’, *ünnepek-kor* ‘at holidays’, *vacsora-kor* ‘at dinner [time]’, *mikor* became a temporal *wh*-adverb, non-compositional for the present-day intuition.

- (15) a. [Mert **my-kor-on** mond-om ual-a kÿ vagÿ te en ÿsten-em]  
for what-time-on say-1SG be-PST who be.2SG you I god-1SG  
tehat val-e-k edesseg-nek nemÿ vÿlagossag-a-ban  
then be-PST-1SG sweetness-DAT some light-POSS-in  
‘For when I was saying: who are you my God, then I was in a light of sweetness’  
(*Jókai C.* 1370: 46)
- b. Es **my-kor-t** vol-na elme-ye-ben ysten-hez akasztatott: nem  
and what-time-ACC be-COND.3SG mind-3SG-in god-to linked not  
felel-e nek-y  
answer-PST.3SG DAT-3SG  
‘And when he was linked to God in his mind, he didn’t answer him.’  
(*Jókai C.* 1370: 16)
- c. [**Mi-kor** kedig bõitõl-ēd-etec] ne-akar-i-atoc len-nē-tec zomorok  
what-time CONJ fast-FUT-2PL not-want-IMP-2PL be-INF-2PL sad-PL  
‘When you fast, don’t want to be sad’  
(*Müncheni C.* 1416: 12va)

Relative phrases involving the noun *idő* ‘time’, a synonym of *kor*, preceded by the *wh*-determiner *mi*, and followed by a superessive or terminative suffix, also evolved into non-transparent relative adverbs. The process was presumably triggered by the merger of the final *-i* vowel of the relative determiner and the initial *-i* vowel of the noun, and was further driven by the *-i*-vowel of the terminative suffix:

- (16)a. [**Midõn** [mi-idõ-n] étel-nç idè-iè lè-nd] io-y idè 7  
what-time-on meal-DAT time-POSS be-FUT.3SG come-IMP2.SG here and  
è-g-èl kèhèr-èt  
eat-IMP.2SG bread-ACC  
‘When it is the time of meal, come here and eat bread’

<sup>4</sup> In such examples, the maximalizing semantics of reading of the correlative clause yields a definite rather than universal reading because of the uniqueness of the main clause predicate (Beyaevev and Haug 2020: Sect. 4.5).

(*Bécsi C.* 1416: 1/5)

- b. [az elsew zyley-nk myg [mi-ide-ig] az eredeth-nek ygassag-aa-t  
the first parents-1PL what-time-for the origin-DAT truth-POSS-ACC  
tart-aa-k] ewket ees meg tart-aa wr isten  
keep-PST-3PL them too PRT keep-PST.3SG lord god  
'As long as our first ancestors kept the truth of origin, they were also kept by Lord  
God.'  
(*Érdy C.* 1524: 388)

As examples (14)–(16) show, the anaphoric correlate of the temporal relative phrase is implicit in the majority of cases. In the Old Hungarian corpus analyzed by Haader (1992), it is spelled out in about one fifth of the examples.

In sum: the paratactic pre-correlative adverbial constructions found in the SOV sister languages of Hungarian, the relics of which were also pointed out in Old Hungarian, evolved into full-fledged correlative adverbial constructions by the beginning of the documented period of Hungarian in the late 12th century. Temporal relative phrases incorporated a generic noun corresponding to 'time', and eventually grammaticalized into relative temporal adverbs. This process took place in correlative clauses where the relative phrase contained the relativized noun.

The Ugric languages display no sign of non-finite adverbial clauses assuming a finite superstrate (a process assumed by Harris and Campbell 1995: 311). The shift from non-finite to finite subordination meant non-finite clauses gradual losing ground to the newly emerging finite pattern.

### 5. From correlatives to free, light-headed, and PP-adjoined adverbial relative clauses

Correlative clauses, representing the earliest type of finite subordinate clauses in the Ugric languages, are adjuncts left-adjoined to the matrix clause, as Lipták (2012) showed based on evidence from binding. The evolution of complement clauses from a correlative antecedent involved the gradual integration of the correlative adjunct into the matrix clause, manifested first in its right adjunction to the matrix VP (as part of the drift of Hungarian syntax from head-final to head-initial), and then in its reanalysis as the V'-internal complement of the matrix verb, triggering object-verb agreement (É. Kiss 2023b). The evolution of attributive relative clauses from a correlative source structure is marked by the right adjunction of the relative clause to a matrix nominal, which is usually located in the postverbal domain of the matrix clause, see Dékány et al. (2020) and É. Kiss (to appear). The integration of temporal correlative clauses into the matrix clause, by contrast, does not always have such perceptible signs – because most temporal clauses remain clausal adjuncts, and the unmarked position of temporal adjuncts in Hungarian is in the left periphery

