A CONTINUATION-BASED COMPOSITIONAL ACCOUNT FOR SYNTAX-SEMANTICS OF TURKISH PERFECTIVE-EVIDENTIAL SUFFIX -MIŞ

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ABSTRACT

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This work investigates the meaning of the perfective/evidential suffix *-mIş*, focusing on its perfect interpretation. It has been argued that there are two distinct syntactic structures for simple verbal sentences [verb+past] and complex verbal sentences [verb+part+cop+past] (Kornfilt, 1997; Kelepir, 2001). Demirok and Sağ (2023) offer a compositional account for these two structures, taking the temporal relations as the basis. Building on that, we propose an Aktionsart-oriented analysis of the verb-participle relation. We offer a continuation-based compositional account within quantificational event semantics (Champollion, 2015) to reconcile the syntactic account of Kelepir (2001) and observations on the perfect meaning of *-mIş*.

Keywords: Event semantics, compositional semantics, perfect aspect, evidentiality

ÖZ

TÜRKÇEDEKİ TAMAMLANMIŞ-KANITSAL -MIŞ EKİNİN SÖZDİZİM-ANLAMI İÇİN SÜREKLİLİK TABANLI BİLEŞİMSEL BİR AÇIKLAMA

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Bu çalışma, *-mIş* tamamlanmış/kanıtsal ekinin anlamını, özellikle tamamlanmışlık yorumuna odaklanarak incelemektedir. Basit fiil cümleleri [fiil+geçmiş] ve karmaşık fiil cümleleri [fiil+part+kop+geçmiş] için iki farklı sözdizimsel yapı olduğu ileri sürülmüştür (Kornfilt, 1997; Kelepir, 2001). Demirok ve Sağ (2023), bu iki yapı için zamansal ilişkileri temel alarak bileşimsel bir açıklama sunmaktadır. Buna dayanarak, fiil-ortaç ilişkisine Aktionsart odaklı bir analiz öneriyoruz. Kelepir'in (2001) sözdizimsel açıklamasını ve -mIş'ın tamamlanmışlık anlamı üzerine gözlemleri uzlaştırmak için, niceliksel olay semantiği (Champollion, 2015) içinde süreklilik-tabanlı bir bileşimsel açıklama sunuyoruz.

Anahtar Kelimeler: Olay anlambilimi, bileşimsel anlambilim, tamamlanmışlık, kanıtsallık

To my family, who let me be and who let me become

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Words cannot express my gratitude to my family, whose love gave me courage and motivation as always and kept me inspired.

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LIST OF ABBREVIATIONS

ABL	ablative case
ACC	accusative case
ADV	adverbializer
AgrSP	agreement subject phrase
ANT	anterior
AOR	aorist
Asp	aspect
AspP	aspect phrase
COM	comitative
COP	copula
CopP	copula phrase
CVB	converb marker
DAT	dative case
ET	event time
EVD	evidential
FUT	future
GEN	genitive case
IMPF	imperfective
INT	interrogative
LF	logical form
LOC	locative case
NEG	negation

NegP	negation phrase
PART	participle
PERF	perfect
PL	plural
POSS	possessive
PP	prepositional phrase
PSB	possibility
PST	past tense
RT	reference time
SG	singular
ST	speech time
T	tense
TP	tense phrase
V	verb
VN	verbal noun marker
VP	verb phrase
1	first person
2	second person
3	third person
Ø	null marker

CHAPTER 1

INTRODUCTION

1.1 Tense and Aspect

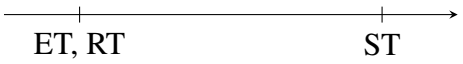
Tense and aspect are two grammatical categories that express temporality. Tense concerns the temporal location of the event relative to a deictic time (Comrie, 1976, 1985). Present, past, and future tenses situate the event time as simultaneous with, preceding, and succeeding the speech time respectively. Comrie (1976, 1985) differentiates the absolute and relative tenses on the basis of whether the event time is located with respect to the deictic center of the speech or to another temporal or eventive referent (Comrie, 1976, p.2). He remarks that, in English, generally the finite verb forms express absolute tenses and non-finite verb forms express relative tenses. For instance, a non-finite participial form in *Having met Harry earlier, I didn't need to see him again*, denotes a relative tense since it locates the time of the subordinate event relative to the time of the main event.

One of the most influential theories that analyse tense originates from Reichenbach (1947). Reichenbach (1947, §51) proposes a system consisting three time points to cover the possible tenses. These three time points are the point of speech (ST), the point of event (ET), and the point of reference (RT). Different tenses order these time points using ST as the deictic center. For instance, for a past perfect sentence in English such as *Peter had gone* (1), ET is the time when Peter went. RT, on the other hand, is a time between ET and ST as illustrated in (1). The speaker refers to a time after the event's occurrence.

(1) Peter had gone. (Past perfect)

Not in all tenses RT emerges as a distinct time point. In simple past tense sentences like *Peter went* (2), ET and RT coincide, since the time that the speaker refers is the time of the event.

(2) Peter went. (Simple past)



One of the innovations of this tripartite temporal system is his analysis of the present perfect. Reichenbach (1947) contrasts the simple past tense with the present perfect tense in terms of RT's position. In the simple past, ET and RT coincide whereas in the present perfect RT coincides with ST as shown in (3). This distinction is especially evident in the ungrammaticality of present perfect expressions with temporal adverbials that denote a past time, such as *Peter has gone yesterday*.

(3) Peter has gone. (Present perfect)

Contrary to this, the simple past tense can easily co-occur with this type of past temporal specifications. One of the distinctive features of the present perfect according to Reichenbach (1947) is that the impression of the *immediacy of a direct report* that the present perfect gives. In these cases, the past event is viewed from a present point of reference. Hence, RT is not a past time as it is in the simple past tense. The reference point is the speech time. Although Reichenbach (1947) analyses other tenses as well, we will restrict our research to these three tenses that concern past reference. We will assume Reichenbach (1947)'s terminology when we refer to this tripartite temporal structure of event time (ET), reference time (RT) and speech time (ST) throughout this work.

Unlike tense, aspect concerns with the inner temporal structure of the event. Traditionally, aspect is distinguished into two categories as lexical and grammatical aspect. Grammatical aspect, or viewpoint aspect, involves 'different ways of viewing the internal temporal constituency of a situation' (Comrie, 1976, p.3). The same event can be presented as either as a whole without any regard to its inner temporal structure, which is called a *perfective viewpoint*, or from a viewpoint located within the situation, that is an *imperfective viewpoint*. The two events in (4a) and (4b) are opposed in terms of the way they are *looked at* although both sentences express the event located in the past. (4b) is said to be expressing a perfective viewpoint and (4a) an imperfective viewpoint.

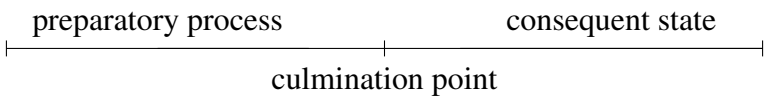
(4) a. Harry was writing the letter. (Imperfective)
b. Harry wrote the letter. (Perfective)

Lexical aspect, on the other hand, refers to the verb classes, *Aktionsarten*, that are categorised on the basis of their internal temporal structures. (Vendler, 1957; Smith, 1997; Moens & Steedman, 1988). Their internal temporal structures effect which verb

classes are well-formed in which tenses, and what types of temporal adverbials they can occur with. We will accept five verb classes; accomplishments, achievements, activities, semelfactives and states. We will refer to four of these verb classes as *events*, namely accomplishments, achievements, activities, and semalfactives, to distinguish them from *states*. And we will refer to both *events* and *states* as *eventualities* as an encompassing term.

In order to explicate what is meant by the inner temporal structure of different verb classes, we will appeal to the concept of *event nucleus* (Moens & Steedman, 1988). The event nucleus is a representation of the event's associated preparatory process that leads to the culmination point and a consequent state that follows event's culmination as illustrated in (5).

(5) Event nucleus:



Accomplishments are complex events that consist of all three parts. For instance, a verb *build a house* denotes an event which has both associated preparatory processes and consequences in addition to the culmination point at which a house comes into existence. Achievements are atomic events that have consequent states, but no preparatory processes, like *win the race*. Achievements denote a change of a state. Activities such as *run* denote processes that have no natural culmination points and thereby no consequent states. They are homogeneous events that do not have a goal in themselves. Finally, semelfactives, such as *hiccup*, are atomic events that have neither preparatory processes nor consequences. States are differentiated from events in terms of dynamicity and boundedness. Smith (1997, pp.35-36) distinguishes states and events in that the latter is a class of discrete entities whereas states are homogeneous that have a uniform inner structure, and lack the dynamic character that events exhibit. States like *know* and *be drunk* are stative because they persist without inherent change.

It is possible for an event that belongs to one verb class to transition to another verb class, and consequently construed differently. These construals can be realized by means of aspectual coercion via adverbials, tense and aspect markers or can be inferred from contextual knowledge (Moens & Steedman, 1988). For instance, the *for*-adverbial in *John hiccuped for weeks* coerces the underlying semelfactive event to an iterative event, hence the event is understood as an activity.

1.2 Scope of Research

We will restrict our discussion to tense/aspect features of Turkish TAM markers *-mIş* and *-DI*, leaving their modal meanings aside. In Turkish, anteriority is marked

with the verbal suffixes *-DI*, *-mIş*, and the copular marker *-(y)DI* (Göksel & Kerslake, 2005). The past tense marker *-DI*, regardless of whether it occurs as a verbal suffix or in copular form, denotes absolute past tense. The suffix *-mIş* marks relative past tense. The *absoluteness* of tense when it comes to relative tense markers depends on the presence of the past tense marker *-(y)DI* or its absence. The absence of the past tense marker *-(y)DI* signals non-past tense. Göksel & Kerslake (2005) also remark that verbal suffixes *-DI* and *-mIş* express perfective aspect, whereas the copular marker *-(y)DI* expresses imperfective aspect since it locates RT within a past situation.

(6) a. Fatma ev-e gel-diğinde, Ahmet ev-den ayrıl-dı.
Fatma house-DAT come-CVB Ahmet house-ABL leave-PST
"When Fatma came home, Ahmet left home"

b. Fatma ev-e gel-diğinde, Ahmet ev-den ayrıl-mış.
Fatma house-DAT come-CVB Ahmet house-ABL leave-PERF/EVD
"When Fatma came home, Ahmet had (already) left home (apparently)."
"When Fatma came home, Ahmet left home (apparently)."

c. Fatma ev-e gel-diğinde, Ahmet ev-den ayrıl-mış-Ø-tı.
Fatma house-DAT come-CVB Ahmet house-ABL leave-PERF-COP-PST
"When Fatma came home, Ahmet had (already) left home."

In (6a), the verb is marked with the absolute past tense marker *-DI*. It locates the main event as coinciding with the subordinate event and denotes that both events are in past. In contrast with (6a), the verb in (6b) is marked with the relative past tense marker *-mIş*. The main event's temporal location is ambiguous with respect to the subordinate event. In one interpretation, the main event is coinciding with the subordinate event, similar to (6a). In the other, the main event occurs before the subordinate event. Both interpretations carry an evidential meaning. (6b) and (6c) differ in their possible interpretations in terms of the temporal location of RT. (6b) allows for an interpretation which asserts that the main event's consequences hold at ST which coincides with RT, whereas in (6c) this assertion is made about a RT that precedes ST.

The relative tense marker *-mIş* and the absolute tense marker *-DI* are differentiated in terms of their modal functions as well[1]. *-mIş* has been considered as the evidential marker in addition to its perfective meaning when it is not followed by further copular markers like *-(y)DI* or auxiliary verb *ol-*. In this work, we will confine ourselves to the perfective meaning of the verbal suffix *-mIş*, which will also give insights about where its evidential meaning originates from.

[1] The evidentiality has been mostly analysed as a type of modality. Palmer (2001) distinguishes epistemic and evidential modalities as two types of propositional modality. The main difference is that the former concerns the speaker's judgement about the factual status of the proposition. The latter concerns the evidence that the speaker has for that judgement. The two categories are intimately related since a speaker's judgement about factuality relies on mostly the evidence that she has.

1.3 Research Question

Recent studies on semantics of verbal *-mIş* (and the copular marker *-(y)mIş*) in Turkish have largely focused on the semantics of indirect evidentiality (Sener, 2011; Meriçli, 2016). Sener (2011) makes an analysis of evidentials in Turkish as presuppositional operators and argues that there exists two distinct indirect evidentiality markers in Turkish. Meriçli (2016) proposes a uniform modal semantics for indirect evidentiality in the spirit of Izvorski (1997). This thesis work, as opposed to the works mentioned, is focused on the aspectual meaning of the verbal suffix *-mIş*. The copular marker *-(y)mIş* is accepted as a distinct grammaticalised evidentiality marker which is exlcuded from the scope of this research. Hence, throughout the work 'the suffix *-mIş*' will refer to the suffix which is attached to the verb stem, in contrast to *-(y)mIş*.

There is not much research on the compositional semantics of verbal inflections in Turkish. It is partly because the task is highly challenging. As an agglutinative language, Turkish provides a rich and complex TAM system where the same morpheme is capable of conveying tense, aspect and modality. This research aims to fill this gap by providing a compositional account for aspectual meaning of the suffix *-mIş*. One concrete proposal comes from Demirok & Sağ (2023). They offer a formal compositional account that considers the aspectual meaning of *-mIş* among other relative tense markers, on which we will elaborate on Section 2.3. The questions that we aim to answer in this work are as follows:

(i) What is the aspectual meaning of the verbal suffix *-mIş*?

(ii) How do verbs compositionally interact with tense and aspect in Turkish?

Our main aim is to propose a syntax-semantics interface on the basis of Kelepir (2001)'s syntactic account of aspecto-temporal projections, building on Demirok and Sağ (Henceforth: D&S) (2023)'s compositional account for participial and finite verbal forms and previous observations on the semantics of the perfective/evidential suffix *-mIş*.

D&S (2023) propose a solution to a problem concerning VP and T head's composition in morphologically aspectless expressions. They separate Asp head's function of binding the event argument from its function of locating the event relative to reference time. Consequently, they construe both temporal adverbials and Asp head as functions from time predicates to time predicates.

We point out some problems about the surface level interpretation in double negated expressions and in the interaction between *for*-adverbials and verbal negation. Instead,

(i) we propose to construe both temporal adverbials and Asp head as functions from sets of event predicates to sets of event predicates following Champollion (2015) and;

(ii) we argue that the perfect meaning of *-mIş* is carried to T head via a continuation variable.

Independently, we argue that;

(iii) the suffix *-mIş* encodes a consequent state of the underlying event.

