

1 **Types of temporal adverbials and the fine structure**
2 **of events**

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4
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8 **1. Introduction**

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10 Temporal adverbials have been widely used to identify the event type of
11 predicates since at least Vendler (1967). However, in most work only *for*- and
12 *in*-adverbials were used, *for*-adverbials to identify accomplishments and *in*-
13 adverbials to identify achievements. Moreover, these adverbials were used ex-
14 clusively to define predicate classes, the internal structure of events was left
15 out of consideration. In the present paper we are going to pursue three goals.
16 First, by using time point adverbials (*at five o'clock*), temporal adverbials which
17 denote the length of the consequent state (*occupy sg for two hours*) and tempo-
18 ral adverbials which delimit temporally an event but do not specify its duration
19 (*until five o'clock*) in addition to the two traditionally employed adverbials, we
20 will attempt to identify the maximal number of verb classes which are identifi-
21 able by means of these temporal adverbials. Second, we will also make use of
22 the compatibility with temporal adverbials to define the event structure of these
23 verbs types in terms of subevents and the temporal relations which hold be-
24 tween them. To be sure, not all aspects of event structure are directly deducible
25 by means of the adverbial test. In some cases a subevent may be presupposed
26 or implied. Third, it will be shown that aspect is derivable from event structure.
27 Though we will restrict ourselves to the lexical representation of event struc-
28 ture, it will become clear that this cannot be done without taking into account
29 the interplay between syntax and semantics. The compatibility with temporal
30 adverbials can only be tested on the sentence level, and the compositionality
31 of event structure, wherever it arises, is also a matter of syntax. The discussion
32 will concentrate on Hungarian but it is hoped that much of what will be said
33 carries over to other languages as well.¹
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36 **2. Types of adverbials and verb classes**

37
38 First, we will examine the compatibility of various verbs with five different
39 types of temporal adverbials:
40

41 ¹The present paper is based on Chapter 4. in Kiefer (2006).

- 1 (a) time span adverbials (e.g. *két órán át* ‘for two hours’), which denote the
 2 length of an ongoing event;
 3 (b) durative-delimitative adverbials (e.g. *két óra alatt* ‘in two hours’), which
 4 denote a process or activity with culmination (termination);
 5 (c) time point adverbials (e.g. *két órakor* ‘at two o’clock’), which identify the
 6 time of a punctual event;
 7 (d) adverbials denoting the length of a resulting state (e.g. *két órára* ‘for two
 8 hours’)²,
 9 (e) adverbials denoting an endpoint of a process or activity (e.g. *két óráig*
 10 ‘until two o’clock’).

11 The importance of this fifth type of adverbial will become clear immedi-
 12 ately. For the sake of brevity, in what follows we will refer to the various types
 13 of adverbials by using the letters (a)–(e). Furthermore, each verb class will be
 14 represented by a verb, which will be used as the name of the respective verb
 15 class.³

18 2.1. Statives: the verb *pihen* ‘rest’

20 Statives are compatible with (a), (c) and (e) but not with (b), (d).⁴

- 21 (1) a. *Két órán á /két órakor /két óráig pihentem.*
 22 two hour for /two o’clock-at /two o’clock-until rested
 23 ‘I had a rest for two hours/at two o’clock/until two o’clock.’
 24 b. **Két óra alatt /két órára pihentem.*
 25 two hour in /two hour-for rested
 26 ‘I had a rest in two hours/for two hours.’

27 The interpretation of the time point adverbial in (1) calls for some comments.
 28 To have a rest at two o’clock can only mean that this time point is part of the
 29 time interval of resting. It cannot mean that the resting event occurred at two
 30 o’clock. *Rest* is a durative verb hence if John rests (has a rest) for two hours it
 31 must be true that John rests at any time point of this interval. In other words,
 32

33 ²Note that – in contrast to *for*-adverbials in English, which are ambiguous – Hun-
 34 garian uses two different forms to express the two meanings: the postposition *át* is used
 35 in the case of time span adverbials and the case suffix *-ra* with adverbials denoting the
 36 length of a resulting state.

37 ³Most verbs which we have taken as representatives of a verb class were discussed in
 38 various works on aspect and/or event structure.

39 ⁴We will not provide complete morphological information in the glosses.

1 the time point adverbial cannot identify any distinct subevent in the case of
 2 states. As for the other two temporal adverbials note that some states may ter-
 3minate, if one rests for two hours, the state of resting ends after two hours and
 4the endpoint of resting may be denoted by a temporal adverbial. Since all stative
 5are atelic, the termination of a state does not lead to a change of state.

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 7
 8 2.2. Processes, activities: the verb *fut* ‘run’

9
 10 Processes and activities are like statives: they are compatible with (a), (c) and
 11 (e), but not with (b) and (d).

- 12 (2) a. *Két órán át /két órákor /két óráig futottam.*
 13 two hour for /two o'clock-at/two o'clock-until was.running
 14 ‘I was running for two hours/at two o'clock/until two o'clock.’
 15 b. **Két óra alatt/két órára futott.*
 16 two hour in /two hour-for was.running
 17 ‘He was running in two hours/for two hours.’
 18

19 Since there are no further candidates which could do the job, statives and pro-
 20cesses/activities cannot be kept apart by means of temporal adverbials, which,
 21of course, does not mean that they have the same temporal properties.⁵

22 As for the interpretation of the time point adverbial, it is similar to what we
 23had in the case of statives. John’s running cannot be a punctual event since *run*,
 24too, is a durative verb. And if John is running for two hours then he is running
 25at most time points during this time interval. Consequently, the time point ad-
 26verbial does not identify any distinct subevent.

27
 28
 29 2.3. Accomplishments: the verb *megír* ‘write down’

30
 31 Accomplishment verbs are compatible with (b), (c) and (e), but not with (a)
 32and (d).