Nevertheless, temporal relative clauses do occasionally appear after the matrix verb in Old Hungarian, in which case they are not correlatives but free temporal relatives:

- (17) Nē oluas-t-atoc è mi-t töt le-gèn dauid [mikor megèhèz-et]  
not read-PST-2PL Q what-ACC did.3SG be-SBJV David when hunger-PST.3SG  
'Haven't you read what David did when he got hungry?'  
(*Müncheni C.* 1416: 17v)

Whereas a correlative clause always precedes the matrix clause, a left-peripheral temporal relative can also occupy a post-topic or intra-topic position in the main clause. In (18a) it follows two topicalized DPs, and two temporal adverbials with wider scope. In (18b) the



temporal relative clause follows a causative adverbial, whereas in (18c) it is adjoined to a left-peripheral temporal demonstrative phrase of the main clause.

- (18) a. Ez tabla-t zent margýt azzon mendenkoron mend eyel mend nappal  
 this table-ACC saint Margit lady always both night both day  
 [mykoron jmadkoz-ÿk val-a] zem-e-y-nek elevtt-e targÿ-a val-a  
 when pray-3SG be-pst eye-3SG-PL-DAT before-POSS keep-3SG be-PST  
 ‘Lady Saint Margaret kept this table in front of her eyes at all times, both day and night when she was praying.’  
 (*Margit legenda* 1510: 65v)
- b. vġan ez-ert [mihel ȝ-uel-e az aġashaz-ba be men-nek ual-a]  
 same this-for as he-with-3SG the bedroom-into in go-3PL be-PST  
 az asmodeus neuȝ ȝrdȝgh úket ottan megh ȝl-ÿ ual-a.  
 the Asmodeus named devil them there PRT kill-3SG be-PST  
 ‘For the same reason, as soon as they went with him into the bedroom, the devil of the name Asmodeus killed them.’  
 (*Kazinczy C.* 1526–1541: 22r)
- c. ez jdev-tevl fogua [mynd add-eg [myg ez zent zvz levn tÿzen nÿolc  
 this time-from on all that-for while this saint virgin became eighteen  
 eztendevs]] mÿndenkoron ban-tat-eek ... ez hazasag-ert  
 year.old always harass-PASS-PST.3SG this marriage-for  
 ‘From that time on, for all the time until this saint virgin became 18 years old, she was constantly harassed for this marriage’  
 (*Margit legenda* 1510: 17)

If the adverbial relative clause precedes a main clause that contains no overt anaphoric correlate of the relative adverb, it can, in principle, be either a correlative clause with an implicit main clause correlate, or a free relative (19a). A sentence with an initial relative clause and a demonstrative correlate in the main clause can also be derived in two ways; it can be a correlative construction, or the demonstrative adverb can be analyzed as the “light” head of the adverbial relative clause extraposed to the left (19b). The episodic reading of (19a) supports the free relative clause analysis. (In (19b), the maximalizing semantics of the correlative clause does not result in a universal interpretation because of the uniqueness of the predicate.)

- (19) a. [hogi vačoral-ik val-a] egi hal tetem altal all-a ah  
 as dine-3SG be-PST a fish bone through pierce-PST.3SG the  
 tork-a-n  
 throat-POSS-on  
 ‘As he was dining, a fish bone pierced into his throat.’  
 (*Debreceni C.* 1519: 89)
- b. [mi-kor-t Crÿstws zÿlet-e-k] akor-t ew Roma-ban  
 what-time-ACC Christ be.born-PST-3SG that-time-ACC he Rome-in  
 lel-eth-eek.  
 find-PASS-PST.3SG  
 ‘When Christ was born, then he could be found in Rome.’  
 (*Érseküjvári C.* 1529: 245r)

The integration of the adverbial relative clause into the main clause is clearest when it modifies a PP, as happens in (20):

- (20) *mýnden-kor-on* *gyakorta* *lelt-e* *evtet* *jmad-sag-ban* [*veternye-nek*  
 every-time-on often found-3SG her prayer-in vespers-DAT  
*elevt-e* [*mykoron* *ez* *soror megý-en* *val-a* *az ora* *meg lat-ný*]  
 before-POSS when this soror go-3SG be-PST the clock PRT see-INF  
 ‘All the time she frequently found her in prayer before vespers when this soror was  
 going to see the clock’  
 (*Margit legenda* 1510: 7v)

In the course of the Old Hungarian period, underspecified indeterminate pronouns assumed indefinite, universal, free choice, negative, and relative morphemes. There are also temporal relative clauses that already contain indeterminate pronouns supplied with the relative *a(z)* morpheme:

- (21) a. *Es* [*a-mykor* *az soltar-t* *olwas-sag*] *thahat* *e-keppen* *kel* *olwass-ny*  
 and REL-when the psalm-ACC read-3PL then this-way needs read-INF  
 ‘And when they read the psalm, then it needs to be read in this way’  
 (*Lányi C.* 1519: 301)
- b. [*A-mmég* *vél-ec* *vagyon a' vőlegény*] *add-ig* *nem bötél-het-nec*  
 REL-while with-3PL is the bridegroom that-for not fast-POSSIB-3PL  
 ‘While the bridegroom is with them, for that time they cannot fast.’  
 (*Heltai* 1565: I4v)

The *a(z)* morpheme, analyzed by Bacskai-Atkari and Dékány (2021) as the [+rel] head of a functional layer extending the bare pronoun, grammaticalized from *az*, the demonstrative head of light-headed subject relative clauses, via rebracketing. The incorporation of the main clause demonstrative into the relative pronoun was followed by demonstrative renewal. I.e., the following process has been reconstructed:

- (22) [TP...[DP *az* [CP *ki*...]]...] > [TP...[DP [CP *a(z)ki*...]]...] > [TP...[DP *az* [CP *aki*...]]...]

In temporal relative clauses, however, the demonstrative preceding the relative clause was a heavy *akkor* ‘then’ or *addig* ‘till then’, which could hardly have worn off into an *a-* vowel. The appearance of the *a-* prefix on temporal relative pronouns must have been the result of analogical levelling.

In sum: temporal correlative clauses evolved into free, light-headed, and lexical-headed relative clauses in Old Hungarian. Similarly to correlatives, adverbial relative clauses tend to appear in the left periphery of the main clause, but, unlike correlatives, they often stand in non-initial, post-topic or intra-topic position. They do not necessarily have the universal reading of correlatives.

Adverbial relative clauses gradually supplanted non-finite adverbial projections, as can be observed in subsequent translations of the same Biblical sentences. Compare, for example, the non-finite examples cited from a Bible translation from around 1416 in (6) and (7c) with their 16th century translations in (23a,b), where the converbial and participial projections have been replaced by finite clauses:

(23)a. [**my-kor-on**      **az nepek-et**      **tanoytta-naa**      **az templom-ban**      **es**  
           what-time-on    the people-ACC    teach-SBJV.3SG    the temple-in      and  
**predicall-ana]** egybe gyűl-ee-nek      az papy feyedelmek es az yrastwdok  
           preach-SBJV.3SG together assemble-PST-3PL the priest chiefs      and the scribes  
           ‘when he taught the people in the temple and preached, the chief priests and the  
           scribes assembled’  
           (Jordánszky C. 1516: 598)

b. [**mij-kor-on**      **Poncius Pilatus Sijdosag-ba**      **few wol-na]**      ... Lew-n  
           what-time-on Pontius Pilatus Jewry-in      head be-SBJV.3SG happen-PST.3SG  
           wr-nak      bezed-e      Ianos-hoz  
           lord-DAT    speech-POSS    John-to  
           ‘when Pontius Pilatus was the head in Judea, the Lord’s speech to John happened’  
           (Pesti, 1536: 118v)

## 6. Event relatives

### 6.1. Event relatives versus temporal relatives

In English, not all temporal subordinate clauses contain a *wh*-pronoun, which raised the question to what extent adverbial subordination can be subsumed under relativization. Larson (1990) observed that *before*, *after*, *since*, and *until* clauses display no visible relative pronoun, nevertheless, these prepositions have cross-clausal long distance readings, which is unexpected from prepositions but is typical of relative operators. In (24a,b), for example, the preposition can be associated with either CP1 (high reading) or CP2 (low reading):

- (24) a. I saw Mary in New York [<sub>PP</sub> before [<sub>CP1</sub> she claimed [<sub>CP2</sub> that she would arrive]]]  
       b. I encountered Alice [<sub>PP</sub> after [<sub>CP1</sub> she swore [<sub>CP2</sub> that she had left]]]

In (24a), the main clause event could have happened either before Mary making a claim or before her arrival; in (24b) it could have happened either after Alice’s swearing or after her leaving. Larson claimed that it is not the preposition that moves in this sentence type but an invisible relative operator, which can originate in either one of the embedded clauses, as shown in (25a). In (25b), the Complex NP Constraint prevents movement from the lower clause, eliminating the low reading.