In Chapter 2, we will detail the syntactic structure of aspecto-temporal projections in Turkish and the semantics of perfective/evidential suffix *-mIş*. In Section 2.1, we will briefly explain Kelepir (2001)'s proposal about clausal structure of Turkish, which our compositional account is based upon. In Section 2.2, we will focus on its semantics. The marker *-mIş* is a versatile particle that has adjectival functions, it expresses perfectivity in embedded positions, and has purely evidential meaning in its copular form *-(y)mIş*[2]. Its Perfect interpretations will also be discussed in Section 2.2. In Section 2.3, we will discuss D&S (2023)'s proposal. In Chapter 3, we will start off with D&S (2023)'s compositional account and move forward by introducing quantificational event semantics of Champollion (2015). Then, we will elaborate on the Perfect meaning of *-mIş* and put forward our proposal. In Chapter 4, we will discuss what has been achieved and what has been left unanswered. In Chapter 5, we will present a conclusion and discuss potential directions for future research.

[2] The relation between the finite *-mIş* and its copular form is a controversial issue. Göksel & Kerslake (2005) state that whereas *-mIş* indicates perfectivity and evidentiality, *-(y)mIş* is an evidential copula that lacks aspect. Johanson (2000) takes both markers as denoting indirectivity, yet remarks that indirectivity of the finite *-mIş* emerges from its postterminality. Sezer (2002) argues that *-mIş* and *-(y)mIş* forms are syntactically and semantically distinct. One potential core semantics that underlies both is discussed by Izvorski (1997) who proposed a formal connection between the present perfect and indirect evidentiality.

CHAPTER 2

BACKGROUND

In this chapter we will present some syntactic and semantic facts about the perfective/evidential suffix *-mIş*, and past tense suffix *-DI* when necessary. Section 2.1 reviews Kelepir (2001)'s proposed syntactic account for aspecto-temporal projections, focusing on some of the relevant evidence. In Section 2.2, we will examine the semantics of the suffix *-mIş*. *-mIş* assumes various functions in different environments. It exhibits perfective aspect in embedded clauses, and perfective aspect with evidential meaning in sentence-final positions. We will also take a look its role in sentences that express Perfect aspect. Section 2.3 focuses on D&S (2023)'s work. They provide an event-based compositional account that takes Reichenbachian temporal relations into its center. We will discuss where it falls short in the light of earlier section.

2.1 Syntax

Kelepir (2001), following Kornfilt (1997), argues that there are fundamentally two types of verbal forms in Turkish; finite verbal forms and participial verbal forms. Finite verbal forms are constructed with the past tense marker *-DI* or the conditional marker *-sA* which are also usually called true tenses. The participial forms are constructed with what Kelepir (2001) calls *Group 1* markers, such as future tense marker *-(y)AcAK*, imperfective/progressive marker *-Iyor* and perfective marker *-mIş*. Group 1 markers occupy the position between verb and true tense markers. Kelepir (2001) argues that these Group 1 markers are participles on the basis of their behaviour in various environments. One of the evidence that supports this claim comes from the fact that there are two agreement marker paradigms, namely k-paradigm and z-paradigm in verbal forms. The agreement paradigm varies according to the rightmost marker. If the rightmost marker is one of true tenses, then we observe k-paradigm as in (1a) and (1c). Otherwise, we observe z-paradigm as in (1b).

(1) a. Ev-e gel-di-k.
house-DAT come-PST-1PL
"We came home."

b. Ev-e gel-miş-iz.
house-DAT come-PERF/EVD-1PL
"We came/have come home (apparently)."

c. Ev-e gel-miş-Ø-ti-k.
house-DAT come-PERF-COP-PST-1PL
"We had come home."

This is also the case with non-verbal predicates that necessarily require a copula to receive a tense marker. In (2a), where the copular past marker *-(y)DI* is present, k-paradigm is observed. When there is no past tense denoting marker as in (2b), z-paradigm prevails. This observation leads to the claim that, in participial verbal forms, the agreement marker is hosted by the copula in the absence of further markers.[3]

(2) a. Kızgın-Ø-dı-k.
angry-COP-PST-1PL
"We were angry."
b. Kızgın-Ø-ız.
angry-COP-1PL
"We are angry."

We will emphasize three kinds of evidence Kelepir (2001) offers for the participle status of Group 1 markers. One of these comes from negation contexts. Turkish has a verbal negation suffix *-mA* which inflects on verbs to negate the event's occurrence (3a). In non-verbal predicates on the other hand, the negation particle *değil* is used. It is possible for the participial forms to occur with the negation particle *değil*. When it occurs with the negation particle *değil*, the tense and agreement markers appear on *değil* as in (3c), and not on the participle as in (3b). Kelepir (2001) argues that the lack of tense and agreement markers on *-mIş* shows that these markers are inflections of the copula.

(3) a. Ev-e dön-me-di-m.
house-DAT return-NEG-PST-1SG
"I did not return home."
b. *Ev-e dön-müş-üm değil.
house-DAT return-PERF-1SG not
Intended meaning: "I have not returned home."
c. Ev-e dön-müş değil-im.
house-DAT return-PERF not-1SG
"I have not returned home."

Another evidence comes from the coordination with suspended affixation of phrases that are inflected for aspect but not inflected for tense and agreement. The tense and agreement scope over the left-hand side conjunct in these examples. Turkish allows for the coordination of such phrases with Group 1 markers as seen in (4a) but does not allow it with true tenses in (4b).

[3] Sezer 2002 argues that what decides the agreement marker is the null present tense instead of the copula. According to this, the structure of (1b) is *Eve gel-miş-Ø-Ø-iz*, second null element being the present tense.

(4) a. Yer-e düş-müş ve kol-um-u kır-mış-tı-m.
ground-DAT fall-PERF and arm-1SG.POSS-ACC break-PERF-PST-1SG
"I had fallen to the ground and had broken my arm."
b. *Yer-e düş-tü ve kol-um-u kır-dı-m.
ground-DAT fall-PST and arm-1SG.POSS-ACC break-PST-1SG
Intended meaning: "I fell to the ground and broke my arm."

Finally, embedded clauses constructed with the nominalizer *-DIK* does not allow true tenses to be embedded under the verb *ol-* 'to be'. *-DIK* carries a non-future meaning. That is, it can express either present or past time (Göksel & Kerslake, 2005). (5a) is ambiguous between the reading where the event in the embedded clause is ongoing at the time of utterance and the reading where it is past relative to the time of utterance. Group 1 markers require that there be a copular verb *ol-* before the nominalization can realise. Group 2 markers cannot be embedded under the verb *ol-* when constructing embedded clauses as in (5c).

(5) a. Bina-nın yıkıl-dığ-ı-nı gör-dü-m.
building-GEN collapse-VN-3G.POSS-ACC see-PST-1SG
"I saw that the building was collapsing."
"I saw that the building had collapsed."
b. Bina-nın yıkıl-mış ol-duğ-u-nu gör-dü-m.
building-GEN collapse-PERF COP-VN-3SG.POSS-ACC see-PST-1SG
"I saw that the building had collapsed."
c. *Bina-nın yıkıl-dı ol-duğ-u-nu gör-dü-m.
building-GEN collapse-PST COP-VN-3SG.POSS-ACC see-PST-1SG
Intended meaning: "I saw that the building had collapsed."

In all of the above contexts, Group 1 marker *-mIş* can occur without tense and agreement markers. Kelepir (2001) claims that this is because the tense and agreement markers are inflections of the copula. Tense requires a verbal element and the copula is obligatorily realised to fulfill this syntactic requirement. The nominal characteristics of participial forms block tense to directly inflect on them. Kelepir (2001) proposes two distinct syntactic structures for the finite verbal form (6a) and the participal verbal form (6b). In (6a), which we will refer as bare past tense structures from now on, the verb moves directly to T head and can be inflected for past tense and agreement without the need for copula. In (6b), the presence of Asp head blocks the verb to move directly to Tense, hence cannot be inflected without the copula. The presence of copula is only a syntactic requirement to carry tense and agreement in participial forms. That is because participials have nominal features whereas T expects a verbal element.

(6) a. Eve gel-di-m.
$[_{AgrSP}\ [_{TP}\ [_{VP}$ Eve gel$]$ -di$]$ -m$]$
"I came home."

b. Eve gel-miş-Ø-ti-m.
[$_{AgrSP}$ [$_{TP}$ [$_{CopP}$[$_{AspP}$ [$_{VP}$ Eve gel] -miş] Ø] -ti] -m]
"I had come home."

Kelepir (2001)'s account raises some questions concerning the semantic composition of VP, Asp and T (Demirok & Sağ, 2023). The past tense marker *-DI* and its copular form *-(y)DI* have been thought as separate TAM markers which occupy distinct positions in the inflectional order. *-DI* seemingly occupies the same aspect position as other participles. Göksel & Kerslake (2005) point out the aspectual difference between the two markers. While *-DI* expresses perfective aspect, the copular form *-(y)DI* expresses imperfective aspect. Sezer (2002) notes that whereas *-DI* carries a present perfect interpretation, *-(y)DI* lacks this interpretation.

One proposal that attempts to reconcile Kelepir (2001)'s syntactic account with the observations on the semantics of past tense comes from D&S (2023). D&S (2023) offer a Reichenbachian compositional account that takes into consideration the participle nature of the TAM markers that occur at aspect position, and propose a logical form for bare past tense structures that are morphologically aspectless. We will discuss this further in Section 2.3, but before we will take a look into the semantics of perfective-evidential suffix *-mIş*.

2.2 Semantics

In Turkish, the suffix *-mIş* in the sentence-final position expresses relative past tense, perfective aspect and evidential meaning (Göksel & Kerslake, 2005). It has been noted as a reported/inferred past marker by Kornfilt (1997). If it is suffixed to the verb stem without any further markers or any auxiliary verb compounds as in (7a), it is understood as expressing both perfectivity and evidentiality. It conveys that the core event is completed and viewed as a whole with the additional meaning that the speaker has indirect evidence. Otherwise, this evidential meaning is not observed as in (7b) and it indicates the perfective aspect only. The copular marker -(y)mIş, on the other hand, communicates purely evidential meaning without perfectivity (7c).

(7) a. Ahmet gel-miş. Perfective/Evidential
Ahmet come-PERF/EVD
"Ahmet came/has come (apparently)."

b. Ahmet gel-miş-Ø-ti. Perfective
Ahmet come-PERF-COP-PST
"Ahmet had come."

c. Ahmet gel-iyor-Ø-muş. Evidential
Ahmet come-IMPF-COP-EVD
"Reportedly, Ahmet is/was coming."

(7a) is ambiguous between reportative and inferential evidential readings. Reportative evidentiality involves reports from the sources outside of the speaker, whereas inferential evidentiality requires the speaker to make a conscious inference whose sources may differ. Slobin & Aksu (1982) compare the two expressions below to emphasize uses of two distinct evidential meanings.

(8) a. Yağmur yağ-acak-Ø-mış. Reportative Evid.
rain rain-FUT-COP-EVD
"Reportedly, it will rain."
b. Yağmur yağ-acak herhalde. Inferential Evid.
rain rain-FUT probably
"It will probably rain."

(Slobin & Aksu, 1982)

Inference requires presupposition of the event on the speaker's part. In a case where the speaker sees a cloudy sky and infers that it will rain, she cannot utter (8a). Instead, she must assert how strong she makes this inference by other means as in (8b). Although this inferential/reportative distinction is mostly clear for the use of the copular form *-(y)mIş*, it is ambiguous for the suffix *-mIş*. *Yağmur yağmış* may mean "(It is apparent that) it has rained" and "(It is reported that) it has rained"

(9) Yağmur yağ-mış.
rain rain-PERF/EVD
"(It is apparent / It is reported that) it has rained."

Lewis (2001, p.122) remarks that, *-mIş* as a past participle, describes "present state arising out of past action". (9) can be uttered, independently from the fact that whether the speaker saw the raining or not, since what is of concern is not the event itself but rather the present situation. He emphasizes that, because the past participle *-mIş* does not express that the speaker has witnessed the event itself, *-mIş* is used to convey evidentiality, that is, either reportative or inferential.

Jendraschek (2011) similarly states that, in sentences like (9), where *-mIş* is suffixed to verb stem without any further suffixes, *-mIş* has acquired evidential meanings. According to Jendraschek (2011), this evidential meaning is an implicature that arises due to the "temporal dissonance between the event and its result". What (9) expresses is about the present traces of a past event. It emphasises the result while backgrounding the event.

Whereas *-mIş* carries various evidential meanings, the past tense suffix *-DI* lacks these modal features and usually understood as asserting the event in a direct manner as a direct experience of the speaker[4]. This (in)directivity has been a central issue in

[4] Here, the mention to the direct experience should be taken with a grain of salt. In certain contexts, it is not required that the speaker has a firsthand experience of the event to use it felicitously. For instance, as Meriçli (2016) notes, the past tense marker *-DI* is used for well-known historical facts, such as *Atatürk Selanik'te*

discussions on the distinguishing feature of the suffix *-mIş* from the past tense marker *-DI* (Slobin & Aksu, 1982; Johanson, 2000). The evidential features of *-mIş* is not observed when the suffix occurs in embedded positions as well. The participle *-mIş* serves an adjectival function in non-finite environments. It denotes a resultant state without conveying any evidential meaning as in (10).

(10) öl-müş adam
die-PART person
"the man who has died"

(Slobin & Aksu, 1982)

One semantic restriction concerns Aktionsart. Unless the verb denotes an event which has a culmination point with a clear resultant state, the participle cannot be used felicitously in this non-finite environment. For instance, processes that do not have an inherent resultant state are not acceptable with the participle *-mIş* as seen in (11a). On the other hand, it can be used felicitously with an accomplishment verb *learn linguistics* which has a clear end-point and a resultant state in (11b).

(11) a. *öğren-miş adam
learn-PART man
"a man who has learned"
b. dil bilimi öğren-miş adam
language science learn-PART man
"a man who has learned linguistics"

(Slobin & Aksu, 1982)

The relation between perfect and indirectivity/evidentiality has been pointed out in previous works (Comrie, 1976; Slobin & Aksu, 1982; Izvorski, 1997). Comrie (1976, p.110) notes the similarity between the two as both "present an event not in itself, but via its results". Izvorski (1997) remarks that this relation between the two is observed in different language families, which suggests it is not a case of accidental syncretism and calls this phenomenon *perfect of evidentiality*. In the next subsection 2.2.1 we will examine the different types of perfect interpretations, focusing mostly on the resultative perfect in relation with *-mIş*. Then, we will look into the past-perfect and past-in-past uses in 2.2.2.