33
 34
 35 ⁵The criteria proposed in the literature (e.g. Dowty 1979) for separating statives and
 36activities do not work properly in Hungarian, however, we may use the adverb *javában*
 37‘[to be] in the middle of [doing something]; [to be] busy [doing something]’ for this pur-
 38pose, which works perfectly: **Péter javában látta a csillagot* ‘Peter was in the middle of
 39seeing the star’ – *Péter javában olvasott* ‘Peter was busy reading’. The adverb *javában*
 40stresses the fact that something is going on and it is incompatible with temporal adver-
 41bials of type (a) and (e), however, it may cooccur with a time point adverbial, as in *Péter két órákor javában olvasott* ‘Peter was in the middle of reading at two o’clock’.

- 1 (3) a. *Két óra alatt /két órakor /két óráig megírta*
 2 two hour in /two o'clock-at /two o'clock-until PRT-wrote
 3 *a levelet.*⁶
 4 the letter-ACC
 5 'He wrote the letter in two hours/at two o'clock/until two o'clock.'
- 6 b. **Két órán át /két órára megírta a levelet.*
 7 two hour-for /two hour-for PRT-wrote the letter-ACC
 8 'He wrote the letter for two hours.'⁷

10
 11 2.4. Achievements: the verb *elér* 'reach'

12
 13 Achievements are compatible with (b), (c) and (e), but not with (a) and (d).

- 14 (4) a. *Két óra alatt /két órakor /két óráig*
 15 two hour in /two o'clock-at /two o'clock-until
 16 *elérték a hegycsúcsot.*
 17 PRT-reached the top-ACC
 18 'They reached the top in two hours/at two o'clock/until two o'clock.'
- 19 b. **Két órán át /két órára elérték a hegycsúcsot.*
 20 two hour for /two hour-for PRT-reached the top-ACC
 21 'They reached the top for two hours.'

22
 23 Since both verbs *megír* 'write down' and *elér* 'reach' are telic⁸ the *until* adverbial denotes the final time point at which the event is successfully terminated, i.e. the relevant change of state is brought about.

24 At first glance it would seem that accomplishment and achievement verbs
 25 are indistinguishable by means of temporal adverbials. On a closer look, however,
 26 it turns out that this is not the case. Note that the time point adverbial
 27 means two different things in the case of the two verb classes. The relevant examples
 28 are repeated in (5) and (6).
 29
 30

- 31 (5) *Két órakor megírta a levelet.*
 32 'He wrote the letter at two o'clock.'
- 33
 34 (6) *Két órakor elérték a hegycsúcsot.*
 35 'The reached the top at two o'clock.'

36
 37
 38 ⁶'PRT' denotes the verbal particle, which, among other things, turns an activity verb into an accomplishment verb. Particle verbs are normally aspectually perfective.

39 ⁷In both senses of the adverbial.

40 ⁸Both verbs are morphologically complex; they contain a verbal particle: *meg+ír*,
 41 *el+ér*.

1 In (5) the adverbial ‘at two o’clock’ cannot mean that the event of writing down
2 the letter occurred in a moment. It can only mean that the writing of the letter
3 started at two o’clock. This interpretation can be made explicit by paraphrases
4 containing a verbal form with the meaning ‘begin’, as in (7).

5 (7) *Két órákor hozzáfogott a levél megírásához.*
6 two o’clock-at started the letter writing-ALL⁹
7 ‘He has started writing the letter at two o’clock.’
8

9 The situation is similar in the case of (8a), which can be paraphrased as in (8b).

10 (8) a. *Nyolc órákor megnézte a filmet.*
11 eight o’clock-at PRT-saw the film-ACC
12 ‘He saw the film at eight o’clock.’
13 b. *Megnézte a nyolc órákor kezdődő filmet.*
14 saw the eight o’clock-at starting film-ACC
15 ‘He saw the film that started at eight o’clock.’
16

17 This means that we can in no way say that the event of writing the letter oc-
18 curred at two o’clock and that the event of seeing the film occurred at eight,
19 the time point adverbial does not identify any subevent. In other words, neither
20 sentence (5) nor sentence (8a) can be interpreted literally, they are sloppy ways
21 of conveying (7) and (8b), respectively. This means that accomplishment verbs
22 are incompatible with time point adverbials.

23 The situation is different with (6), where the time point ‘two o’clock’ defines
24 the occurrence of an event: the subevent of reaching the top.

25 As shown by their compatibility with durative-delimitative adverbials, ac-
26 complishments and achievements consist of a durative process or activity and
27 of a culmination, which, however, can only be identified as a subevent in the
28 case of achievements.

29 The fact that both accomplishments and achievements are compatible with
30 durative-delimitative adverbials shows that both must involve a process or activ-
31 ity. At the same time they also show that they have not only a culmination point
32 but also a resulting state. This will follow from the meaning of the durative-
33 delimitative adverbials, as shown further below. All accomplishment and achieve-
34 ment verbs are change of state verbs.¹⁰
35

36 2.5. *Megáll* ‘stop’ type verbs

37
38 The verb *megáll* is compatible with (b), (c) and (d), but not with (a) and (e).
39

40 ⁹‘ALL’ denotes the allative case suffix.

41 ¹⁰Cf. Pustejovsky (1991: 57–58).

- 1 (9) a. *A vonat két perc alatt /két percre /két órakor*
 2 the train two minute in /two minute-for /two o'clock-at
 3 *megállt.*
 4 PRT-stopped
 5 'The train stopped in two minutes/for two minutes/at two o'clock.'
- 6 b. **A vonat két percen át /két óráig megállt.*
 7 the train two minute for /two o'clock-until PRT-stopped
 8 'The train stopped for two minutes/until two o'clock.'

9 The adverbial 'at two o'clock' identifies a punctual stopping event. Due to the
 10 fact that (9a) contains a durative-delimitative adverbial, the event described by
 11 the sentence must have a process or activity phase as well. What makes *megáll*
 12 'stop' dissimilar from achievement verbs is its compatibility with (d), which de-
 13 notes the length of the consequent state.
 14

15
 16 2.6. *Elborozgat* 'spend the time by drinking wine' type verbs
 17

18 The verb *elborozgat* is compatible with (e), but not with (a)–(d). Though there
 19 are other verb types which are compatible with (e), (e) is the only adverbial
 20 type admitted by *elborozgat*. This is the reason why it was important to add
 21 (e) to the list of temporal adverbials.