- (25) a. I saw Mary in New York [before [**Op<sub>i</sub>** she claimed **t<sub>i</sub>** [that she would arrive **t<sub>i</sub>**]]]  
       b. I saw Mary in New York [before [**Op<sub>i</sub>** she made [the claim **t<sub>i</sub>** [that she had arrived]]]]]

Hungarian clauses of this type, involving the postpositions *előtt* ‘before’, *után* ‘after’, *alatt* ‘in’, *közben* ‘during’, do contain the *wh*-pronoun *mi* ‘what’; nevertheless, as Lipták (2005) and Ürögdi (2012) observed, their properties are different from those of free temporal relative clauses. Superficially, (26a) and (26b) look similar; however, their temporal clauses bear different relationships to the main clause:

- (26) a. [**Mikor** Anna      megérkez-ett]      Péter elmen-t.  
           when Anna    arrive-PST.3SG    Peter leave-PST.3SG  
           ‘When Anna arrived, Peter left.’  
       b. [**Mi-után** Anna      megérkez-ett]      Péter elmen-t.  
           what-after Anna    arrive-PST.3SG    Peter leave-PST.3SG

‘After Anna arrived, Peter left.’

Lipták interprets (26a) as follows: the relative pronoun *mikor*, roughly corresponding to ‘at time *t*’, is the temporal modifier of the arrival event, preposed into Spec,CP. The relative clause as a whole, too, denotes the time specification that characterizes the event internal to the relative clause. The temporal clause, denoting this time expression, is then applied to the main clause event. This way, the embedded clause and the main clause events have the same specification in the temporal domain.

In (26b), by contrast, the relative phrase does not originate inside the relative clause and it does not denote the time specification of the embedded event. The relative clause does not mean that ‘Anna arrived after time *t*’; it means ‘after the event of Anna’s arrival’, or, assuming Larson’s relative operator, ‘after [the time] when Anna arrived’. Lipták argues that the operator relativizes the IP as a whole; therefore she calls this clause type ‘IP-relative’. (Ürögdi (2012) uses the term ‘event relative’ instead, presumably because the relativized proposition can involve different functional extensions with different syntactic labels.) Compare the structures Lipták (2005) assigns to free temporal relatives (27a) and to event relatives (27b):

- (28) a. [CP **mikor**<sub>i</sub> [IP Anna vásárol-t <sub>t<sub>i</sub></sub>]]  
          when       Anna shop-PST.3SG  
          ‘when Anna was shopping’
- b. [PP **mi**<sub>i</sub>-közben [DP **t<sub>i</sub>** [CP [C' **t<sub>i</sub>** [RelP **t<sub>i</sub>** [IP Anna vásárol-t]]]]]]]  
          what-during                               Anna       shop-PST.3SG  
          ‘while Anna was shopping’

In (27b), the pronoun *mi* relativizes the IP; it moves from Rel via the head positions of the dominating CP and DP projections into the head position of a PP, where it merges with the postposition base generated there.

Lipták claims that temporal relative clauses and event relative clauses differ in the following respects:

(i) The pronouns introducing temporal clauses can, those introducing event relative clauses cannot have relative morphology (i.e., an *a*- prefix). (Ürögdi (2012: 117) actually cites examples from the internet where event relativizers, too, have an *a*- morpheme, but such examples are relatively rare and sound marginal; I assume that they may be interference phenomena.)

- (28) a. Péter boldog [(a)-**mi-óta** Anna itt van.  
          Peter happy REL-what-since Anna here is  
          ‘Peter has been happy since Anna has been here.’
- b. Tamás megjö-tt [(\*)**mi-után** Zsuzsa elmen-t].  
          Tamás arrive-PST.3SG REL-what-after Zsuzsa leave-PST.3SG  
          ‘Tamás arrived after Zsuzsa left.’

(ii) Temporal relative clauses can, event relative clauses cannot host multiple *wh*-pronouns:

- (29) a. [**A-ki** **a-mi-óta** ismeri Annát] az azóta szereti.  
          REL-who REL-what-since knows Anna-ACC that that-since loves  
          ‘Everyone loves Anna since the time he/she has known her.’

- b.\*[**Ki mi-közben** énekel], az a-közben boldog.  
 who what-during sings that that-during happy  
 Intended: 'Everyone is happy while he/she is singing.'

(iii) Temporal relative clauses do, event relative clauses don't have adnominal construal:

- (30) a. A nap [(a)**mi-kor** Anna megjö-tt] emlékezetes Péter-nek.  
 the day REL-what-at Anna arrive-PST.3SG memorable Peter-DAT  
 'The day when Anna arrived is memorable for Peter.'

- b.\*A nap [**mi-után** Anna megjö-tt] emlékezetes Péter-nek.  
 the day what-after Anna arrive-PST.3SG memorable Peter-DAT  
 Intended: 'The day after Anna's arrival is memorable for Peter.'

(iv) *Wh*-pronouns introducing temporal relative clauses do, those introducing event relative clauses don't have cross-clausal construal. (Actually, the Hungarian native speakers I consulted judged long construal marginal also in the case of temporal relatives, but they, too, found it more acceptable in temporal relatives than in event relatives.)