2.2.1 Perfect

Perfect as an aspect category differs from (im)perfectivity in that it relates an earlier event to a later situation in various ways (Comrie, 1976). Take for example, the English present perfect construction *I have lost my keys*. In its most salient resultative

doğdu. Hence, Slobin & Aksu (1982) associate the use of the past tense marker *-DI* with the assimilation of the information to the speaker's knowledge.

interpretation, it expresses that the results of a previous event —losing the keys— hold at the time of speech. If the keys are not lost at the speech time, it loses its resultative reading and can only be interpreted as experiential perfect (see below) (Iatridou et al., 2003). In Turkish, the present perfect meaning is conveyed either by bare past tense structures such as *Ahmet geldi* or by structures like *Ahmet gelmiş* with the additional inferential meaning.

Perfect aspect has various uses that are categorised under four main types (Comrie, 1976; Iatridou et al., 2003). The universal perfect conveys that the predicate holds over a span of time that begins in the past and extends to a later time. For present perfect, it extends to the present as in *I have been sick since 1998*. In Turkish, it is expressed by (i) the lack of past tense marker on non-verbal predicates, (12a), and (ii) the presence of the imperfective suffixes -(I)yor, (12b), or -mAktA on verbal predicates, (12c), with contribution of certain adverbials (Arslan-Kechriotis, 2006).

(12) a. 1998'den beri hasta-yım.
1998-ABL since sick-1SG
"I have been sick since 1998."

b. On yıl-dır aynı semt-te otur-uyor-um.
ten year-ADV same neighborhood-LOC live-IMPF-1SG
"I have lived/have been living in the same neighborhood for ten years."

c. Beş sene-dir bu bölüm-de çalış-makta-yım.
five year-ADV this department-LOC work-IMPF-1SG
"I have worked/have been working in this department for five years."

(Arslan-Kechriotis, 2006)

It is also possible to express that a situation continues to hold now by using the marker *-mIş*, in mostly colloquial contexts. In (13), there is no apparent evidential meaning.

(13) Yıl-lar-dır bu bina-da yaşa-mış-ım, ben-i bura-dan
year-PL-ADV this building-LOC live-PERF-1SG, I-ACC here-ABL
çıkart-a-ma-z-lar.
remove-PSB-NEG-AOR-3PL
"I have lived in this building for years, they can't remove me from here."

The experiential perfect indicates that the subject has a certain experience (Iatridou et al., 2003). To utter a sentence that expresses experiential perfect, it is enough for the event holds at least once in the past. For instance, for the expression *John has been to Norway* to be true, it is enough for John to be in Norway once in the relevant time frame, which is his lifetime in this case. In Turkish, the past tense marker *-DI* is employed with the adverbial *hiç* (ever) to convey the experiential perfect meaning (Arslan-Kechriotis, 2006). When there is no adverbial that specifies the relevant time frame, it is determined contextually[5].

[5] The interpretation of bare past tense structures as expressing experiential perfect relies on additional adverbials. In interrogative contexts, an interrogative sentence without any adverbial, such as *Lunaparka gittin mi?*, can

(14) a. 2010'dan beri hiç Ahmet'le görüş-tü-n mü?
2010-ABL since ever Ahmet-COM meet-PST-2SG INT
"Have you ever met with Ahmet since 2010?"
b. Hiç lunapark-a git-ti-n mi?
ever amusement.park-DAT go-PST-2SG INT
"Have you ever been to the amusement park?"

Similar to (13), one can express that the person has an experience due to his being a participant in a previous situation by using *-mIş*. In (15), the speaker remarks that, as of now, the person has the experience of 'having worked at the best companies'. Note that it is independent from the fact whether the speaker has direct knowledge of the person's career or not. The source of the speaker's knowledge is irrelevant. Furthermore, if *-DI* replaces *-mIş* in this context, it sounds unnatural.

(15) En iyi şirket-ler-de çalış-mış-sın, sen-den iyi-si-ni
most good company-PL-LOC work-PERF-2SG, you-ABL good-POSS-ACC
mi bul-acak-lar?
INT find-FUT-3PL
"You've worked at the best companies, are they going to find someone better than you?"

The perfect of recent past is used only to assert the temporal proximity, usually with an adverbial like *yeni* (just).

(16) Ahmet ev-e yeni gel-di.
Ahmet home-DAT recently arrive-PST
"Ahmet has just arrived home."

The resultative perfect expresses that the results of an earlier event holds at a later time. Bare past tense structures in Turkish can be interpreted as conveying resultative perfect meanings as Arslan-Kechriotis (2006) remarks. If (17) is followed by *But I found them later*, it loses its resultative perfect reading, and can only be interpreted as a simple past tense sentence.

(17) Anahtar-lar-ım-ı kaybet-ti-m.
key-PL-1SG.POSS-ACC lose-PST-1SG
"I have lost my keys."

However, the resultative perfect requires some further discussion in relation with the inferential use of *-mIş*. Sener (2011) argues for two *-mIş* morphemes, one is reporta-

be interpreted as experiential perfect with relative ease. It is not so for non-interrogative sentences. For example, *Lunaparka gittim* can rarely be interpreted as conveying experiential perfect meaning if uttered out of the blue.

tive and the other is inferential. In inferential contexts, only one reading survives. We adapt this example from Şener (2011, p.26).

(18) Context: The speaker goes home with his roommate after a night out. His roommate asks the speaker to unlock the door since he is barely able to stand upright. The speaker says:

a. (Dün) Anahtar-lar-ım-ı kaybet-ti-m.
(Yesterday) key-PL-1SG.POSS-ACC lose-PST-1SG
"I lost my keys (yesterday)."

b. (Dün) Anahtar-lar-ım-ı kaybet-miş-Ø-ti-m.
(yesterday) key-PL-1SG.POSS-ACC lose-PERF-COP-PST-1SG
"I had lost my keys (yesterday)."

c. *(Dün) Anahtar-lar-ım-ı kaybet-miş-im.
(yesterday) key-PL-1SG.POSS-ACC lose-PERF-1SG
"I have lost my keys *(yesterday)."

(18a) locates the event within the time interval that is denoted by *yesterday*. However, there is no assertion about the present no matter whether there is a time frame adverbial or not. The speaker may or may not have his keys at the present moment. The resultative interpretation comes from extra-linguistic factors. (18b) has two readings, one where *yesterday* denotes the event's time, and one where it denotes the reference time. Neither of the two interpretations makes an assertion about now. Again, it is implied that the speaker do not have his keys at the present moment. (18c) cannot be an assertion about a past time. If it co-occurs with the frame adverbial *yesterday*, then it loses its resultative perfect meaning and inferential evidentiality interpretation. It can only convey a hearsay meaning in this context. The example below shows the hearsay use.

(19) Dün anahtar-lar-ım-ı kaybet-miş-im ama sonra
yesterday key-PL-1SG.POSS-ACC lose-PERF-1SG but then
bul-muş-um. Ben hatırla-mı-yor-um, Fatma söyle-di.
find-PERF-1SG. I remember-NEG-IMPF-1SG, Fatma tell-PST
"(Supposedly) I lost my keys yesterday, but then I found them. I don't remember, Fatma told me."

It is also possible that, in the context (18), the roommate asks *Sonra ne oldu?* "What happened then?" absentmindedly as a reply to (18a) and (18b), while the question that follows (18c) requires a reportative question *Sonra ne olmuş?* "What supposedly happened then? / What is claimed to be happened?".

Arslan-Kechriotis (2006) assumes that the sentences constructed with non-finite *-mIş* and the auxiliary verb *ol-*[6], 'become', as in (20d), express resultative perfect.

[6] The auxiliary verb *ol-* is interpreted in various ways depending on the environment it occurs. Göksel (2002) presents its aspectual characteristics in certain main clauses, and its semantic and syntactic inacitivity in others and in object relative clauses.

However, we must note that the perfect meaning that is contributed by *-mIş* does not lead to the perfect interpretation of the whole sentence. (20d) corresponds to simple past tense in Reichenbachian terms. This is evident in that the only temporal specification available is about ET in the past, that is the time of the —become— event. RT is not available as a distinct temporal referent from ET.

The example below is taken from Arslan-Kechriotis (2006)'s adaptation of Giorgi & Pianesi (1997). As Giorgi & Pianesi (Henceforth: G&P) (1997) point out, the event that culminated at a previous time cannot be denied by (20c), whereas it can be by the participle *-mIş* together with the auxiliary verb *ol-* construction in (20d) (Arslan-Kechriotis, 2006).

(20) a. Cuma gün-ü Ayşe yarış-ı kazan-dı.
Friday day-POSS Ayşe race-ACC win-PST
"Ayşe won the race on Friday."

b. Cumartesi gün-ü diskalifiye ol-du.
Saturday day-POSS disqualified become-PST
"She got disqualified on Saturday."

c. *Yarış-ı kazan-ma-dı.
race-ACC win-NEG-PST
"She did not win the race."

d. Yarış-ı kazan-ma-mış ol-du.
race-ACC win-NEG-PERF become-PST
"She became someone who has not won the race."

However, when the assertion is made about the present or any other day after the disqualification, (20d) seems odd, suggesting the time interval must include ET, that is the time of *becoming someone who has not won the race*. Suppose that today is Monday.

(21) a. Pazar gün-ü, yarış-ı kazan-ma-mış-Ø-tı. / Pazar
Sunday day-POSS race-ACC win-NEG-PERF-COP-PST / Sunday
gün-ü, yarış-ı kazan-mış Ø değil-di.
day-POSS race-ACC win-PERF COP not-PST
"On Sunday, she had not won the race."

b. #?Pazar gün-ü yarış-ı kazan-ma-mış ol-du.
Sunday day-POSS race-ACC win-NEG-PERF become-PST
"#?On Sunday, she became someone who has not won the race."

c. Şu an, yarış-ı kazan-ma-mış. / Şu an, yarış-ı kazan-mış
right now race-ACC win-NEG-PERF / right now race-ACC win-PERF
Ø değil.
COP not
"As of now, she has not won the race."

d. #?Şu an yarış-ı kazan-ma-mış ol-du.
right now race-ACC win-NEG-PERF become-PST

"#?As of now, she became someone who has not won the race."

In (21b) and (21d), the temporal adverbials can only be understood as denoting ET, which leads to expressions whose truth values are false. Otherwise, they are semantically odd. In (21a) and (21c), RT becomes available, hence temporal adverbials are able to modify a time after ET. RT is Sunday in (21a) and RT is ST in (21c). Note that the resultant state in (21c)[7] is said to not hold now, as it is expected from a English present perfect sentence that expresses resultant perfect. We will return to this in Chapter 3.

2.2.2 Past perfect and past-in-past

Kornfilt (1997) takes both the aspectual perfect category and the relative tense category as real categories and existent in Turkish. Compare the two examples below (Kornfilt, 1997, pp. 350-351).

(22) Fatma dün saat 6'da Hasan-ı şirket-te gör-müş
Fatma yesterday hour 6-LOC Hasan-ACC company-LOC see-PERF
ol-a-ma-z çünkü o saat-te Hasan çoktan
be-PSB-NEG-AOR because that hour-LOC Hasan already
ev-i-ne dön-müş-Ø-tü.
home-3SG.POSS-DAT return-PERF-COP-PST
"Fatma cannot have seen Hasan at the company at 6 o'clock yesterday, because at that time Hasan had already returned home."

Kornfilt (1997) notes that in (22) the natural reading is Hasan had already returned home at 6 o'clock. The referred time is the time when Fatma supposedly saw Hasan at the company. It expresses that at the referred time, a previous event's results are in effect, hence (22) is used in the past perfect meaning.

(23) Geçen Salı buluş-acak-Ø-tı-k; Hasan saat 5'te
last Tuesday meet-FUT-COP-PST-1PL Hasan hour 5-LOC
büro-su-na uğra-mış, saat 6'da ev-i-ne
office-3SG.POSS-DAT stop.by-PERF hour 6-LOC home-3SG.POSS-DAT
dön-müş-Ø-tü; ben-se iş-im-den
return-PERF-COP-PST I-however work-1SG.POSS-ABL
ayrıl-a-ma-mış-Ø-tı-m.
leave-PSB-NEG-PERF-COP-PST-1SG
"We were going to meet last Tuesday; Hasan had stopped by his office at 5 o'clock and had returned home at 6 o'clock; however I had been unable to leave work."

[7] Here, we ignore the additional evidential meaning induced due to the sentence-final position of *-mIş* in *Şu an, yarışı kazanmamış*.

In (23) on the other hand, according to Kornfilt (1997), the natural reading of *Hasan had returned home at 6 o'clock* is *Hasan returned home at 6 o'clock*. Because in her words: "the event that precedes the (past tense) vantage point is in no necessary relation to the situation depicted at that vantage point" (p.351). It lacks that resultative reading.

However, one of the narrative functions of such sequences of sentences that are interpreted as past-in-past tense is to constitute a background for further events (Kamp & Reyle, 1993). These sentences introduce a time interval to discourse that can be referred later and in which the speaker can locate further events. The time interval introduced is not any time after but a time when the results of previous background setting events are in effect. We observe them as they are from a 'past vantage point', to which there are no further events are predicated yet, but possibly there will be, or it is supposed that there is on the part of the speaker. Consider the case below:

(24) Ev-im-den belge-ler-i al-acak-Ø-tı-m.
house-1SG.POSS-ABL document-PL-ACC take-FUT-COP-PST-1SG
Anahtar-lar-ım-ı kaybet-miş-Ø-ti-m. Komşu-lar-ım
key-PL-1SG.POSS-ACC lose-PERF-COP-PST-1SG neighbor-PL-1SG.POSS
ise hala tatil-den dön-me-miş-Ø-ti. Ali'nin
however still vacation-ABL return-NEG-PERF-COP-PST Ali-GEN
lokanta-sı-na biraz zaman geçir-mek için uğra-dı-m.
restaurant-3SG.POSS-DAT a.little time spend-INF for stop.by-PST-1SG
"I was going to pick up the documents from my house. I had lost my keys. My neighbors still hadn't returned from vacation. I stopped by Ali's restaurant to pass some time."

The first three sentences create a setting in which the event denoted by the final sentence occurs. Moreover, it is hard to interpret the narrative in a way that the results of previous events are not in effect at the time interval in which the final event occurs. It is evident in that the narrative consisted of the first three sentences cannot be felicitously finalized with a sentence *Eve girip belgeleri aldım*, 'I went into the house and took the documents', or at least cannot be finalized without violating discourse relations (Kamp & Reyle, 1993). The previous events *add* to the vantage point which is the time interval in which these earlier events' results are in effect, unless asserted or implied otherwise in a discourse.

As again Kornfilt (1997) notes, another usage of past-in-past involves sentences that express events that have long since occurred and used in mostly colloquial contexts, such as;

(25) Ben san-a bu kitab-ı çok eskiden ver-miş-Ø-ti-m.
I you-DAT this book-ACC very long.ago give-PERF-COP-PST-1SG
"I had given you this book a long time ago."