22 The verb *elborozgat* is derived from the noun *bor* 'wine', from which the
 23 verb *boroz(ik)* 'drink wine' is derived; *-gat* is a suffix with a deminutive mean-
 24 ing, which yields *borozgat* 'take a glass or two of wine'. This form can be pre-
 25 fixed by the particle *el*, which has a delimitative-perfective meaning: the activity
 26 is temporally delimited. The verb has thus the following morphological struc-
 27 ture: [el_{PRT} [[bor_N oz_V] gat_V]]; the pattern is highly productive.¹¹
 28

- 29 (10) a. *Késő estig elborozgattak.*
 30 late evening-until PRT-drunk.wine
 31 'They drank wine until late at night.'
- 32 b. **Két órán át /két óra alatt/két órára /két órakor*
 33 two hour for /two hour in /two hour-for /two o'clock-at
 34 *elborozgattak.*
 35 PRT-drunk.wine
 36 'They drank wine for two hours/in two hours/for two hours/at
 37 two o'clock.'

38
 39 ¹¹The verb *elborozgat* represents one of the *aktionsarten* in Hungarian. As in Slavic,
 40 in Hungarian, too, all *aktionsarten* are derived by morphological means (prefixation,
 41 suffixation). Aspect and *aktionsart* are two different notions.

1 That there is an activity going on during a certain time, which eventually leads
2 to an endpoint, can be shown by examples such as (11).

- 3 (11) *Kettől háromig elborozgattak.*
4 two-from three-until PRT-drank.wine
5 'They drank wine from two to three.'

8 2.7. *Tüsszent* 'sneeze' type verbs

10 The verb *tüsszent* 'sneeze' is compatible with (a), (c) and (e), but not with
11 (b), (d).

12 *Tüsszent* 'sneeze' is a punctual verb, the occurrence of the sneezing event can
13 be identified by means of a time point adverbial.¹² At the same time, this verb
14 is compatible with time span and endpoint adverbials as well.

- 16 (12) a. *Két órakor tüsszentett.*
17 two o'clock-at sneezed
18 'He sneezed at two o'clock.'
19 b. *Két órán át tüsszentett.*¹³
20 two hour for sneezed
21 'He was sneezing for two hours.'
22 c. *Két óráig tüsszentett.*
23 two o'clock-until sneezed
24 'He was sneezing until two o'clock.'

25 While sentence (12a) denotes one single punctual sneezing event, (12b) and
26 (12c) express a series of punctual sneezing events.¹⁴ The iterative reading is im-
27 posed on the predicate by the temporal adverbial.

28 For obvious reasons, the verb *tüsszent* is incompatible with (b) and (d).

31 2.8. *Feljajdul* 'cry out in pain' type verbs

33 The verb *feljajdul* 'cry out in pain' is compatible with (c) only.

36 ¹²Smith (1991) calls 'sneeze' and similar punctual verbs 'semelfactive'. Note that this
37 term is used to denote a special type of *aktionsart* in Slavic linguistics. Punctual verbs
38 are not all semelfactive in Smith's sense, as we shall see presently.

39 ¹³The Hungarian verb has no progressive form: the verb forms in (12a) and (12b) are
40 identical, the different interpretation is due to the different time adverbials.

41 ¹⁴Hungarian is not different from English in this respect.

1 The verb *feljajdul* is a punctual verb, the crying out event can be identified
 2 by a time point adverbial. In contrast to ‘sneeze’, however, it does not admit
 3 time span adverbials, consequently it can never get an iterative meaning.

- 4 (13) a. *Két órákor feljajdult.*
 5 two o'clock-at out-cried
 6 ‘He cried out in pain at two o'clock.’
 7 b. **Két órán át feljajdult.*
 8 two hour for out-cried
 9 ‘He cried out in pain for two hours.’
 10

11 Once again, for obvious reasons the verb *feljajdul* is incompatible with (d)
 12 and (e).

13 Both punctual verbs, *sneeze* and *cry out*, denote events which do not presup-
 14 pose any preceding process and do not lead to a resulting state. This is shown
 15 by the incompatibility of these verbs with (b), see below.

17 2.9. *Eltörök* ‘break’ type verbs

18 The verb *eltörök* ‘break’ is compatible with (c), but not with (a), (b), (d) and (e).

19 The verb *eltörök* is once again a punctual verb, but it is also a change of state
 20 verb. This means that we must assume that there is a consequent state though
 21 this state cannot be identified by any temporal adverbial. All change of state
 22 verbs must be characterized lexically for this property.
 23

- 24 (14) *Két órákor a váza eltörött.*
 25 two o'clock-at the vase PRT-broke
 26 ‘The vase broke at two o'clock.’
 27
 28

29 2.10. *Portalanít* ‘dust’ type verbs

30 The verb *portalanít* is compatible with (a), (b) and (c), but not with (d) and (e).
 31 Two groups of verbs belong here, both can be defined by morphological crite-
 32 ria. The verb *portalanít* is derived from the noun *por* ‘dust’, to which the nega-
 33 tive suffix *-talan* is attached, which yields the adjective *portalan* ‘dustless’. From
 34 that adjective the verb *portalanít* lit. ‘to make dustless’ is derived by means of
 35 the suffix *-ít*. This a productive derivational pattern. The second group con-
 36 tains verbs of foreign origin containing the derivational suffix *-izál* or *-ál*: e.g.
 37 *modern#izál* ‘modernize’, *telefon#ál* ‘phone, call’. The compatibility behavior
 38 of the verbs of these two groups can be predicted on the basis of their morpho-
 39 logical structure.
 40
 41

- 1 (15) a. *Két órákor portalanított.*
 2 two o'clock-at dusted
 3 'He was dusting at two o'clock.'
 4 b. *Két órán át portalanított.*
 5 two hour-for dusted
 6 'He was dusting for two hours.'
 7 c. *Két óráig portalanított.*
 8 two o'clock-until dusted
 9 'He was dusting until two o'clock.'
 10 d. *Két óra alatt portalanította a lakást.*
 11 two hour-in dusted the apartment
 12 'He dusted the apartment in two hours.'