- (31) a. Add-ig marad-ok [**a-medd-ig** mond-od, hogy marad-j-ak].  
 that-for stay-1SG REL-what-for say-2SG that stay-SBJV-1SG

HR: 'I will stay as long as you keep saying I should stay.'

LR: 'You tell me I should stay for time t. I'll stay for time t.'

- b. Az-után indul-ok [**mi-után** mond-od, hogy Péter elindul].  
 that-after leave-1SG what-after say-2SG that Peter leave.3SG

HR: 'I'll leave after the time of you saying that Peter's leaving.'

\*LR: 'You tell me Peter's leaving at time t. I'll leave after t.'

Differences (ii)–(iv) are direct consequences of the structural differences of (28a) and (28b); difference (i) is a descriptive observation.

Ürögdi (2012) found a further difference setting the two clause types apart:

(v) Temporal relatives don't, event relatives do have *that*-clause equivalents. The *that*-clause explicates the demonstrative complement of the main clause postposition. The complement clause assumes a temporal reading owing to the postposition.

- (32) a.\***A-mikor /a-midőn** [hogy Zsuzsa elmen-t], Tamás megjö-tt.  
 DEM-when/DEM-when that Zsuzsa leave-PST.3SG Tamás arrive-PST.3SG  
 Intended: 'When Zsuzsa left, Tamás arrived.'

- b. **Az-után /az-előtt** [hogy Zsuzsa elmen-t] Tamás megjö-tt.  
 DEM-after/DEM -before that Zsuzsa leave-PST.3SG Tamás arrive-PST.3SG  
 'After/before Zsuzsa left, Tamás arrived.'

Ürögdi (2012) observed that the postpositions/adverbial suffixes occurring in temporal relatives and those occurring in event relatives form overlapping sets. *Óta* 'while, since' and *-ig* 'until' clauses function as temporal relatives when the embedded proposition denotes

a time interval, and they function as event relative clauses when the embedded proposition denotes a point of time. Compare:

- (33) a. **(A)mióta** Anna itt van, Péter boldog.  
REL-since Anna here is Peter happy  
'Since Anna has been here, Peter has been happy.'
- b. **(\*A)mióta** Anna megérkez-ett, Péter boldog.  
REL since Anna arrive-PST.3SG Peter happy  
'Since Anna arrived, Peter has been happy.'

(33a) contains a temporal relative clause: *óta* relativizes the time interval of Anna being present, and the clause as a whole denotes the time interval of Peter being happy. (33b) contains an event relative: the embedded proposition determines a point of time, which marks the beginning of the time interval of Peter being happy.

In (34a), the embedded clause contains an imperfective predicate and denotes a time interval, whereas in (34b), it contains a perfective accomplishment predicate and denotes a point of time. The P *-ig* allows a *hogy* 'that' clause complement only in the latter case:

- (34) a. **\*[Add-ig vár-t-am] hogy forr-t a víz.**  
DEM-for wait-PST-1SG that boil-PST.3SG the water.  
'I waited as long as the water was boiling.'
- b. **[Add-ig vár-t-am] hogy fel-forr-t a víz.**  
DEM-until wait-PST-1SG that up-boil-PST.3SG the water.  
'I waited until the water boiled up.'

Ürögdi's structural analysis of event relatives is simpler than that of Lipták (2005); it involves no DP projection above the embedded clause:

- (35) [PP **mi**-közben [CP *t<sub>i</sub>* [RelP *t<sub>i</sub>* [IP Anna vásárol-t]]]]  
what-during Anna shop-PST.3SG  
'while Anna was shopping'

Whereas in Lipták's analysis the relative pronoun is a head undergoing cyclic head movement, eventually merging with the P, in Ürögdi's structure it is a phrasal operator generated in Spec,RelP, landing in Spec,PP. The following argument supports Lipták's approach. An interrogative PP can contain the coordinated Ps *előtt* and *után* taking a shared *mi* complement, as illustrated in (36a). In a relative PP this is impossible – see (36b):

- (36) a. **Mi előtt és (mi) után** kell ez-t a bor-t in-ni?  
what before and what after needs this-ACC the wine-ACC drink-INF  
'Before (what) and after what shall one drink this wine?'
- b. **[Mi-előtt és \*(mi-)után e-tt-ünk] jó-t beszélget-t-ünk.**  
what-before and what after eat-PST-1PL good-ACC talk-PST-1PL  
'Before and after we ate, we had a good conversation.'

*Mi előtt és után* 'before and after what' in (36a) appears to involve a pair of coordinated postpositions rather than a pair of coordinated PPs with an elided *mi* in the second PP because

*előtt* and *után* are understood to share the same complement, i.e., the sentence means what (food) is to be preceded and followed by this wine. The coordination of *előtt* and *után* in (36b) is impossible because the relative *mielőtt* and *miután* are semantically non-compositional syntactic heads.