Although it is possible to interpret it as *I gave you this book a very long time ago* as Kornfilt (1997) notes, this reading lacks the pragmatic effect of *psychological distancing* that is induced by the presence of *-mIş* (Slobin & Aksu, 1982). Psychological distancing is described by Slobin & Aksu (1982) as a lack of preparedness for an event as if the speaker is saying 'I have just become aware of something which I had no premonitory consciousness'. Comparing the utterance of *Kemal gelmiş* ('Kemal came, apparently') upon the arrival of an unexpected visitor Kemal, against the utterance of *Kemal geldi* ('Kemal came') when the event is preplanned or expected, they offer a cognitive account for the core meaning of *-mIş* based on this psychological distancing or an *unprepared mind* of the speaker. Consider the example below:

(26) Context: A asks B upon seeing that B is looking at a book B has just found while rummaging through the bookshelf.

A: Bu kitap nere-den çık-tı?
this book where-ABL come.out-PST
"Where did this book come from?"

a. B: Bu kitab-ı ben san-a çok eskiden
this book-ACC I you-DAT very long.ago
ver-miş-Ø-ti-m.
give-PERF-COP-PST-1SG
"I had given you this book a long time ago."

b. B: #?Bu kitab-ı ben san-a çok eskiden ver-di-m.
this book-ACC I you-DAT very long.ago give-PST-1SG
"I gave you this book a long time ago."

Since inter-sentential semantic/pragmatic relations are not the subject of this work, we will leave this issue here, while noting that past-in-past readings usually have functions that manifest themselves in a discourse.

In this section we have illustrated the meanings of the suffix *-mIş* in different positions and in the context of perfect aspect. Before, moving on we give a short summary. It expresses perfectivity and evidentiality when it is attached to verb stem without further inflection, (27a). If it occurs with the copular past tense form *-(y)DI*, it loses its evidential meaning and only expresses perfectivity, (27b). When it occurs above copula in its copular form *-(y)mIş*, it loses its perfective meaning and only express evidentiality, (27c).

(27) a. Ahmet gel-miş. Perfective/Evidential
Ahmet come-PERF/EVD
"Ahmet came/has come (apparently)."

b. Ahmet gel-miş-Ø-ti. Perfective
Ahmet come-PERF-COP-PST
"Ahmet had come."

c. Ahmet gel-iyor-Ø-muş. Evidential
Ahmet come-IMPF-COP-EVD
"(Reportedly) Ahmet is/was coming."

We have also discussed types of perfect, emphasising the resultative perfect interpretation. We give examples of each below.

(28) a. Üç yıl-dır bu okul-da oku-yor-um. Universal Perfect
three year-ADV this school-LOC study-IMPF-1SG
"I have studied/been studying at this school for three years."
b. Hiç lunapark-a git-ti-n mi? Experiential Perfect
ever amusement.park-DAT go-PST-2SG INT
"Have you ever been to the amusement park?"
c. Ahmet ev-e yeni gel-di. Perfect of Recent Past
Ahmet home-DAT new arrive-PST
"Ahmet has just arrived home."
d. Anahtar-lar-ım-ı kaybet-ti-m. Resultative Perfect
key-PL-1SG.POSS-ACC lose-PST-1SG
"I have lost my keys."

Past-perfect expresses the perfect in past, (29a). However, it is also used without any apparent perfect meaning to convey that the event in question is a distant event, especially in colloquial contexts, (29b).

(29) a. Hasan dün saat 6'da ev-i-ne çoktan
Hasan yesterday hour 6-LOC house-3SG.POSS-DAT already
dön-müş-Ø-tü.
return-PERF-COP-PST
"Hasan had already returned to his house at 6 o'clock yesterday."
b. Ben san-a bu kitab-ı çok eskiden ver-miş-Ø-ti-m.
I you-DAT this book-ACC very long.ago give-PERF-COP-PST-1SG
"I had given you this book a long time ago."

In the next section, we will return to Kelepir (2001)'s account for aspecto-temporal projections, and discuss D&S (2023)'s proposal for syntax-semantics interface of the two verbal forms.

2.3 Previous Works

We have briefly examined Kelepir (2001)'s syntactic structures for the two verbal forms in Turkish in Section 2.1. Whereas (i) bare past tense structures lack aspectual projections and verb moves to Tense without any issue, in (ii) participial forms

Asp head intervenes between the two, forming a complex head AspP with [-verbal] features, and it requires the insertion of the copula between AspP and TP in order to meet the [+verbal] feature requirement of Tense. The former, (i), is given in (30a), and the latter, (ii), is given in (30b) below.

(30) a. Ahmet ev-e gel-di.
Ahmet house-DAT come-PST
"Ahmet came home."
[$_{TP}$ [$_{VP}$ Ahmet eve gel] -di]

b. Ahmet ev-e gel-miş-Ø-ti.
Ahmet house-DAT come-PERF-COP-PST
"Ahmet had come home."
[$_{TP}$ [$_{CopP}$[$_{AspP}$ [$_{VP}$ Ahmet eve gel] -miş] Ø] -ti]

D&S (2023) identify two problems with Kelepir (2001)'s account. How to (i) reconcile the fact that there are bare past tense structures with perfective aspect without AspP, and how to (ii) overcome the compositional difficulty that arises due to the type mismatch between VP and T head. This mismatch stems from that VPs are predicates of events, on the other hand, T requires a predicate of time intervals. They propose a compositional account for the two distinct verbal forms. In this section, after a quick review of their proposal, we will point out some issues concerning (ii).

2.3.1 Compositionality problem

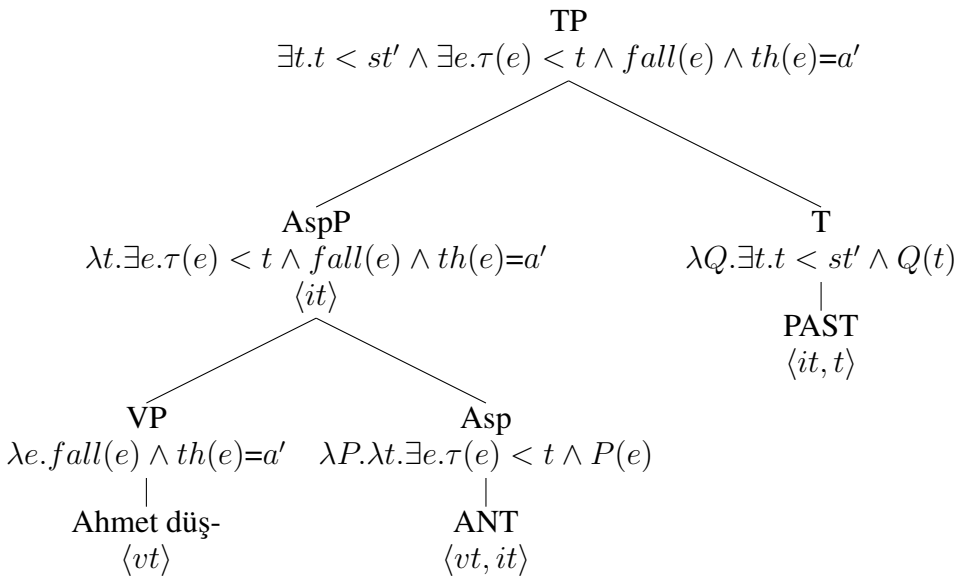
First, we will discuss the compositionality problem that D&S (2023) put forward. Aspect head is generally assumed to be a syntactic head that functions as an intermediary between ET and RT. It maps the event's run-time relative to the reference time. Tense, on the other hand, relates the reference time to the speech time. Let us represent VPs with a semantic type of $\langle vt \rangle$ which takes an event and returns a truth-value. Hence, VPs denote sets of events. Aspect head, existentially binds the event argument and relates the time at which the event holds true to a time interval. Thus, Aspect head applies to VP and returns a set of times that act as reference times. Then, Tense head applies to the set of times that AspP denotes and gives a truth-value. In short, Asp and T heads serve to align the Reichenbachian times on the time axis. Aspect positions ET relative to RT, and Tense positions RT relative to ST. Assuming that *-mIş* encodes anteriority, Aspect head *-mIş*, (31) takes a set of events, $\langle vt \rangle$, and returns the set of times that succeed ET. Past tense marker *-DI* binds the time variable that AspP denotes and locates it in the past, relative to ST:

(31) $[[\texttt{ANT}]]_{\text{-mIş}} = \lambda P.\lambda t.\exists e.\tau(e) < t \wedge P(e) :: \langle vt, it \rangle$

(32) $[[\texttt{PAST}]]_{\text{-DI}} = \lambda Q.\exists t.t < st' \wedge Q(t) :: \langle it, t \rangle$

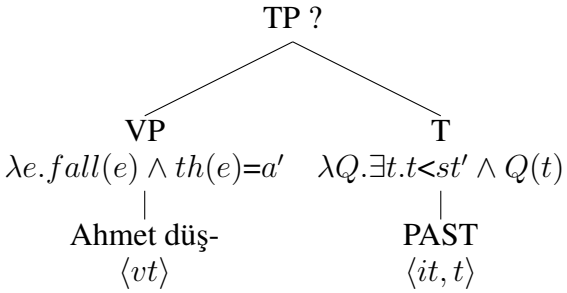
According to this, the compositional structure for a past perfect sentence can be represented as below (33).

(33) Ahmet düş-müş-Ø-tü.
Ahmet fall-ANT-COP-PST
"Ahmet had fallen."



The final logical form gives us right truth-conditions for Reichenbachian temporal relations between ET, RT and ST. It denotes that there is a time interval, t, and t precedes ST, and t succeeds the time of the *fall* event whose theme is Ahmet. However, in cases where there is no Aspect head, the semantic types will clash. T head expects for an $\langle it \rangle$ type, whereas VP is $\langle vt \rangle$ type. For a bare past tense structure, ***Ahmet düştü***, derivation clashes at TP level without Asp head.

(34) Ahmet düş-tü.
Ahmet fall-PST
"Ahmet fell."



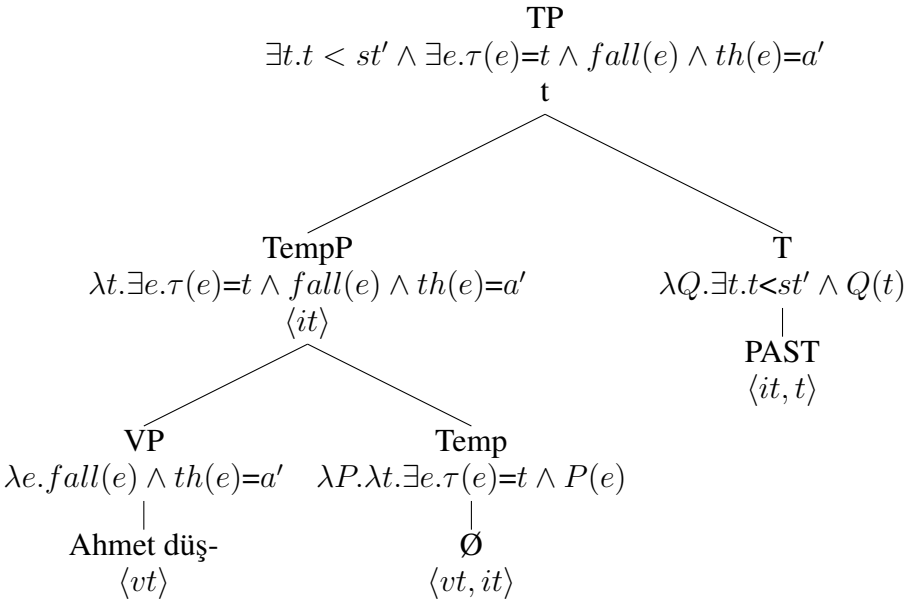
As a solution to this mismatch, D&S (2023) argue against treating Asp head as a function from a set of events to a set of times. Instead, they propose an intermediary syntactic head called TEMP (35). Temp head as a function of semantic type $\langle vt, it\rangle$, existentially binds the event argument and returns a set of times at which the event holds true. It leaves Asp head only with the task of situating ET relative to RT. For instance, *-mIş* that denotes anteriority, (36), takes a set of times, existentially binds ET, and returns a set of times that succeed it. In this way, type mismatch gets bypassed by construing both Asp head and T head as functions from sets of times.

(35) $[[\texttt{TEMP}]] = \lambda P.\lambda t.\exists e.\tau(e)=t \wedge P(e) :: \langle vt, it\rangle$

(36) $[[\texttt{ANT}]]_{\text{-mIş}} = \lambda Q.\lambda t_2.\exists t_1.t_1 < t_2 \wedge Q(t_1) :: \langle it, it\rangle$

Hence, the bare past sentence *Ahmet düştü* derives properly in (37).

(37) Ahmet düş-tü.
Ahmet fall-PST
"Ahmet fell."



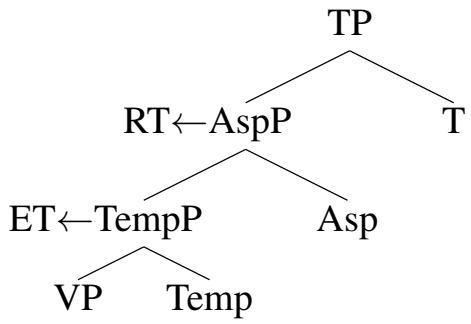
This move offers two obvious advantages besides solving the compositional problem. It (i) preserves appropriate Reichenbachian temporal orders by aligning ET, RT and ST, which can be represented as ET<RT<ST for past perfect tense and (ii) disambiguates the two readings where temporal adverbials specify ET and RT. Take for example, the past perfect sentence *Saat 3'te Ahmet odaya girmişti* 'Ahmet had entered the room at 3 o'clock.' below (38). It has two readings in one of which PP adjoins at TempP, which corresponds to ET-specifying interpretation, and in the other reading

PP adjoins at AspP level which corresponds to RT-specifying reading. In (38b), we give the readings with LFs. The corresponding PP landing sites are shown in (39).