13 *Portalanít* is a process verb, hence the compatibility with (a) and (e) is what
 14 we would expect. (15c), however, has an accomplishment reading, as shown
 15 by adverbial (b). Lexically the verb is certainly not ambiguous. Consequently,
 16 the accomplishment reading must be derived compositionally and the verbs in
 17 question have to be marked lexically to this effect.¹⁵
 18

20 2.11. *Végigül* 'sit through' type verbs

21
 22 The verb *végigül* does not admit any of the adverbials (a)–(e). The verb class
 23 is defined by the complete lack of compatibility with temporal adverbials. The
 24 reason for this particular behavior is evident: the verbs in question require an
 25 object argument denoting an event, which, too, has a temporal structure, hence
 26 it functions as a temporal modifier.
 27

- 28 (16) *Végigülte az előadást.*
 29 end-to-sat the performance-ACC
 30 'He sat through the performance.'

31 The performance has a certain duration and this duration defines the duration
 32 of the sitting-event. Since a sentence admits only one temporal modifier ex-
 33 pressing duration, the sitting event cannot be temporally specified by means of
 34 a temporal adverbial.¹⁶
 35
 36
 37

38 ¹⁵In this respect *portalanít*-type verbs are similar to 'verbs of creation'.

39 ¹⁶Of course, deictic temporal adverbs are not a problem: *Yesterday he sat through the*
 40 *performance*. For a detailed discussion of verbs with the particle *végig* 'to the end'
 41 cf. Piñon (2000).

1 2.12. Conclusion

2

3 On the basis of various temporal adverbials we have identified eleven verb
4 classes. Our results are summarized in Table 1. We will refer to each verb class
5 by means of the verb representing it. Furthermore, we will leave out of consid-
6 eration the compatibility with time point adverbials in the case of statives, pro-
7 cesses and accomplishments, as well as in the case of the verb *portalanít* ‘dust’
8 since, as was shown above, it cannot identify a distinct subevent in these cases.

9

10 Table 1. The compatibility of verbs with temporal adverbials

11 verb class	/	temporal adverbial	(a)	(b)	(c)	(d)	(e)
13 (1) <i>pihen</i> ‘rest’			yes	no	no	no	yes
14 (2) <i>fut</i> ‘run’			yes	no	no	no	yes
15 (3) <i>megír</i> ‘write down’			no	yes	no	no	yes
16 (4) <i>elér</i> ‘reach’			no	yes	yes	no	yes
17 (5) <i>megáll</i> ‘stop’			no	yes	yes	yes	no
18 (6) <i>elborozgat</i> ‘drink wine for a while’			no	no	no	no	yes
19 (7) <i>tüsszent</i> ‘sneeze’			yes	no	yes	no	yes
20 (8) <i>feljajdul</i> ‘cry out’			no	no	yes	no	no
21 (9) <i>eltörik</i> ‘break’			no	no	yes	no	no
22 (10) <i>portalanít</i> ‘dust’			yes	yes	no	no	yes
23 (11) <i>végigül</i> ‘sit through’			no	no	no	no	no

23

24 As can be seen, the following verb types can uniquely be determined by means
25 of the compatibility test: (3), (4), (5), (6), (7), (10), (11). On the other hand, (1)–
26 (2) and (8)–(9) cannot be kept apart in this way. Concerning the distinction
27 between states and activities, in Hungarian the adverbial *javában* ‘[to be] in the
28 middle [of sg]’ can be used to keep these two types apart.¹⁷ For the difference
29 between (8) and (9) we have to rely on the semantics of these verbs. To use the
30 terminology proposed by Moens and Steedman (1988), (8)-type verbs have
31 neither a ‘preparatory phase’ nor a ‘consequent state’, while (9)-type verbs do
32 have a ‘consequent state’. In sum, then, we have identified eleven verb classes
33 in Hungarian, which include all verb classes identifiable by means of temporal
34 adverbials.¹⁸

35

36

37 ¹⁷Cf. fn. 5.

38 ¹⁸We disregard individual cases such as the one represented by the verb *túlél vkit*
39 ‘outlive sb’, which is compatible with an adverbial of type *két évvel* ‘by two years’ only:
40 *Két évvel túlélte a férjét* ‘She outlived her husband by two years’. This verb, however,
41 does not represent a verb class since it is the only verb of this type.

1 **3. Event structure**

2
3 3.1. Preliminaries

4
5 We will assume – following Pustejovsky (1991, 1995) – that events may be
6 composed of subevents and that the notion of event structure implies such a
7 composition. It has also been proposed that subevents may be determined by
8 various tests, which we will not repeat here.¹⁹ Though these tests are certainly
9 useful to show that events may be composed of subevents, they cannot be used to
10 systematically identify these subevents. In the present paper it will be claimed
11 that this can be done to a large extent by means of temporal adverbials. Conse-
12 quently, our task will be to find out what the compatibility with temporal ad-
13 verbials can tell us about event structure.

14 Following Engelberg (2000), we will assume that there are three event types
15 which cannot be traced back to anything else hence must be taken for being
16 atomic: states, activities and punctual events, to be denoted by S, A and P, re-
17 spectively. A state holds during a time interval without interruption, an activity
18 (or process) is going on during a time interval allowing gaps, a punctual event
19 occurs at a given time point and there is no other time point at which it occurs.
20 The notion of ‘change of state’ will be used in the narrower sense: an activity
21 does not involve a change of state but it may lead to a change of state (as in
22 the case of accomplishments and achievements). The symbol *e* will be used to
23 refer to events; subevents will be denoted by subscripts: e_i . S(*x*, *e*) will mean
24 that the entity *x* is in the state S, A(*x*, *e*) that the entity *x* participates in the
25 activity A, and P(*x*, *e*) that *x* is the participant of a punctual event P. The tran-
26 sitive variants are correspondingly S(*x*, *y*, *e*), A(*x*, *y*, *e*) and P(*x*, *y*, *e*). Examples
27 for the basic event types are given in (17)–(19).