Accepting the head analysis of *mielőtt* and *miután* does not mean the acceptance of the whole structure assigned to event relatives by Lipták (2005) though. What I find problematic in both Lipták's and Ürögdi's (2012) analysis is that the PP harboring the *wh*-pronoun is external to the subordinate clause. Event relative clauses can have a demonstrative correlate (a proleptic pronoun/proadverb) in the main clause as shown in (37a,b). If *miközben*, *miután* are parts of the main clause in these sentences, then the clauses containing them have two referentially identical PPs:

- (37) a. A-közben, **mi-közben** Anna bevásárol-t, Péter iv-ott egy sör-t]  
 DEM-during what-during Anna shop-PST.3SG Peter drink-PST.3SG a beer-ACC  
 'While Anna was shopping, Peter had a beer.'
- b. Az-után, **mi-után** Anna bevásárol-t, Péter iv-ott egy sör-t.  
 DEM-after what-after Anna shop-PST.3SG Peter drink-PST.3SG a beer-ACC  
 'After Anna shopped, Peter had a beer.'

Intuitively, *miközben* and *miután* belong to the embedded clauses in (37a,b); they are relativizers located in the complementizer domain.

## 6.2. From temporal relatives to event relatives

If event relativizers like *mielőtt* 'wh-before', *miután* 'wh-after', or *miközben* 'wh-during' are located in the CP domain of the subordinate clause, then an event relative, e.g. that in (38), looks formally like a temporal relative clause except that *miután* is presumably a head in C position rather than a phrase in Spec,CP.

- (38) [CP<sub>1</sub> [CP<sub>2</sub> **Mi-után** János megérkez-ett], [CP<sub>1</sub> (**azután**) megebédel-t-ünk]]  
 what-after János arrive-PST.3SG that-after dine-PST-1PL  
 'After John arrived, we dined.'

Temporal relatives have been claimed to be descendants of the correlative construction; this, however, cannot be true of event relatives, where the relativizer does not bind a clause-internal variable, and the relative clause does not explicate the main clause demonstrative. The question arises how event relatives nevertheless assumed a structure formally similar to that of temporal relatives. It will be argued below that first *mikor*-type temporal relative pronouns evolved into event relativizers; then *miután*-type event relativizers emerged with the analogical extension of the *mikor* class.

Temporal phrases are adjuncts in most cases, hence a proposition introduced by a temporal relative pronoun like *mikor* is also complete if *mikor* binds no empty time adverbial position in it. A *mikor* clause can easily be interpreted as an event relative, with *mikor* inserted outside the proposition, relativizing the proposition as a whole. That is, *mikor* (and *midőn*, *mihelyt* etc.) relatives can be assigned either the structure and interpretation of temporal relative clauses (39a), or the structure and interpretation of event relative clauses (39b):

- (39) a. [CP **Mikor**<sub>i</sub> [C' [TopP Péter *t<sub>i</sub>* megérkez-ett]], (akkor) megebédel-t-ünk.  
 when Peter arrive-PST.3SG then dine-PST-1PL  
 'Peter arrived at the time we had lunch.'

- b. [CP [C' **Mikor**<sub>i</sub> [RelP **t<sub>i</sub>** [TopP Péter megérkezett]]]], (akkor) megebédelt-ünk.  
 when Peter arrive-PST.3SG dine-PST-1PL  
 'Peter arrived the time we had lunch.'

Notice that the English *when* is also argued to be ambiguous between a 'time interval' and an 'event' interpretation by Hall & Caponigro (2010). They attribute a similar ambiguity to *then*, as well. They claim that there are languages which lexicalize the 'time interval' and 'event' readings differently. This appears to be the case in Hungarian, too.

By now, the *a-* prefix has become an obligatory part of all kinds of relative pronouns other than temporals. The relative pronouns *hol* 'where', *ki* 'who', *mi* 'what', *milyen* 'what-ADJ', *miért* 'why', *hogyan* 'how', etc. are either ungrammatical without the *a-* morpheme in present-day Hungarian, or have a distinctly archaic flavour, e.g.:

- (40) a. \***[Mi-t** vásárolt-am] nem tetszett a férj-em-nek.  
 what-ACC buy-PST-1SG not please-PST.3SG the husband-1SG-DAT  
 'What I bought did not please my husband.'

- b. \***[Hol** lak-om] oda nem jár autóbusz.  
 where live-1SG there not goes bus  
 'The bus does not go to where I live.'

- c. \***[Hogyan** a szoprán énekel-t] az minden várakozás-t  
 how the soprano sing-PST.3SG that all expectation-ACC  
 felülmúl-t.  
 exceed-PST.3SG  
 'It exceeded all expectations how the soprano sang.'