(38) a. Ahmet saat 3'te oda-ya gir-miş-Ø-ti.
Ahmet hour 3-LOC room-DAT enter-ANT-COP-PST
"Ahmet had entered the room at 3 o'clock."

b. ET is 3 o'clock:
[$_{TP}$ [$_{AspP}$ [$_{TempP}$Saat 3'te[$_{TempP}$[$_{VP}$ Ahmet odaya gir-]]] -miş] -ti]
$\exists t_2.t_2 < st' \wedge \exists t_1.t_1 < t_2 \wedge \mathbf{t_1}$**=3** $\wedge \exists e.enter\ the\ room(e) \wedge ag(e)=a' \wedge \tau(e)=t_1$
RT is 3 o'clock:
[$_{TP}$ [$_{AspP}$ Saat 3'te[$_{AspP}$[$_{TempP}$[$_{VP}$ Ahmet odaya gir-]] -miş]] -ti]
$\exists t_2.t_2 < st' \wedge \mathbf{t_2}$**=3** $\wedge \exists t_1.t_1 < t_2 \wedge \exists e.enter\ the\ room(e) \wedge ag(e)=a' \wedge \tau(e)=t_1$

(39)



2.3.2 A discussion on compositionality problem

We call into question the necessity of an intermediate temporal projection level. D&S (2023) provide two pieces of evidence. They claim that (i) acceptability of some PPs as modifiers of ET but not as modifiers of RT suggests that there need to be a level of projection that denotes a set of times of the event denoted by VP, namely TempP and that (ii) without TempP, the modification of ET would not be possible. We will go over these two points.

One example concerns the behaviour of the temporal adverbial *saat 5'ten 6'ya kadar* 'from 5 to 6 o'clock'. Compare the two examples below:

(40) a. Saat 5'ten 6'ya kadar yüz-müş-Ø-tü.
hour 5-ABL 6-DAT until swim-ANT-COP-PST
"She had swum from 5 to 6 o'clock."

b. Saat 5 ile 6 arasında yüz-müş-Ø-tü.
hour 5 and 6 between swim-ANT-COP-PST
"She had swum between 5 and 6 o'clock."

It is possible that *saat 5 ile 6 arasında*, 'between 5 and 6 o'clock', to modify both ET and RT. On the other hand, it is not acceptable for the temporal adverbial *saat 5'ten 6'ya kadar* to modify RT. It can only modify ET. It is not clear why it would require another projection level. Its behaviour can be explained by its telic properties. It expects an atelic event and returns a telic event. Telicity is usually associated with quantization of the predicate (Krifka, 1998). (Non-)quantized predicates are generally characterised in terms of their sub-interval properties. Let us say, if an event predicate holds for all the proper parts of the event which it applies to, it is said that it is a non-quantized predicate. For instance, an event predicate *swim* is a non-quantized predicate. Because all its proper parts are also *swim* events. On the other hand, *swim a mile* is a quantized predicate. It is not true that all its proper parts are *swim a mile* events. In the same vein, *swim from 5 to 6 o'clock* is a quantized predicate. No proper part of the event satisfies the predicate *swim from 5 to 6 o'clock*. This observation by itself cannot account for the inability of this temporal adverbial to specify RT. Still, let us proceed with the assumption that the culmination point initiates a state. It is known that whether the subject is in control of the state or not plays an essential role in the interaction of some adverbials with states (Erguvanlı Taylan, 2002). Consider the examples below.

(41) a. Nazan iki hafta için burada / burada-y-dı.
Nazan two week for here / here-COP-PST
"Nazan is / was here for two weeks."
b. *Nazan iki hafta için hasta / hasta-y-dı.
Nazan two week for sick / sick-COP-PST
"Nazan is / was sick for two weeks."

(Erguvanlı Taylan, 2002)

(42) a. Saat 5'ten 6'ya kadar burada-y-ım / burada-y-dı-m.
hour 5-ABL 6-DAT until here-COP-1SG / here-COP-PST-1SG
"I am / was here from 5 to 6 o'clock."
b. Saat 5'ten 6'ya kadar *hasta-y-ım / hasta-y-dı-m.
hour 5-ABL 6-DAT until sick-COP-1SG / sick-COP-PST-1SG
"I *am / was sick from 5 to 6 o'clock."

In both cases in (41), the predicates denote states. But, whereas in (41a), the subject usually has control over the state of being here, in (41b), she usually has no control over the state of being sick. (42) exhibits a similar pattern. In addition to this, *saat 5'ten 6'ya kadar* requires that the state is situated in a closed interval, which leads to the unacceptability in (42b). Now, the state that is initiated by the culmination point seems to be never completely under control of the subject. There are always consequences that hold after the occurrence of the event. At the very least, a consequence arises simply from being a participant in the event. If one visits Berlin, she will always be someone who has visited Berlin thereafter. If one gets sick, she will always be someone who has been sick thereafter. The states that are initiated by the occurrence of an event are open ended, and cannot be presented within a closed time

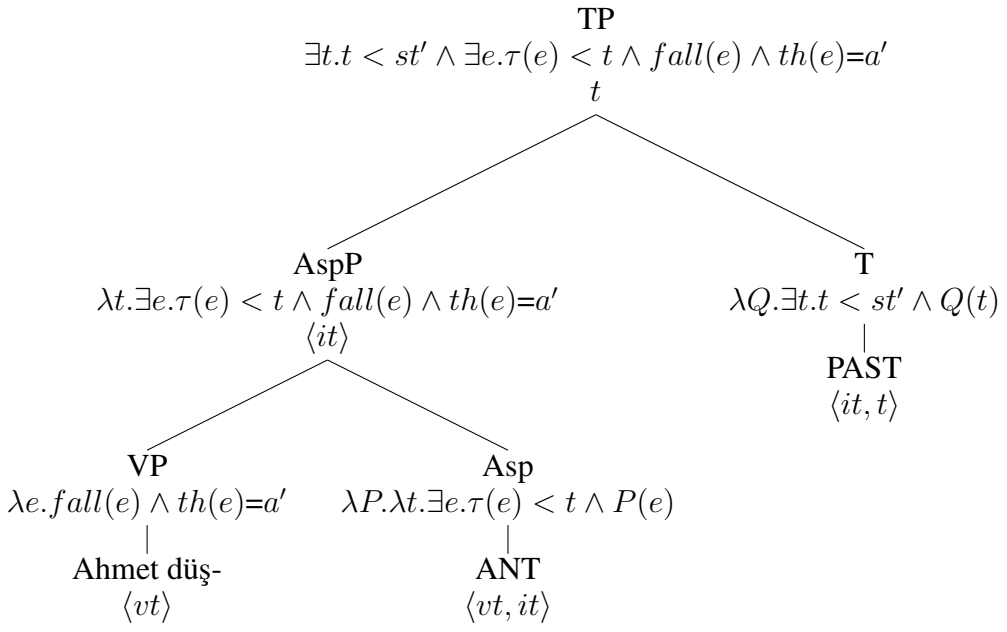
interval. But some states appear to be initiated purely by the will of the subject and cease by the will of the subject. Take for example;

(43) Saat 5'ten 6'ya kadar sen-i ara-yacak-Ø-tı-m ama sonra
hour 5-ABL 6-DAT until you-ACC call-FUT-COP-PST-1SG but then
iş-im çık-ınca vaz-geç-ti-m.
work-1SG.POSS come.up-CVB give.up-PST-1SG
"From 5 to 6 o'clock, I had been intending to call you but then I changed my mind when something came up."

Here, in one of the readings of (43) the temporal adverbial *saat 5'ten 6'ya kadar* does not specify ET, but RT. It denotes that the subject's intention of calling someone continued to be maintained from 5 to 6 o'clock. Whether the state can be presented within a closed time interval and whether the subject has control over the state seem to be important factors for this temporal adverbial's behaviour, and it seems to be at play in these cases.

We will leave this issue with these insights, and move on to the second point, which is the possibility of temporal adverbials adjoining at VP level. D&S (2023) posit TempP as a necessity for a temporal adverbial to modify ET. At the risk of being repetitive, we show a derivation without TempP below, reciting (33).

(44) Ahmet düş-müş-Ø-tü.
Ahmet fall-ANT-COP-PST
"Ahmet had fallen."



In (44), since Asp returns a set of times that follows ET, there is no level at which PP can modify ET. Here, D&S (2023) assume that at VP level the run-time of the event is not accessible. As they note, it is also a viable option to assume that the event's run-time is accessible at VP if it is assumed that the event representations are rich enough, which will be our assumption in Chapter 3.

In this section, we have discussed a previous compositional account for aspecto-temporal projections of finite verbal forms and participial verbal forms. D&S (2023) argue that there must be an intermediary projection level above VP, on the basis of the fact that some temporal adverbials, namely temporal adverbials like *saat 5'ten 6'ya kadar* 'from 5 to 6 o'clock', are unacceptable in the position that modifies RT. According to them, it indicates a projection level that denotes a set of run-times of the event denoted by the VP. We have argued against the requirement of an intermediary projection level. We have suggested that the unacceptability of such temporal adverbials in RT-specifying position might stem from their telic features and closedness of time interval, which can be ultimately expressed in terms of a semantic incompatibility between what the temporal adverbial denotes and what is projected at AspP. In the next chapter, we will present our proposal concerning the semantics of *-mIş*.

CHAPTER 3

PROPOSAL

We have discussed the perfect meaning of the participle *-mIş* in the previous chapter. In this chapter, we put forward our main claim that this suffix encodes the consequent state of the underlying event and propose a compositional account that is based on the quantificational event semantics (Champollion, 2015; Coppock & Champollion, 2024). Champollion (2015) proposes that verbs should be semantically treated as generalized existential quantifiers over events. The main motivation behind this representation of verbs in the lexicon is to keep the event quantifier at the lowest possible scope, and consequently, allow other quantifiers to take a wide-scope (Champollion, 2015). One advantage it offers is that the quantifying elements are interpretable in situ. Champollion (2015) leaves the event argument open for further predications via a continuation variable. For our purposes, the continuation variable allows us to access the event argument for aspectual coercion induced by aspectual marker without a concern about at which projection level the event argument should be existentially bound.

In the first section 3.1, we make some assumptions about the meaning of past tense marker *-DI*, which we will maintain throughout the chapter. In Section 3.2, we start off with a standard understanding of aspecto-temporal projections and discuss the semantic type of temporal adverbials. Section 3.3 entertains the idea that temporal adverbials are of type $\langle it, it \rangle$ within the compositional account proposed by D&S (2023), and we put forward issues of surface level composition concerning negation and *for*-adverbials. In Section 3.4, we introduce Champollion (2015)'s quantificational event semantics and integrate it to the standard schema of 3.2, leaving D&S (2023)'s outline. Then, we demonstrate that it fails to capture the most salient reading of past perfect sentences, namely resultative perfect reading. Section 3.5 focuses on conceptualising what is meant by consequent state following Moens & Steedman (1988), and adopts the idea that the perfect morphology coerces culminated events to consequent states. Finally, in Section 3.6, we formalise how the marker *-mIş* encodes consequent states and integrate it into our schema.

Ultimately, our strategy results in two eventuality layers, one at VP level, which corresponds to the underlying event, and one at AspP level, which corresponds to the consequent state. This gives us a more transparent way to combine temporal adverbials with eventualities while taking their internal constituency into consideration, while also staying faithful to the composition at the surface level structure.

3.1 Preliminaries

We will utilise a model-theoretic approach where truth of a sentence is evaluated within a model. It allows us to derive meanings of natural language expressions from the meanings of their parts. Our model-theoretic world will consist of eventualities, *e*, time intervals, and individuals. Eventualities will have the semantic type *v*, time intervals will have the semantic type *i*, and individuals will have the semantic type *e*.

1. Eventualities, $\{e_1, e_2, e_3...\}$, are of semantic type *v*
2. Time intervals, $\{t_1, t_2, t_3...\}$, are of semantic type *i*
3. Individuals, $\{x, y, z...\}$, are of semantic type *e*
4. Boolean values are of semantic type *t*
5. If α and β are semantic types, then $\langle \alpha, \beta \rangle$ is a semantic type.
6. Nothing else is a semantic type.

We will employ lambda calculus in order to define and combine the meanings of natural language expressions. As an illustration, in neo-Davidsonian event semantics, an intransitive verb would denote a semantic type of $\langle e, \langle v, t \rangle \rangle$. It takes an individual whose thematic relation is defined either in the denotation of the verb or by a separate syntactic head, and returns a $\langle v, t \rangle$ type expression. Take for example (1).

(1) a. [[`swim`]] = $\lambda x.\lambda e.swim(e) \wedge ag(e) = x :: \langle e, \langle v, t \rangle \rangle$
b. [[`john`]] = $john' :: e$
c. [[`john swim`]] = $\lambda e.swim(e) \wedge ag(e) = john' :: \langle v, t \rangle$

(1c) denotes swimming events whose agent is John. It corresponds to a set of events that satisfy the predicates *swim* and *its agent is John*. If the predicate holds true for an event, it returns true. We will mostly refrain from the compositional details of the inner VP structure of thematic relations between the individual(s) and the event, since our main topic is aspecto-temporal projections.

Before we dive into details of our proposal, we will establish some preliminary assumptions about past tense marker *-DI*. If there is no previously established time, out of the blue bare past tense expressions in discourse are semantically odd due to the definite character of past tense. The specification of the relevant time interval may come from context, discourse, or be introduced via time adverbials. If there are no implicit or explicit time adverbials, these expressions are usually interpreted as carrying a present perfect meaning in daily speech.

(2) a. Ahmet düş-tü.
Ahmet fall-PST
"Ahmet fell / has fallen."

b. Ahmet saat 3'te düş-tü.
Ahmet hour 3-LOC fall-PST
"Ahmet fell at 3 o'clock."

c. Ahmet dün saat 3'te düş-tü.
Ahmet yesterday hour 3-LOC fall-PST
"Ahmet fell at 3 o'clock yesterday."

There are no adverbial or TAM marker that coerces a present perfect reading. Some adverbials that express temporal proximity between the event and the speech time compel the hearer to interpret the utterance as present perfect as in (3).

(3) a. Ahmet şimdi düş-tü. ?(Ama şimdi ayakta, merak etme)
now fall-PST
"Ahmet fell just now. ?(But he's on his feet right now, don't worry)"

b. Ahmet demin düş-tü. (Ama şimdi ayakta, merak etme)
a.moment.ago fall-PST
"Ahmet fell a moment ago. (But he's on his feet right now, don't worry)"

c. Ahmet biraz önce düş-tü. (Ama şimdi ayakta, merak etme)
a.little before fall-PST
"Ahmet fell a little while ago. (But he's on his feet right now, don't worry)"

All of them can be followed by *Ama şu an ayakta, merak etme*, 'But he is on his feet right now, don't worry', and their present perfect interpretation can be cancelled. This cancellation has varying degrees of acceptability that changes with respect to the temporal proximity. However, without any adverbial, there are no signal other than context that compels the hearer to interpret bare past tense sentences as present perfect. Compare them, with the examples below that are constructed with the perfective/evidential marker *-mIş*.

(4) a. Ahmet düş-müş. Ama şu an ayakta, merak etme.
Ahmet fall-PERF/EVD
"(It is reported to me that) Ahmet fell / has fallen. But he is on his feet right now, don't worry."

b. Ahmet düş-müş. #Ama şu an ayakta merak etme.
Ahmet fall-PERF/EVD
"Ahmet has fallen (as I infer). #But he is on his feet right now, don't worry."