28 (17) *János beteg* ‘John is ill’
29 S(John, ill): ‘John is in the state of being ill’

30
31 (18) *János dolgozik* ‘John is working’
32 A(John, working) ‘John participates in the event of working’

33 (19) *János elbotlott* ‘John stumbled’
34 P(John, stumble) ‘John was the participant of a stumbling event’
35

36 It has also been suggested that representations such as (17)–(19) should be com-
37 plemented by the thematic proto-roles of the participants. Thematic roles, too,
38 can be represented as predicates over participants and events.²⁰ Consequently,

39
40 ¹⁹Cf. Pustejovsky (1991), and for a more detailed discussion Engelberg (2000: 48–54).

41 ²⁰Cf., for example, Engelberg (2000) and (2004).

1 a more complete representation of the event structures (17)–(19) may look like
2 (20)–(22).

3 (20) S(John, ill) & Patient(John, ill): ‘John is in the state of being ill and he
4 is the Patient participant of this state’

5
6 (21) A(John, working) & Agent(John, working): ‘John participates in the
7 event of working and he is the Agent participant of that event’

8 (22) P(John, stumble) & Patient(John, stumble): ‘John was the Patient
9 participant of a stumbling event’
10

11 Since we are interested in identifying the event types and the subevents of
12 events, we will leave thematic roles out of consideration in the present paper.

13 There may be various temporal relations between subevents: temporal prece-
14 dence, immediate precedence, and temporal overlap, among other things.²¹ In
15 what follows we will be concerned with temporal precedence and temporal
16 overlap only, to be denoted by ‘<’ and ‘◊’, respectively.

17 Before embarking on the discussion of event structure, let us have a closer
18 look at the meaning of the various temporal adverbials in order to see what
19 kind of conclusions we can draw from their semantics with respect to event
20 structure.

21

22

23 3.2. The meaning of temporal adverbials

24

25 We have been using five temporal adverbials for finding out how many differ-
26 ent verb classes can temporally be defined. In what follows we will see how
27 temporal adverbials can be used to identify (sub)events.

28

29

30 3.2.1. *‘for time t, during time t’ adverbials (type (a))*

31

32 These adverbials can be used to identify states, activities and processes. How-
33 ever, they provide only a sufficient, and not a sufficient and necessary, condi-
34 tion for processhood. If a predicate is compatible with (a) only, it must denote
35 either a state or a process. The process involved in the case of accomplishment

36

37 ²¹ Engelberg (2004) distinguishes five temporal relations. In addition to the ones just
38 mentioned, he postulates two more relations: something like ‘the event starts earlier’ and
39 ‘precedence with overlap’. The linguistic evidence for their postulation is not very con-
40 vincing, however.

41

1 and achievement predicates cannot be identified by means of (a). Neither can it
2 be done in the case of *portalanít* ‘dust’, *megáll* ‘stop’, *elborozgat* ‘drink wine’,
3 and *végigül* ‘sit through’ type verbs. In other words, the temporal adverbial (a)
4 cannot be used to identify process-subevents. However, if it is the only adverbial
5 applicable, the verb must either be a stative or an activity/process verb.

6
7
8 3.2.2. *Alatt* ‘in time t’ adverbials (type (b))
9

10 The predicates with which these adverbials are compatible must denote a process
11 which leads to a new state. The change-of-state meaning leading to a new
12 state is a typical feature of these predicates. The resulting state cannot be identified
13 directly by means of temporal adverbials, they appear rather as implications.
14 For example, *János megírta a levelet* ‘John has written the letter’ implies
15 that the letter has been finished. The change of state can be described by saying
16 that at the initial state there was no letter and at the final state there was a
17 letter. Consequently, (b) may be used to identify two subevents: a process and
18 a state. The compatibility with (b) thus tells us that accomplishment and
19 achievement type verbs as well as *megáll* ‘stop’ and *portalanít* ‘dust’ type verbs
20 must contain at least two subevents: a process-event and a state-event. In the
21 case of *megáll*, the process event can also be considered to be presupposed:
22 both *Az autó megállt* ‘The car stopped’, and *Az autó nem állt meg* ‘The car did
23 not stop’ presuppose that the car was moving. Note that though they denote a
24 change of state, *eltörik* ‘break’ type verbs are not compatible with (b). This
25 means that compatibility with (b) works only in one direction.

26
27
28 3.2.3. *Time point adverbials* ‘at time point t’ (type (c))
29

30 The time point adverbial (in the strict sense) denotes the fact that an event occurred
31 precisely at the time point denoted by the adverbial. If (c) is the only adverbial
32 with which the predicate is compatible, then it must denote a punctual event.
33 This is the case with *feljajdul* ‘cry out in pain’ and *eltörik* ‘break’ type
34 verbs. If the predicate is compatible with other types of adverbials as well, it
35 must contain a punctual subevent in its event structure. This is the case with
36 achievements and the *megáll* ‘stop’ type of verbs.

37 What about the *sneeze* ‘tüsszent’ type? They, too, are compatible with (c)
38 type adverbials, at the same time, however, they also admit (a) and (e) type
39 adverbials. This seems to be a contradiction since processes and punctual events
40 are incompatible with each other. The apparent contradiction disappears if we
41

1 realize that *tüsszent* ‘sneeze’ is a punctual event from which another ‘situation
2 type’ can be derived.²²

3 No doubt, we have to do here with a rather special type of verbs, which have
4 to be marked to this effect in the lexicon, since – in contrast to English – other
5 types of punctual verbs do not make the derivation of a process reading possible.