In the case of temporal relative pronouns, by contrast, the *a-* prefix is optional; *mikor*, *midőn* or *míg* as relative pronouns are just as unmarked and just as common as *amikor*, *amidőn*, and *amíg*. Recall that Lipták (2005) claimed that pronouns introducing temporal clauses can, whereas those introducing event relative clauses cannot, have a relative *a-* prefix, without explaining this difference. I suggest that – for most speakers of Hungarian – temporal pronouns have relative morphology when they occupy Spec,CP, and they lack it when they are located in C. *Mikor* can occur either with or without the *a-* prefix because it can occur in both positions.

If (a)*mikor*-type pronouns are variable-binding relative operators, then they should be able to move out of their clauses through Spec,CP, as argued e.g. for *ameddig* in example (32a) by Lipták (2005). If they are C heads, then they cannot leave a *hogy* 'that' clause, i.e., they do not allow the long construal ruled out in (32b). To test the behaviour of *amikor*, assumed to be a relative phrase, and *mikor*, assumed to be a head, let us compare the following minimal triplet. The intended interpretation of the relative pronoun is the low reading; in fact, this is its only coherent reading.

- (41) a. ?Az-on a nap-on **[a-melyik-en]** mond-tá-tok, hogy Mari érkezik **t<sub>i</sub>** nem  
 that-on the day-on REL-which-on say-PST.2PL that Mari arrives not  
 lesz-ek itthon.  
 be-1SG at.home  
 'On the day on which you said Mary would arrive I won't be at home.'



- b. ?? **A-mikor<sub>i</sub>** mond-tá-tok, *t<sub>i</sub>* hogy Mari érkezik *t<sub>i</sub>*, nem lesz-ek itthon.  
 REL-when say-PST.2PL that Mari arrives not be-1SG at.home  
 ‘When you said Mary would arrive I won't be at home.’
- c. \* **Mikor<sub>i</sub>** mondtátok, hogy *t<sub>i</sub>* Mari érkezik, nem leszek itthon.  
 ‘When you said Mary would arrive I won't be at home.’

The low reading is marked but possible in the case of *amelyiken* ‘on which’, and is marginal but possible in the case of *amikor*, as expected if both *amelyiken* and *amikor* are phrases moving through Spec,CP. However, it is ungrammatical in the case of *mikor* – which follows if *mikor* is a head that could only move into the next higher c-commanding head position, which is taken by *hogy*.

I assume that the evolution of event relatives introduced by *mielőtt* ‘wh-before’, *miután* ‘wh-after’, or *miközben* ‘while’ must have been triggered by *mikor* clauses interpreted as event relatives. Recall that the morpheme *-kor* of *mikor*, originally a noun meaning ‘time’, was recategorized as a temporal adverbial suffix meaning ‘at [the time of]’. The meaning of semantically vague adverbial case suffixes can be made more precise if they are replaced by postpositions, which still preserve some of the lexical content that has already been lost in the case of adverbial case suffixes. Thus the vague location denoted by the KaseP *a ház-nál* ‘at the house’, involving the adessive suffix *-nál* ‘at’, can be marked more precisely by the PPs *a ház mögött* ‘behind the house’, *a ház előtt* ‘before the house’, or *a ház mellett* ‘at the side of the house’. The time of an event can also be anchored more precisely if *mi-kor* ‘when, lit. at what [time]’ is replaced by *mi-után* ‘after what [time]’, *mi-előtt* ‘before what [time]’, *mi-alatt* ‘in what [time]’, *mi-közben* ‘during what [time]’, or *mi-óta* ‘since what [time]’. Event relative clauses introduced by a *mi* + postposition complex must have evolved by the replacement of the *-kor* adverbial suffix in the relative pronoun *mi-kor* by various postpositions.

Whereas temporal relative phrases had already been common in Hungarian when the first surviving documents were created at the end of the 12th century, postpositional event relativizers must have been innovated around that time, as they are still rare in Old Hungarian. The oldest book-length Hungarian document, Jókai Codex (1370), relating the life of Saint Frances, contains 127 instances of relative *mikoron*, but only 3 instances of *miután*, and one instance of *mielőtt*, i.e., the postpositional *miután* and *mielőtt* run up only to 3% of the occurrences of *mikoron*. In a 20th century of Saint Francis’ life (Balanyi 1925), we find 66 occurrences of (a)*mikor*, 13 occurrences of *miután*, and 2 occurrences of *mielőtt*, i.e., these PP relatives total up 22,7% of *mikor* relatives.