As we have discussed in Section 2.2, When *-mIş* denotes reportative evidentiality, it lacks any inherent aspectual meaning as in (4a). On the other hand, when *-mIş* is used to assert the current situation as in (4b), and carries a present perfect meaning, it cannot be cancelled.

As far as this work concerns, we will assume that the past tense marker *-DI* denotes past tense. Its present perfect interpretation generally comes from pragmatic principles and context, and in some cases, from adverbials such as (3). *-DI* denotes that the event time is located within a relevant past time which must not be confused with RT (reference time). We will denote the relevant time with t'_c as a free variable which either implicitly comes from discourse as in (5), or explicitly stated.

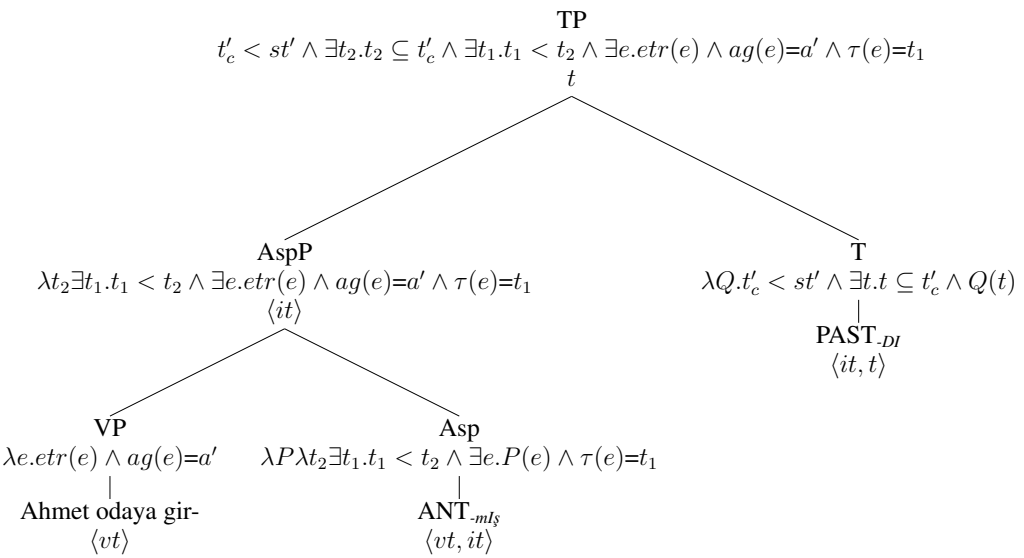
(5) A: Dün akşam kafede seni göremedim?
"Last night, I didn't see you at the café."
B: (Dün akşam) Voleybol maçını izledim.
"(Last night) I watched the volleyball match."

3.2 First Approximation

Anterior tense, in Reichenbachian terms, positions ET in the past relative to RT. Accordingly, Reichenbach (1947) calls the past perfect, *anterior past*. As a first approximation, let us assume *-mIş* encodes anterior tense. It takes a set of events, locates ET in the past relative to RT, and returns a set of times which act as RT in the interpretation.

(6) a. $[[\texttt{enter the room}]] = \lambda e.etr(e) :: \langle vt \rangle$
b. $[[\texttt{ANT}]]_{\textit{-mIş}} = \lambda P \lambda t_2 . \exists t_1 . t_1 < t_2 \wedge \exists e . P(e) \wedge \tau(e) = t_1 :: \langle vt, it \rangle$
c. $[[\texttt{PAST}]]_{\textit{-DI}} = \lambda Q . t'_c < st' \wedge \exists t . t \subseteq t'_c \wedge Q(t) :: \langle it, t \rangle$

(7) Ahmet oda-ya gir-miş-Ø-ti.
Ahmet room-DAT enter-ANT-COP-PST
"Ahmet had entered the room."



LF in (7) captures the temporal relations between ET, RT and ST for the expression *Ahmet odaya girmişti*. It reads as 'there is a time interval t_2 such that t_2 is included in t'_c which precedes the speech time, st', and there is a time interval t_1 such that t_1 precedes t_2, and t_1 is the run time of an *enter the room* event whose agent is Ahmet'. Informally, it expresses that there is a time interval, t_2, within the past relevant time, and this time interval succeeds the event's run-time. Asp head existentially binds the event argument e and ET. Then it returns a set of times that succeed ET. In our case above, it ultimately locates ET in the past relative to RT. The final LF expresses the temporal order ET<RT<ST. Note that ET's relation to t'_c is under-specified. This is a desired result, since what is asserted is that the time interval which succeeds ET is included in t'_c, not that ET is included in t'_c.

(8) Dün Ahmet oda-ya gir-miş-Ø-ti.
yesterday Ahmet room-DAT enter-ANT-COP-PST
"Yesterday, Ahmet had entered the room."
$y' < st' \wedge \exists t_2.t_2 \subseteq y' \wedge \exists t_1.t_1 < t_2 \wedge \exists e.etr(e) \wedge ag(e)=a' \wedge \tau(e)=t_1$

The indexical time, *yesterday*, can be construed as a function that takes the speech time and gives a time interval accordingly. However, for our purposes, we denote it with the constant *y'* above. The event's run-time does not need to be within yesterday for the LF in (8) to be true. In fact, t_2 can fill the whole time interval that y' denotes. Truth-conditions capture this intuition.

We can add temporal adverbials into the equation now. Since the underlying eventuality, *enter the room*, is an achievement, we can expect it to combine with a punctual locative temporal adverbial with ease, namely *at 3 o'clock*.

(9) a. Ahmet saat 3'te oda-ya gir-miş-Ø-ti.
Ahmet hour 3-LOC room-DAT enter-ANT-COP-PST
"Ahmet had entered the room at 3 o'clock."
b. ET (t_1) is 3 o'clock:
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge \exists t_1.t_1 < t_2 \wedge \mathbf{t_1{=}3} \wedge t_1 \subseteq t'_c \wedge \exists e.etr(e) \wedge ag(e)=a' \wedge \tau(e)=t_1$
RT (t_2) is 3 o'clock:
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge \mathbf{t_2{=}3} \wedge \exists t_1.t_1 < t_2 \wedge \exists e.etr(e) \wedge ag(e)=a' \wedge \tau(e)=t_1$

(9a) has two readings whose LFs are given in (9b). In one reading, *at 3 o'clock* specifies the event's run-time, ET, whereas in the other it specifies RT. In the ET-specifying interpretation in (9b), we include in its denotation that the time point *3 o'clock* is also included in t'_c, since it is a fixed time point within t'_c.

Now, it brings about a problem concerning the semantic type of temporal adverbials. If a temporal adverbial *at 3 o'clock* modifies ET at VP level and returns a set of events that are *enter the room* events which occur at 3 o'clock and whose agent is Ahmet, we need to assume that it is of a semantic type $\langle vt, vt \rangle$. However, it is admissible for the same temporal adverbial to modify RT which must adjoin at AspP level. This leaves us two options. One option is to conclude that these temporal adverbials are

lexically distinct adverbials with different semantic types; one is an ET-modifying adverbial whose semantic type is $\langle vt, vt\rangle$, as in (10a), and the other is an RT-modifying adverbial, whose semantic type is $\langle it, it\rangle$ as in (10b).

(10) a. $[[\texttt{at 3 o'clock}]] = \lambda P \lambda e.\exists t.t{=}3 \wedge t \subseteq t'_c \wedge P(e) \wedge \tau(e){=}t :: \langle vt, vt\rangle$
b. $[[\texttt{at 3 o'clock}]] = \lambda Q \lambda t.t{=}3 \wedge Q(t) :: \langle it, it\rangle$

However, there is no need for an analysis for this supposed ambiguity between semantic types for there is no much support for this analysis. It is true that some expressions with certain temporal adverbials resist certain interpretations. In some cases, temporal adverbials can only be interpreted as modifying ET or RT, whereas in others one reading is more salient than the other.

(11) a. Ahmet saat 3'te mektub-u yaz-mış-Ø-tı.
Ahmet hour 3-LOC letter-ACC write-ANT-COP-PST
"Ahmet had written the letter at 3 o'clock."
b. Ahmet saat 3'ten 5'e kadar koş-muş-Ø-tu.
Ahmet hour 3-ABL 5-DAT until run-ANT-COP-PST
"Ahmet had run from 3 to 5 o'clock."

The prominent reading of (11a) is that Ahmet had finished the writing at a time before RT which is 3 o'clock. Another reading is that the culmination point of the accomplishment is at 3 o'clock which is ET. In this reading, the underlying eventuality must be coerced into an achievement first in order to agree with the punctual feature of temporal adverbial. (11b), on the other hand, concerns a durative temporal adverbial which easily modifies the activity verb *run*. However, the reading in which the durative adverbial modifies RT seems inaccessible, or marked at best. In these cases, it is more plausible to argue that this is due to the conflicting features of temporal adverbial and Aktionsart of the underlying eventuality, rather than to argue that there are two kinds of temporal adverbials with different semantic types. The same temporal adverbials may modify ET or RT without any issue when we take other Aktionsarten into consideration as shown below.

(12) a. Ahmet saat 3'te kapı-yı çal-mış-Ø-tı.
Ahmet hour 3-LOC door-ACC knock-ANT-COP-PST
"Ahmet had knocked on the door at 3 o'clock."
b. #?Ahmet saat 3'ten 5'e kadar yarış-ı kazan-mış-Ø-tı. (Saat
Ahmet hour 3-ABL 5-DAT until race-ACC win-ANT-COP-PST
5'te diskalifiye edildi.)
"Ahmet had won the race from 3 to 5 o'clock. (He got disqualified at 5 o'clock.)"

(12a) happily allows for both ET and RT readings, since the event is already a punctual event. In (12b), temporal adverbial cannot be felicitously interpreted as modify-

ing the underlying achievement's run time. Its RT-specifying reading is marginally acceptable, with the right intonation, in a context where the situation can be presented within a closed time interval. We conclude that the availability of ET-reading or RT-reading is a matter of the compatibility between the features of temporal adverbials and Aktionsarten, and not an issue of semantic type differences between temporal adverbials. Punctual temporal adverbials such as *at 3 o'clock* or *at that moment*, and inclusive temporal adverbials such as *saat 10 ile 11 arasında* can easily modify RT due to what is denoted by AspP and what is denoted by temporal adverbials.

Since we have excluded that the idea temporal adverbials have different semantic types varying with respect to the level they can adjoin to the derivation, we can consider what semantic types temporal adverbials are. In the next section, we will return to D&S (2023)'s proposal and consider that temporal adverbials as $\langle it, it\rangle$ types.

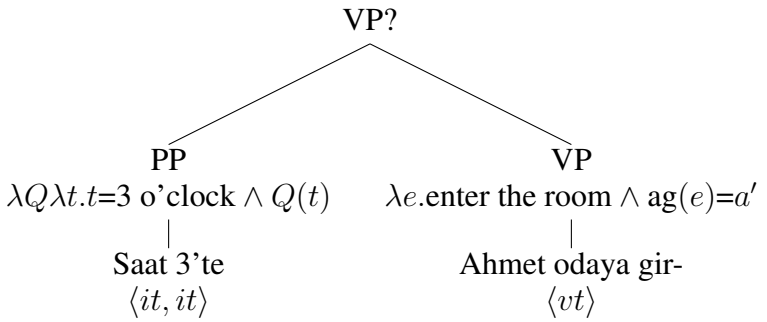
3.3 Sets of Times and Sets of Events

Let us assume, for now, temporal adverbials denote modifiers of sets of times. For instance, *at 3 o'clock* takes a time predicate and returns a set of times that are 3 o'clock in addition to the content that is denoted by its first argument. It is given in (13).

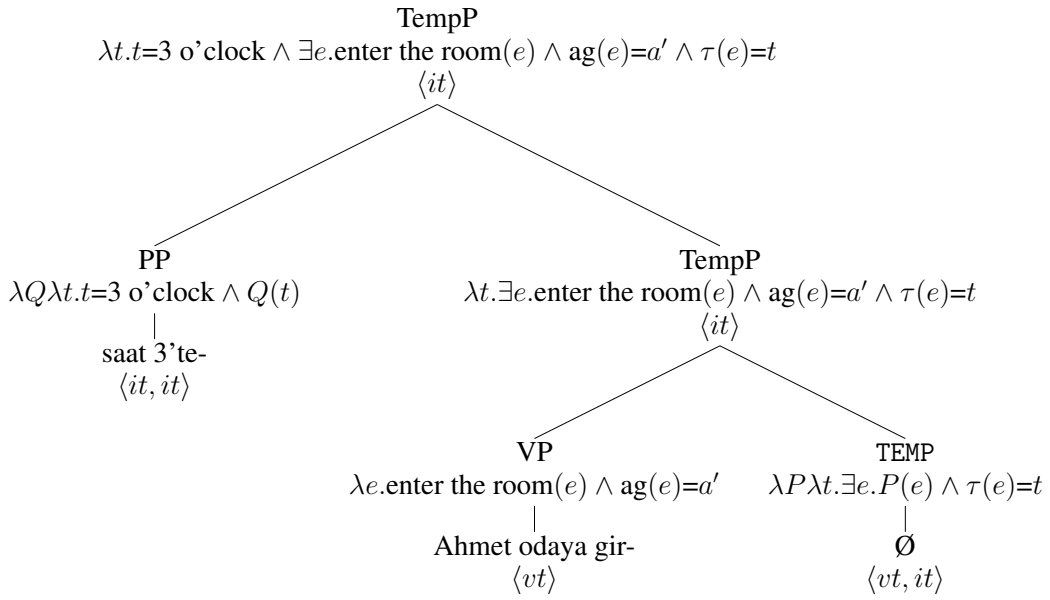
(13) $[[\texttt{at 3 o'clock}]] = \lambda Q \lambda t.t$=3 o'clock $\wedge\, Q(t) :: \langle it, it\rangle$

Our question is how we can combine VPs of a semantic type $\langle vt\rangle$ with a temporal adverbial that will modify ET. We show this semantic mismatch in (14). One possible solution is to introduce a level that projects a set of times denoting ET, thereby satisfying the semantic requirements of the PP, *at 3 o'clock*. This is how D&S (2023)'s account solves this issue. They propose positing an intermediary projection level above VP which denotes a set of times acting as ET. A syntactic head TEMP binds the event argument *e*, extracts and projects ET as in (15), consequently provides a level for (13) to modify ET.

(14)



(15)



This allows for a straightforward structure to disambiguate the two readings of (9a), repeated below in (16). If PP adjoins at TempP, it derives ET-modifying reading, and if PP adjoins at AspP, the result is RT-modifying reading.