6 (23) **Órákon át feljajdult.*
7 ‘He was crying out in pain for hours.’²³

8
9 (24) **A váza órákon át eltörött.*
10 ‘The vase broke for hours.’

11 In Hungarian it is possible to derive a verb with a repetitive meaning by means
12 of the reduplication of the particle.²⁴ Such verbal constructions always yield a
13 process reading though the base denotes a punctual event.²⁵

14
15 (25) *Órákon át fel-feljajdult.*
16 ‘He was crying out in pain for hours.’

17 The fact that *eltörök* ‘break’ type verbs do not admit a derived reading can
18 easily be explained: the event of breaking leads to an irreversible resulting state.

19
20

21 3.2.4. *t időre* ‘for time t’ adverbials, denoting the length of a state following
22 an event (type (d))

23
24 The English examples below show what is at stake here.²⁶

25
26 (26) a. *Mary ran into the house for twenty minutes.*
27 b. *John left for a week.*

28 Hungarian does not behave differently in this respect. However, as is well-
29 known, not all change-of-state verbs admit adverbial (d). It is certainly true
30 that the resulting state must be reversible for (d) to be applicable: (27a) is gram-
31 matical, (27b) is definitely odd.

32
33

34 ²²Smith considers the derived readings to be a consequence of the incompatibility of
35 the meaning of the predicate and the temporal adverbial. The punctual event reading of
36 *Mary coughed* and the durative reading of *for an hour* are incompatible, therefore the
37 temporal adverbial gives rise to an iterative reading of the predicate. Repetitive events
38 are always process-like. Cf. Smith (1991).

39 ²³The English translation of the Hungarian sentence is, of course, grammatical.

40 ²⁴Cf. Kiefer (1995–1996) on particle reduplication in Hungarian.

41 ²⁵This is, of course, not the same thing as Smith’s derivation.

²⁶Cited from Pustejovsky (1991).

- 1 (27) a. *Fél órára elszundított.*
 2 half hour-for PRT-fell.asleep
 3 'He fell asleep for half an hour.'
 4 b. **Fél órára kivasalta az ingét.*
 5 half hour-for PRT-ironed the shirt-his-ACC
 6 'He ironed his shirt for half an hour.'

7 On the other hand, examples (28a, b) show that reversibility is not a sufficient
 8 condition for compatibility with (d).²⁷
 9

- 10 (28) a. **Ellopták öt napra a pénztárcámat.*
 11 'They stole my briefcase for five days.'
 12 b. **Öt napra betegre verték.*
 13 'They beat him hollow for five days.'

14 It follows that adverbial (d) cannot be used to identify the resulting state. It re-
 15 mains true, however, that if a predicate is compatible with (d), the event struc-
 16 ture of the predicate must contain a subevent which expresses such a state.
 17

18
 19 3.2.5. *t* időig 'until time point *t*' adverbials, expressing the endpoint of a
 20 process or activity (type (e))
 21

22 An adverbial (e) may denote the end of a state (*He loved her until the end of*
 23 *last year*), the end of a process or activity (*He was working until six o'clock*'),
 24 the endpoint of the completion of a task (*He wrote the letter until six o'clock*,
 25 *They reached the top until six o'clock*), the end point of an iterative event (*He*
 26 *was sneezing until noon*). However, there seems to be a clear difference between
 27 two interpretations of (e) in the above sentences. In the case of states and pro-
 28 cesses it clearly indicates the end of a state or a process: we cannot say that he
 29 was ill until yesterday when he, in fact, was already OK the day before yester-
 30 day. Similarly, we cannot say that he was working until six o'clock when he, in
 31 fact, finished working at four. On the other hand, in the case of accomplish-
 32 ments and achievements (e) is a kind of deadline: the letter may have been
 33 ready or they may have reached the top much before six o'clock. In this case
 34 the meaning of (e) is 'not later than'. In both cases, however, the compatibility
 35 with (e) proves the existence of a process. This process can also be considered
 36 to be a presupposition: *A fiúk éjfélig elborozgattak* 'The boys were drinking
 37 wine until midnight' – *A fiúk nem borozgattak el éjfélig* 'The boys did not drink
 38 wine until midnight'. The latter clearly means that the boys were drinking wine
 39 but not until midnight.
 40

41 ²⁷Cf. Gyuris (2003) for some discussion of this problem.

1 Adverbial (e) has a distinctive role in the case of *elborozgat* ‘drink wine’ type
 2 verbs since it is the only temporal adverbial with which these verbs are compat-
 3 ible. In fact, these verbs require a delimiting time adverbial.

- 4 (29) a. *Mit csináltak az irodában?*
 5 what did-you the office-in
 6 ‘What did you do in the office?’
 7 b. *??Elborozgattunk.*
 8 ‘We were spending our time by drinking wine.’
 9
 10 (30) a. *Mit csináltak tegnap este az irodában?*
 11 what did-you yesterday evening the office-in
 12 ‘What did you do in the office last night?’
 13 b. *Elborozgattunk egy kicsit.*
 14 ‘We were drinking wine for a while.’

15 Time adverbial (e), however, does not only identify the activity subevent of the
 16 event of drinking wine for a while but it also refers to the endpoint of that activ-
 17 ity. The verbs in question all contain the preverb *el-*, which renders them telic.
 18

19 3.3. The event structure of verb classes (a)–(e)

20 In this section we are going to sum up what we learnt about event structure in
 21 the previous section.

22 3.3.1. States and processes/activities have no subevents. States can be repre-
 23 sented by $S(x, e)$ and processes/activities by $A(x, e)$.

24 3.3.2. Accomplishments contain two subevents, a process or activity subevent
 25 and a resulting state. It goes without saying that the process/activity subevent
 26 must precede the stative subevent, hence we get:²⁸

$$27 (31) A(x, e_1) < S(x, e_2)$$

28 3.3.3. Achievement verbs contain three subevents: a process or activity, a
 29 punctual event and a resulting state, in that order.

$$30 (32) A(x, e_1) < P(x, e_2) < S(x, e_3)$$

31 3.3.4. *Megáll* ‘stop’ type verbs have the same event structure as achievement
 32 verbs, the difference between them is that in the case of *megáll* the length of the
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 41 ²⁸In the representations we will restrict ourselves to the intransitive cases.