Observe how an occurrence of *mikor* in Matthew 27: 31 of a Bible translation from 1516 is replaced by a PP in a subsequent translation from 1561:

- (42) a. Es [**my-kor-on** meg czuffol-t-ak vo-na hűtet] le vony-a-k  
 and what-time-on PRT mock-PST-3PL be-SBJV him off pull-PST-3PL  
 az palast-ot rol-a.  
 the robe-ACC from-3SG  
 ‘And when they had mocked him, they pulled the robe off from him.’  
 (Jordánszky C. 1516: 446)
- b. Es [**mi-nec vtánn-a** meg czuffol-t-ác vól-na] le-uon-á-c  
 and what-DAT after-POSS PRT mock-PST-3PL be-SBJV off-pull-PST-3PL  
 ról-a a' felfő ruhá-t.<sup>5</sup>

<sup>5</sup> The object of ‘mock’ is a dropped pro licensed by the objective conjugation of the verb.

from-3SG the over garment-ACC

‘And after they had mocked him, they pulled the overgarment off from him.’

(Heltai 1561: H5r)

Originally, the KaseP *mikor* and the PPs *miután*, *mielőtt*, *miközben* etc. were phrases, as assumed by Ürögdi (2012). In (42b), *minek vtánna*, a more complex alternative of *miután*, still preserves the possessive morphology of the source structure of PPs; the complement of P bears dative case, and the postposition bears a possessedness morpheme (cf. Hegedűs 2015). Since the structure of *minek vtánna* is clearly phrasal, it must occupy the specifier of CP. Later the possessive morphology of relative PPs disappeared, and the pronominal content and the NP status of *mi* became obsolete. Eventually, event relativizers with no clear phrasal structure, binding no clause-internal variable were targeted by the economy principles *Be a head rather than a phrase*, and *Merge as late as possible* (Van Gelderen 2011), which resulted in their reanalysis as heads and in their base-generation in C. Relative phrases occupying Spec,CP must have assumed the *a-* morpheme after event relativizers became heads in C.

In sum: in so-called event relatives, introduced by *mielőtt*, *miután*, *miközben*, etc., the relative pronoun does not bind a variable internal to the subordinate clause; it relativizes the whole proposition. Event relativization must have appeared as an alternative interpretation of relative clauses introduced by *mikor*. Postpositional event relativizers evolved by the substitution of *-kor*, a temporal case suffix, with postpositions such as *után* ‘after’, *előtt* ‘before’, or *közben* ‘during’. The temporal relatives *mikor*, *mielőtt*, *miután*, or *miközben* have lost their phrasal status for most speakers; they are relative adverbs functioning as complementizers.

## 7. Conclusion

This paper examined how Hungarian, originally a head-final language with non-finite subordination, shifted to finite temporal subordination. It has been shown that it was not non-finite adverbial clauses that developed finiteness and a head-initial complementizer. The source construction of complex sentences with a finite temporal subordinate clause was a paratactic pre-correlative structure, with an indeterminate pronoun in the initial clause. The next stage of the evolution was the emergence of a temporal correlative construction, with the indeterminate pronoun reinterpreted as a relative operator. Correlative clauses evolved into free, light-headed, and lexically headed relative clauses, which gradually supplanted non-finite temporal clauses. Temporal relative clauses introduced by *mikor* ‘when’ also assumed an alternative, event relativizing structure and interpretation, and later the set of event relativizers were extended by PPs like *mielőtt* ‘REL-before’ and *miután* ‘REL-after’. In event relativizing constructions, the string-vacuity of relative operator movement gave rise to the base-generation of the relativizer in the complementizer domain, and its recategorization as a head.

### Abbreviations:

ABL	ablative
ACC	accusative
ADJ	adjectivalizer
APPR	approximative
ASP	aspect marker
C.	codex
CAUS	causative
COND	conditional

CONJ	conjunction
CONV	converb
DAT	dative
DEL	delative
DEM	demonstrative
DU	dual
ESS	essive
ex.	example
FUT	future
ILL	illative
IMP	imperative
INF	infinitive
INE	inessive
INS	instrumental
KP	kase phrase
LAT	lative
LOC	locative
NEG	negative
NEGPTCP	negative participle
NOM	nominalizer
Op	operator
OUDB	Ob-Ugric Database
P	postposition
PP	postpositional phrase
PASS	passive
PL	plural (verbal or possessive agreement)
PL<3SG	a morpheme complex or portmanteau morpheme crossreferencing the number feature of the object and the person and number of the subject
POSS	possessedness suffix
POSSIB	possibility
PRF	perfect
PRS	present
PRSPTCP	present participle
PRT	particle
PTCP	participle
PSTPTCP	past participle
Q	question particle
r	recto
RECIP	reciprocal
REL	relative
REFL	reflexive
SBJV	subjunctive
SG	singular (verbal or possessive agreement)
SG < 1SG	a morpheme complex or portmanteau morpheme crossreferencing the number feature of the object and the person and number of the subject
SUP	superessive
TP	tense phrase
v	verso

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