(16) a. Ahmet saat 3'te oda-ya gir-miş-Ø-ti
Ahmet hour 3-LOC room-DAT enter-PERF-COP-PST
"Ahmet had entered the room at 3 o'clock."

b. ET (t_1) is 3 o'clock:
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge \exists t_1.t_1 < t_2 \wedge \mathbf{t_1{=}3} \wedge t_1 \subseteq t'_c \wedge \exists e.etr(e) \wedge ag(e){=}a' \wedge \tau(e){=}t_1$
RT (t_2) is 3 o'clock:
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge \mathbf{t_2{=}3} \wedge \exists t_1.t_1 < t_2 \wedge \exists e.etr(e) \wedge ag(e){=}a' \wedge \tau(e){=}t_1$

However, we will point out a crucial issue, which we will have to face sooner or later, concerning negation scope and negation's position on the surface level. In Turkish, there are two negation positions. One is negation particle *değil* that occurs with non-verbal predicates such as *be sick* in (17a), and the other is the negation suffix *-mA* which attaches to verbs in (17b). The participial verbal forms, on the other hand, can take double negation as in (17c). These are shown with their surface level structures below. The double negated sentence (17c) is semantically equivalent to its non-negated counterpart *Ahmet okula gitmişti*.

(17) a. Ahmet hasta Ø değil-di.
Ahmet sick COP not-PST
"Ahmet was not sick."
[$_{\texttt{TP}}$ [$_{\texttt{NegP}}$[$_{\texttt{CopP}}$ Ahmet hasta Ø] değil] -di]

b. Ahmet okul-a git-me-di.
Ahmet school-DAT go-NEG-PST

"Ahmet did not go to school."
[$_{\text{TP}}$ [$_{\text{NegP}}$[$_{\text{VP}}$ Ahmet okula git] me] -di]

c. Ahmet okul-a git-me-miş Ø değil-di
Ahmet school-DAT go-NEG-ANT COP not-PST
"It was not the case that Ahmet had not gone to school."
[$_{\text{TP}}$ [$_{\text{NegP}}$[$_{\text{CopP}}$[$_{\text{AspP}}$[$_{\text{NegP}}$[$_{\text{VP}}$ Ahmet okula git] -me] -miş] Ø] değil] -di]

With our assumption that temporal adverbials are of semantic type $\langle it, it\rangle$, all projections above VP up to TP are $\langle it\rangle$ type. Remember that, as we mention in 2.3, as a result of positing TempP, Aspect head must be construed as of semantic type $\langle it, it\rangle$ (Demirok & Sağ, 2023). We repeat the lexical item for anteriority denoting *-mIş* as construed as of type $\langle it, it\rangle$ below (18). We can assume that the negation needs to be $\langle it, it\rangle$ as well.

(18) $[[\texttt{ANT}]]_{\text{-mIş}} = \lambda Q.\lambda t_2.\exists t_1.t_1 < t_2 \wedge Q(t_1) :: \langle it, it\rangle$

(19) $[[\texttt{NEG}]] = \lambda Q\lambda t.\neg Q(t) :: \langle it, it\rangle$

With these in mind, consider the logical formula that is derived for (17c) below.

(20) Ahmet okula git-me-miş Ø değil-di.
[$_{\text{TP}}$ [$_{\text{NegP}}$[$_{\text{CopP}}$[$_{\text{AspP}}$[$_{\text{NegP}}$[$_{\text{TempP}}$[$_{\text{VP}}$ Ahmet okula git] TEMP]-me] -miş] Ø] değil] -di]
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge \neg\exists t_1.t_1 < t_2 \wedge \neg\exists e.go\ to\ school \wedge ag(e)=a' \wedge \tau(e)=t_1$

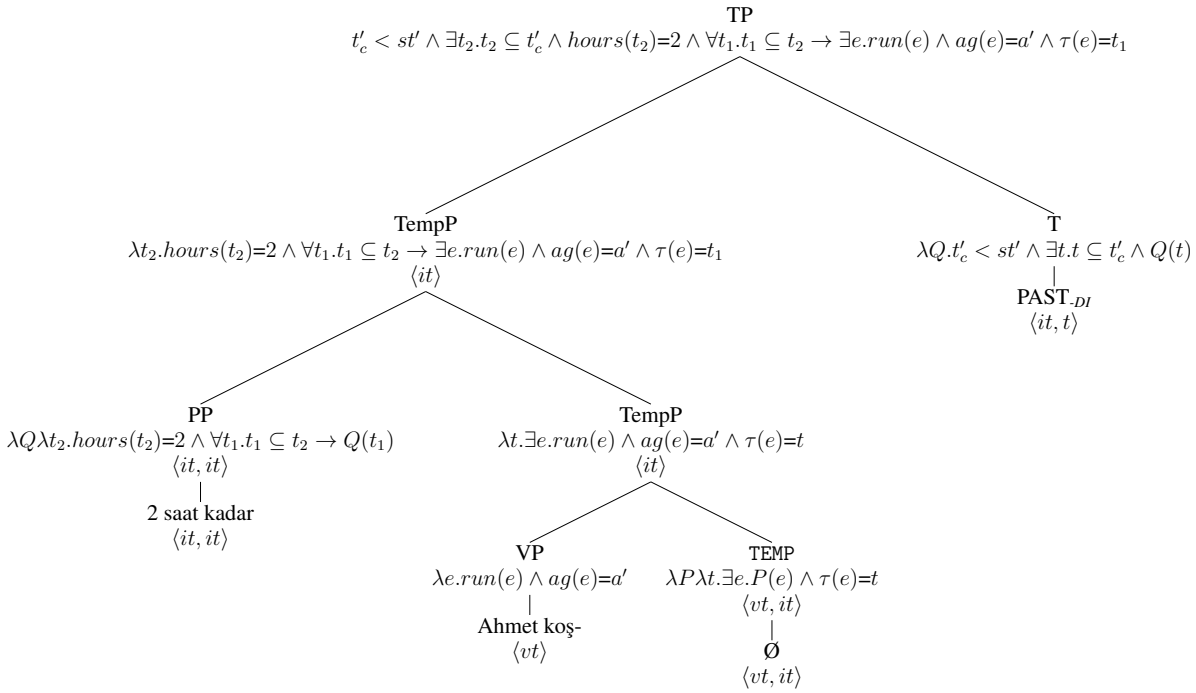
It denotes that there is no time, t_1, such that t_1 precedes t_2 and there is no *go to school* event whose run-time is t_1. It can be reformulated as, for any time that precedes RT, there is a *go to school* event whose agent is Ahmet. This is an unintended reading. It expresses false truth-conditions in double negated expressions. This is a direct result of construing anterior aspect as of a type $\langle it, it\rangle$. Since the predicate that denotes the anteriority relation is above the scope of the event quantifier, the higher negation —*değil*— negates this relation. On the other hand, it is not the case in the standard construal where Aspect is of type $\langle vt, it\rangle$ where this relation is denoted under the scope of event quantifier.

We will discuss a similar problem about the scope of negation, this time about the possible levels at which negation can operate over. Following the idea that temporal adverbials are of semantic type $\langle it, it\rangle$, we can construe a lexical entry for *for*-adverbials. *For*-adverbials select eventualities with sub-interval properties such as activities or states (Dowty, 1979). If a predicate holds for a time interval t, then the same predicate holds for sub-intervals of t as well. Accomplishments, achievements and semelfactives cannot co-occur with *for*-adverbials unless coerced into other types. *For*-adverbial universally quantifies over a time interval and denotes that at any sub-interval the relevant predicate holds. We devise *for*-adverbial as a function that expects a predicate of times and returns a set of times, hence it modifies ET at TempP.

(21) [[for 2 hours]] =
$\lambda Q \lambda t_2.hours(t_2)$=2 $\wedge \forall t_1.t_1 \subseteq t_2 \rightarrow Q(t_1) :: \langle it, it \rangle$

(21) returns a set of 2-hour time intervals, for all subintervals of which, the time predicate it takes as an argument holds. Consider the example below.

(22) Ahmet iki saat kadar koş-tu.
Ahmet two hour for run-PST
"Ahmet ran for two hours."



The final LF in (22) expresses right truth conditions for *Ahmet iki saat kadar koştu*.

(23) Ahmet iki saat kadar koş-tu.
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge hours(t_2)$=2 $\wedge \forall t_1.t_1 \subseteq t_2 \rightarrow \exists e.run(e) \wedge ag(e)$=$a' \wedge \tau(e)$=$t_1$
"There exists a time interval t_2 within past t'_c such that t_2 is 2 hours, and for all time intervals t_1, if t_1 is a sub-interval of t_2 then there exists a *run* event whose agent is Ahmet and whose run time is t_1."

In short, for all the sub-intervals t_1 of 2-hour time interval t_2, there exists a *run* event whose agent is Ahmet and whose run-time is t_1. However, when the negation is of concern it fails to give one of the available readings of the expression in (24).

(24) Ahmet iki saat kadar koş-ma-dı.
run-NEG-PST
"Ahmet did not run for two hours."

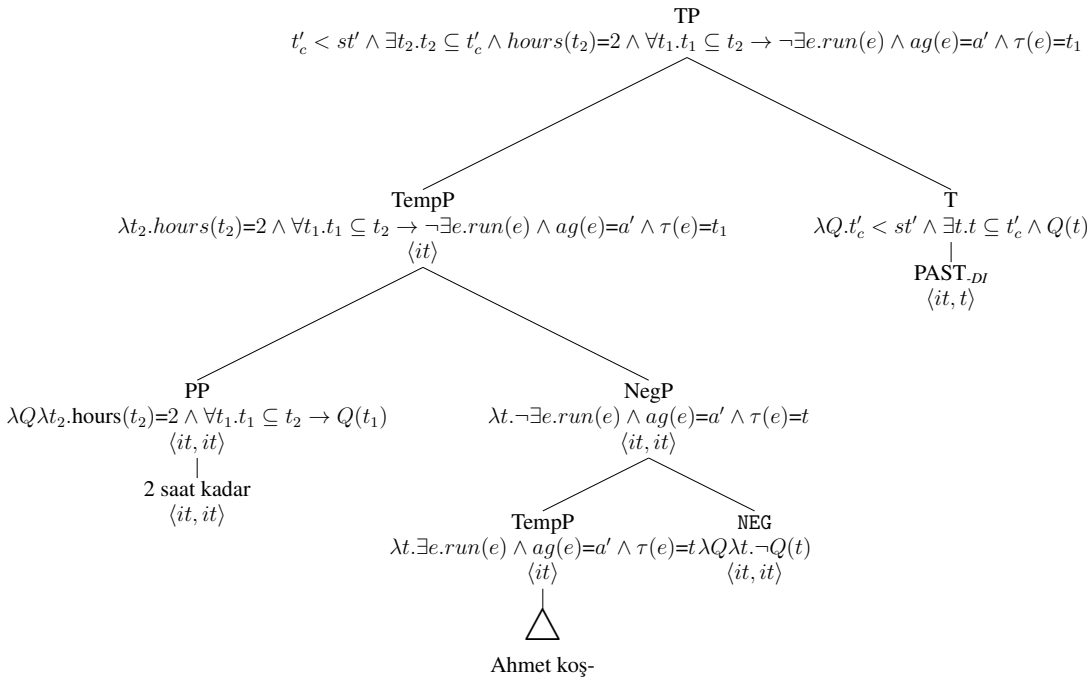
a. For two hours, Ahmet did not run.
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge hours(t_2)=2 \wedge \forall t_1.t_1 \subseteq t_2 \rightarrow \neg\exists e.run(e) \wedge ag(e)=a' \wedge \tau(e)=t_1$

b. It was not the case that Ahmet ran for two hours.
$t'_c < st' \wedge \neg\exists t_2.t_2 \subseteq t'_c \wedge hours(t_2)=2 \wedge \forall t_1.t_1 \subseteq t_2 \rightarrow \exists e.run(e) \wedge ag(e)=a' \wedge \tau(e)=t_1$

In one reading (24a), for the whole 2-hour interval there is no *run* event whose agent is Ahmet. In the other reading (24b), there is no *run* event whose run time is a 2-hour interval within the relevant time frame. Any other *run* event whose run time falls short of 2 hours is compatible with the proposition expressed. There are two possible landing sites for negation. One is TempP before PP adjoins and the other is after PP adjoins.

(25) $[[\texttt{NEG}]] = \lambda Q \lambda t.\neg Q(t)$

(26) Ahmet iki saat kadar koş-ma-dı.
run-NEG-PST
"Ahmet did not run for two hours."



Although, (26) gives the right truth-conditions for the reading in (24a), the second reading cannot be captured when PP adjoins before negation:

(27) [$_{TP}$ [$_{NegP}$ [$_{TempP}$ 2 saat kadar [$_{TempP}$ [$_{VP}$ Ahmet koş]]] -ma] -dı]
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge \neg[hours(t_2)\text{=}2 \wedge \forall t_1.t_1 \subseteq t_2 \rightarrow \exists e.run(e) \wedge ag(e)\text{=}a' \wedge \tau(e)\text{=}t_1]$

(27) expresses that there is a time interval t_2 that is included in the past relevant time, and it is not true that t_2 is a 2-hour interval and for all time intervals t_1, such that if t_1 is a sub-interval of t_2, then there is a *run* event whose agent is Ahmet and whose run-time is t_1. The truth-conditions do not reflect what is meant by this second reading. LF in (27) is true as long as there is a time interval that satisfies the negated predicates. Any time interval that is not a 2-hour interval for which Ahmet ran, makes it true.

This discrepancy is not observed when AspP is present, since Asp head functions as existential closure over ET. One option is to move NEG to TP, and apply it as a sentential negation, however at the surface level it appears under TP.

In this section, we have considered temporal adverbials as $\langle it, it\rangle$ types and come across unintended interpretations in double negated expressions. We have discussed scope issues concerning negation and temporal adverbials. In the next section, in order to deal with the interactions of the scope-taking expressions at the surface level, we will adopt the quantificational event semantics of Champollion (2015), and introduce verbs as generalized existential quantifiers over events.

3.4 Second Approximation

The verb representations as sets of event predicates that can be true of that event has been proposed by Champollion (2015). The innovation of his proposal is to include a continuation variable *f* in all verbal projections and all quantifying expressions that can contribute to the meaning of the event. Hence, it can be said that *f* represents the future predications on the event. We will not delve into issues concerning thematic roles and their compositions in this work. Instead we will take VPs as saturated by thematic roles. Champollion (2015) argues for verb representations where the event argument is existentially quantified in the lexical entry. The main motivation behind it is to keep the event quantifier at the lowest possible scope, and consequently, allow other quantifiers to take wide-scope.