1 resulting state is controllable by an Agent. This property can be added as an
2 additional feature of the representation, as in (33).

3 (33) $A(x, e_1) < P(x, e_2) < [S(x, e_3) \& \exists y \text{ CONTROL}(y, e_3)]$
4

5 Note, however, that, as to event structure proper, there is no difference between
6 (32) and (33).

7
8 3.3.5. *Elborozgat* ‘drink wine’ type verbs must contain a process/activity sub-
9 event, shown by their compatibility with (e). It is equally clear that the event
10 structure of these verbs must have at least one further subevent. If this were
11 not the case, the predicate would be compatible with (a) type adverbials, too.
12 The second subevent, however, cannot be identified by means of temporal ad-
13 verbials. We cannot tell either what the temporal relation between the two sub-
14 events is. This leaves us with (34).

15 (34) $A(x, e_1)?$
16

17 3.3.6. The verb *tüsszent* ‘sneeze’ is a punctual verb: $P(x, tüsszent)$. The process
18 reading must be derived compositionally, which shows that lexical event struc-
19 ture may change on the sentence level. Event structure is compositional just like
20 aspect.
21

22 3.3.7. The verb *feljajdul* ‘cry out in pain’ differs from the *tüsszent* ‘sneeze’ type
23 with respect to its compositional properties: it cannot be turned into a process
24 by means of a time span adverbial; this can only be done by means of particle
25 reduplication. With respect to event structure, however, the two verb classes are
26 identical.
27

28 3.3.8. The verb *eltörök* ‘break’, too, denotes a punctual event. Normally, this
29 event has no preparatory phase. If we assume, however, that someone was
30 manipulating a vase for some time and then the vase broke, we can say *A*
31 *váza öt perc alatt eltörött* ‘The vase broke in five minutes’. In that case the event
32 consists of three subevents. Normally, however, the resulting state cannot be
33 identified by means of temporal adverbials. Such a state follows from the fact
34 that we have to do with a change-of-state verb. The compatibility test suggests
35 that what we get is (35):
36

37 (35) $P(x, e_1) < ?$
38

39 3.3.9. The verb *portalanít* ‘dust’ is basically a process verb consisting of one
40 single event $A(x, e)$; by means of a (b) type adverbial, however, it can be turned
41 into an accomplishment. This has nothing to do with ‘derived situation types’,

1 it is simply a matter of compositional semantics. To be sure, the verbs that
2 admit this change in interpretation must be marked in the lexicon.

3
4 3.3.10. For semantic reasons discussed further above *végigül* ‘sit through’ type
5 verbs do have an event structure, but none of the subevents are identifiable by
6 means of temporal adverbials.

7
8 In view of the above observations we must conclude that the semantic verb
9 classes established on the basis of compatibility with temporal adverbials are
10 not identical with the types of event structure which can be identified by the
11 same tests.

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4. Event structure and aspect

16 Let us now summarize the types of event structure we get by means of temporal
17 adverbials (Table 2.). The verb types which have identical event structure will
18 not be listed separately.

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Table 2. Event structures identifiable by means of temporal adverbials

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Verb type	Event structure
1. <i>pihen</i> ‘rest’	S(x, e)
2. <i>fut</i> ‘run’, <i>portalanít</i> ‘dust’	A(x, e)
3. <i>megír</i> ‘write down’	A(x, e ₁) < S(x, e ₂)
4. <i>elér</i> ‘reach’, <i>megáll</i> ‘stop’	A(x, e ₁) < P(x, e ₂) < S(x, e ₃)
5. <i>elborozgat</i> ‘drink wine for a while’	A(x, e)?
6. <i>tüsszent</i> ‘sneeze’, <i>feljajdul</i> ‘cry out in pain’	P(x, e)
7. <i>eltörik</i> ‘break’	P(x, e ₁) < ?
8. <i>végigül</i> ‘sit through’	??

33 Before embarking on the discussion of the relationship between event structure
34 and aspect, we will first eliminate the question marks in Table 2. This can be
35 done in a straightforward way in the case of *eltörik* ‘break’, which is a change-
36 of-state verb, consequently its event structure must contain a subevent denoting
37 the resulting state (‘x is broken’), hence the event structure of 7. *eltörik* ‘break’
38 looks like (36):

$$(36) \quad P(x, e_1) < S(x, e_2)$$

1 *Elborozgat* ‘drink wine’ type verbs express the delimitative *aktionsart*, which we
 2 may denote by DELIM(e), meaning ‘e is a temporally delimited (bounded)
 3 atelic event’. We have to add DELIM(e) to the process-subevent.²⁹

4 (37) $A(x, e) \& \text{DELIM}(e)$
 5

6 The situation is more complex in the case of *végigül* ‘sit through’. The sitting
 7 event and the performance event denoted by the deverbal noun, which binds
 8 the second argument of the verb, must have identical temporal extensions. The
 9 sitting event is of type S(x, e) (the verb *sit* is stative), and the performance event
 10 is of type A(x, e), and the activity not only has an endpoint but it leads to
 11 a new state. We can compare this case with the events described by *János*
 12 *elolvasta a könyvet* ‘John has read the book (from beginning to end)’ or *Mária*
 13 *eljátszotta a szonátát* ‘Mary has played the sonata (from beginning to end),
 14 which bring about a new state. If we use the symbol ‘ \diamond ’ for overlapping
 15 events, we may represent the event structure of *végigül* ‘sit through’ in the fol-
 16 lowing way.

17 (38) $[S(x, y, e_1) \diamond A(x, y, e_2)] < S(x, y, e_3)$
 18

19 By having eliminated the question marks in Table 2. we get the following event
 20 structures:

21
 22 Table 3. Verb types and their event structure

23 Verb type	24 Event structure
25 1. <i>pihen</i> ‘rest’	S(x, e)
26 2. <i>fut</i> ‘run’, <i>portalanít</i> ‘dust’	A(x, e)
27 3. <i>megír</i> ‘write down’	$A(x, e_1) < S(x, e_2)$
28 4. <i>elér</i> ‘reach’, <i>megáll</i> ‘stop’	$A(x, e_1) < P(x, e_2) < S(x, e_3)$
29 5. <i>elborozgat</i> ‘drink wine for a while’	$A(x, e) < \text{DELIM}(e)$
30 6. <i>tüsszent</i> ‘sneeze’, <i>feljajdul</i> ‘cry out in pain’	P(x, e)
31 7. <i>eltörik</i> ‘break’	$P(x, e_1) < S(x, e_2)$
32 8. <i>végigül</i> ‘sit through’	$[S(x, y, e_1) \diamond A(x, y, e_2)] < S(x, y, e_3)$

33
 34 The event types of verbs determine the event types of sentences in which they
 35 occur. This is, of course, not always the case. As we saw above, *tüsszent*
 36 ‘sneeze’ type verbs, which are lexically punctual verbs, can be turned composi-
 37 tionally into process verbs, and *portalanít* ‘dust’ type verbs, which are lexically
 38

39 ²⁹DELIM(P) can properly be defined as follows:

40 $\forall P[\text{DELIM}(P) \leftrightarrow \forall x \forall y (P(x) \& (y \subset x \rightarrow P(y)) \& x \subset z \rightarrow \neg P(z))]$
 41

1 process verbs, can be turned compositionally into accomplishment verbs of
 2 type 3. We are not going to discuss the compositionality of event structure in
 3 more detail in the present paper. For simplicity's sake we are going to assume
 4 that the event structure of sentences is determined by the event structure of
 5 their verbs.

6 We are now in a position to have a closer look at the relationship between
 7 event structure and aspect. We will restrict ourselves to the two major aspectual
 8 categories 'perfective' and 'imperfective'. We define these notions by means of
 9 their subinterval properties. Let I be the time interval during which a situation
 10 holds:³⁰

- 11
 12 (39) a. A situation G is perfective if there is no subinterval of I during
 13 which G holds.
 14 b. A situation G is imperfective if G holds at most subintervals of I.

15 Or, to put it differently, perfective situations are characterized by an indivisible
 16 time interval whereas the time interval of imperfective situations is divisible.
 17 (39a, b) implies that a perfective event can only be true of the whole time inter-
 18 val I whereas an imperfective event may be true of any subinterval of I.

19 The time interval of a punctual event is certainly not divisible, hence predi-
 20 cates whose event structure consists of a single punctual event must be perfec-
 21 tive. If an event structure contains two or more subevents, then each subevent
 22 must be assigned a different subinterval, i.e., the time interval of the event is
 23 split up into two or more subintervals. This means that the verb types men-
 24 tioned in Table 3. under 4., 7., and 8. are perfective since the situations they
 25 describe cannot be true for most subintervals. This leaves us with verbs express-
 26 ing the delimitative *aktionsart* which are neither punctual, nor do they contain
 27 two or more subevents. But the events in question are always delimited by a
 28 temporal adverbial. The situations they describe hold until their endpoint is
 29 reached, consequently the delimited event must be perfective.

30 Note that there is independent evidence for the perfectivity of these predi-
 31 cates. One way of showing this is to use a test first proposed by Kamp (1979),
 32 which was based on the observation that in a narrative text a 'perfective' event
 33 may move forward the sequence of events even if there is no temporal adverbial
 34 in the sentence, whereas in the case of an 'imperfective' event this is not possi-
 35 ble.³¹ Consider, for example, (40a, b).

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³⁰A similar definition has already been proposed by Dowty 1979.

³¹We know, of course, that this is a sufficient but not a necessary condition of perfec-
 tivity, however, the details of the problem need not concern us in the present paper.

- 1 (40) a. *Megírta a levelet és hazament.*
2 'He wrote the letter and went home'
3 b. *Megállt és körülnézett.*
4 'He stopped and looked around'

5 In both cases the event described by the first conjunct must precede the event
6 described by the second one.

7 We are now left with **1.**, **2.**, and **5.** Divisible temporal intervals are a charac-
8 teristic feature of states and activities, hence they are imperfective. As for **5.**,
9 the predicate DELIM(e) seems to have the same effect on a process as a punctu-
10 al subevent. The 'temporal sequence' test shows that *elborozgat*-type verbs
11 must be perfective, too.
12

- 13 (41) *Elborozgattak egy darabig és hazamentek.*³²
14 'They drank wine for a while and went home.'

15 In sum, then, all verb types except for **1.** and **2.** are perfective. Aspect can be
16 read off from event structure.
17

18 19 **5. Conclusion** 20

21 In the present paper we have been using temporal adverbials in order to identi-
22 fy verb classes and we have found that (at least) nine such classes can be deter-
23 mined. This number significantly exceeds the number discussed earlier in the
24 literature.³³ The next question was to find out how compatibility with temporal
25 adverbials relates to event structure. It turned out that five different event struc-
26 tures can be fully determined, two only partially and in one case nothing at all
27 could be said about event structure on the basis of compatibility with temporal
28 adverbials.³⁴ In these cases we had to rely on the semantics of the verbs in ques-
29 tion. In this way we ended up with eight different event structures.³⁵ Finally, we
30 were looking at the relationship between event structure and aspect. It was
31 found that in most cases (if event structure consists of a single punctual event
32 or if it contains two or more subevents) aspect automatically follows from
33 event structure. It was also pointed out that if boundedness is properly defined,
34 the perfectivity of delimitative verbs, too, can be read off from event structure.
35

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37 ³²Footnote Missing

38 ³³Cf. Table 1. Note that the verbs in (1) and (2) and (8) and (9) cannot be kept apart
39 by means of the adverbial test.

40 ³⁴Cf. Table 2.

41 ³⁵Cf. Table 3.

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