(28) $[[\texttt{run}]] = \lambda f.\exists e.run(e) \wedge f(e) :: \langle vt, t\rangle$

(28) denotes a set of event predicates, and variable *f* keeps the expression open for further event predications. Accordingly, we re-construe our temporal adverbials as functions from sets of event predicates to sets of event predicates, $\langle\langle vt, t\rangle, \langle vt, t\rangle\rangle$, and anterior aspect head *-mIş* as a function from a set of event predicates to set of times, $\langle\langle vt, t\rangle, \langle it\rangle\rangle$ in (30). We will denote $\langle vt, t\rangle$ type with the variable *V*. The renewed definition of temporal adverbial, *at 3 o'clock*, in (13) is given below in (29). We need two entries for the same adverbial, since one adjoins at VP which is $\langle vt, t\rangle$

and the other adjoins at AspP which is $\langle it \rangle$. We will also need two entries for past tense *-DI*, since our VPs are of semantic type $\langle vt, t \rangle$.

(29) a. $[[\texttt{at 3 o'clock}]] = \lambda Q \lambda t.t{=}3 \wedge Q(t) :: \langle it, it \rangle$
b. $[[\texttt{at 3 o'clock}_v]] = \lambda V \lambda f. \exists t.t{=}3 \wedge t \subseteq t'_c \wedge V(\lambda e.\tau(e){=}t \wedge f(e)) :: \langle \langle vt, t \rangle, \langle vt, t \rangle \rangle$

(30) $[[\texttt{ANT}]]_{\text{-mIş}} = \lambda V \lambda t.V(\lambda e.\tau(e) < t) :: \langle \langle vt, t \rangle, \langle it \rangle \rangle$

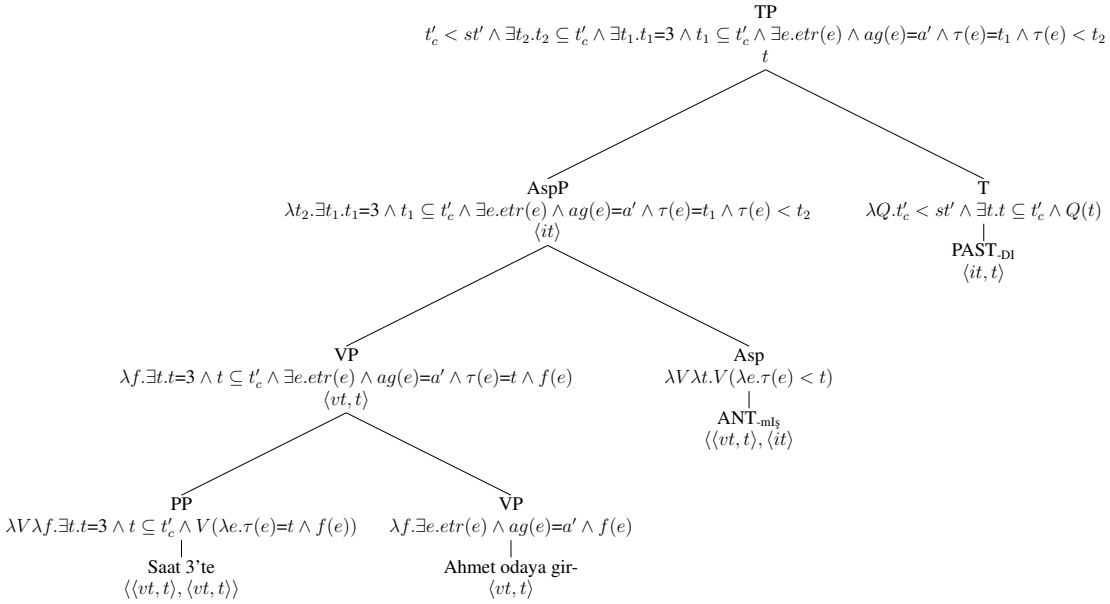
(31) a. $[[\texttt{PAST}]]_{\text{-DI}} = \lambda Q.t'_c < st' \wedge \exists t.t \subseteq t'_c \wedge Q(t) :: \langle it, t \rangle$
b. $[[\texttt{PAST}_v]]_{\text{-DI}} = \lambda V.t'_c < st' \wedge V(\lambda e.\tau(e) \subseteq t'_c) :: \langle \langle vt, t \rangle, t \rangle$

Let us reconsider (16), repeated in (32), with our updated lexicon.

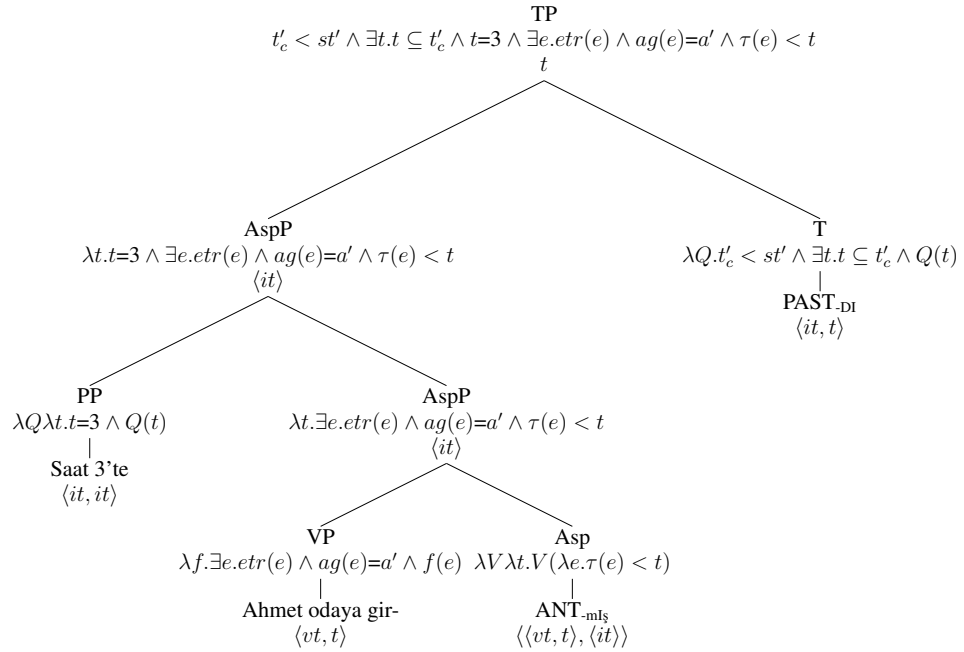
(32) a. Ahmet saat 3'te oda-ya gir-miş-Ø-ti
Ahmet hour 3-LOC room-DAT enter-ANT-COP-PST
"Ahmet had entered the room at 3 o'clock."
b. ET (t_1) is 3 o'clock:
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge \exists t_1.t_1 < t_2 \wedge \mathbf{t_1{=}3} \wedge t_1 \subseteq t'_c \wedge \exists e.etr(e) \wedge ag(e){=}a' \wedge \tau(e){=}t_1$
RT (t_2) is 3 o'clock:
$t'_c < st' \wedge \exists t_2.t_2 \subseteq t'_c \wedge \mathbf{t_2{=}3} \wedge \exists t_1.t_1 < t_2 \wedge \exists e.etr(e) \wedge ag(e){=}a' \wedge \tau(e){=}t_1$

Let us remind that there are two readings of (32). In one, *at 3 o'clock* denotes the event's run-time, and in the other, it denotes the reference time. Below we give derivations for both according to our updated lexicon, respectively.

(33) Saat 3'te Ahmet oda-ya gir-miş-Ø-ti. (ET=3 o'clock)
"Ahmet had entered the room at 3 o'clock."



(34) Saat 3'te Ahmet oda-ya gir-miş-Ø-ti. (RT=3 o'clock)
"At 3 o'clock, Ahmet had entered the room."



This captures the general meaning of the past-in-past meaning that is expressed by the complex tense *-mIşDI*. This approach has two advantages. Firstly, since we construe verbs as set of event predicates, we can avoid having recourse to an intermediary projection level that denotes set of event times. Secondly, we can rely on that scope-taking elements can adjoin the derivation as they appear at the surface level. For instance consider the double negated example (20) repeated below. The verbal nega-

tion *-mA* adjoins at VP, and negation particle *değil* adjoins at AspP. Note that LF in (36) is equivalent to its affirmative counterpart.

(35) a. $[[\texttt{NEG}_{\text{değil}}]] = \lambda Q \lambda t. \neg Q(t)$
b. $[[\texttt{NEG}_{\text{-mA}}]] = \lambda V \lambda f. \neg V(f)$

(36) Ahmet okul-a git-me-miş Ø değil-di.
Ahmet school-DAT go-NEG-ANT COP not-PST
"It was not the case that Ahmet had not gone to school."
[$_{\texttt{TP}}$ [$_{\texttt{NegP}}$[$_{\texttt{AspP}}$[$_{\texttt{NegP}}$[$_{\texttt{VP}}$ Ahmet okula git] -me] -miş] değil] -di]
$t'_c < st' \wedge \exists t.t \subseteq t'_c \wedge \neg\neg \exists e.go\ to\ school(e) \wedge ag(e)$=$a' \wedge \tau(e) < t$

Although it captures the past-in-past meaning whose Reichenbachian relations can be represented as ET<RT<ST, is it faithful to the semantics of *-mIş*? We have discussed the resultative perfect meaning of *-mIş* in Section 2.2. The resultative perfect requires that the results of the underlying eventuality holds at RT. In a case like (37), it is unclear whether this meaning is properly captured.

(37) a. Ahmet saat 3'te oda-ya gir-di.
Ahmet hour 3-LOC room-DAT enter-PST
"Ahmet entered the room at 3 o'clock."
b. Ahmet saat 4'te oda-dan çık-tı.
Ahmet hour 4-LOC room-ABL exit-PST
"Ahmet left the room at 4 o'clock."
c. Ahmet saat 5'te oda-ya gir-miş-Ø-ti.
Ahmet hour 5-LOC room-DAT enter-ANT-COP-PST
"Ahmet had entered the room at 5 o'clock." (RT=5 o'clock)
$t'_c < st' \wedge \exists t'.t' \subseteq t'_c \wedge t'$=5 $\wedge \exists e.etr(e) \wedge ag(e)$=$a' \wedge \tau(e)$<$t'$

On the assumption that the narrative that (37a) and (37b) present is true, we have a reluctance to assert (37c). In its experiential perfect interpretation in which the meaning is that Ahmet had the experience of having entered the room, LF in (37c) represents the right truth-conditions. It denotes that at 5 o'clock, there exists at least one *enter the room* event whose agent is Ahmet and its run-time precedes 5 o'clock. On the other hand, in its resultative perfect reading where it is required that its results hold at RT, LF in (37c) fails to capture this meaning. (37c) is true as long as ET precedes RT, even if Ahmet is not in the room at 5 o'clock. In the examples below this difference between the meaning of resultative perfect and experiential perfect is clearer:

(38) a. Ahmet ev-e dön-düğünde, Fatma ev-den
Ahmet house-DAT return-CVB Fatma house-ABL
ayrıl-mış-Ø-tı.
leave-ANT-COP-PST

"When Ahmet returned home, Fatma had left home."

b. Ahmet iş-e başvur-duğunda, Çin'e git-miş-Ø-ti.
Ahmet job-DAT apply-CVB China-DAT go-ANT-COP-PST
"When Ahmet applied for the job, he had gone to China/he's been to China."

(38a)'s the most prominent reading is resultative. It expresses that the leaving event of Fatma, e_1, precedes Ahmet's return, e_2, and the results of e_1 holds at the time of e_2. In a context where Fatma had left home but had already returned when Ahmet arrived, it seems that it cannot be felicitously uttered. It lacks an experiential interpretation or if there is one, it is too weak and requires too much contextual support. (38b) is ambiguous equally between resultative and experiential readings. In its resultative meaning, when the application took place Ahmet was in China, whereas in experiential reading, when the application took place Ahmet had the experience of going to China. The essential difference is that in the resultative perfect, the main event's results hold at the time of the subordinate event. In experiential perfect, it seems that there is no such requirement. However, the experiential perfect expresses a state that is attributed to the experiencer. Having visited China or having climbed Mt. Everest are properties that are obtained just by doing them. Smith (1997) calls this property *participant property*:

> Present Perfect sentences ascribe to their subjects a property that results from their participation in the prior situation. If at some time Henry has laughed, danced, built a sandcastle, the property of having done these things is asserted of Henry. I will call this the 'participant property'. The participant property holds whether or not the situation is of the sort that has an enduring result.
> .
>
> (p. 107)

She remarks that *Henry has been fired* expresses not only the event's occurrence, but also it ascribes to Henry the property of having been fired. The experiential perfect readings can be associated with such properties. Furthermore, she draws attention to a pragmatic felicity condition. According to which, the person to whom the property is ascribed must be in a position to hold that property. *Einstein has lived in Princeton* is felicitous as long as it is uttered when Einstein is alive, otherwise it is odd. A similar occurrence of infelicitous use can be observed in past perfect Turkish sentences such as *Atatürk Paris'i ziyaret etmişti.* "Atatürk had visited Paris". Considering that he was not alive in 1940, the sentence *1940'ta, Atatürk Paris'i ziyaret etmişti* is infelicitous as long as the topic of the sentence is Atatürk.

Here, we adapt an example that we have discussed in Section 2.2 in relation to resultative perfect, which we re-adapt from Arslan-Kechriotis (2006)'s adaptation of the example given by G&P (1997). Note that we use (31b) for the past tense marker *-DI* in the derivation of (39a) below.

(39) a. Cuma gün-ü Ayşe yarış-ı kazan-dı.
Friday day-POSS Ayşe race-ACC win-PST

"On Friday, Ayşe won the race."
$friday' < st' \wedge \exists e.win\ the\ race(e) \wedge ag(e)$=$a' \wedge \tau(e) \subseteq friday'$

b. Cumartesi gün-ü diskalifiye ol-du.
Saturday day-POSS disqualified become-PST
"On Saturday, she got disqualified."

c. #Pazar gün-ü yarış-ı kazan-mış-Ø-tı.
Sunday day-POSS race-ACC win-ANT-COP-PST
"On Sunday, she had won the race."
$sunday' < st' \wedge \exists t.t \subseteq sunday' \wedge \exists e.win\ the\ race(e) \wedge ag(e)$=$a' \wedge \tau(e) < t$

Given (39a) and (39b), one could not utter (39c) truly, hence it must come out as false. Because, as far as Sunday concerns, Ayşe had not won the race. However, as we can see in (39c), LF is true. It denotes that there is a time interval that is included in Sunday, and the run-time of *win the race* event whose agent is Ayşe precedes this time. Currently, we cannot account for the the fact that the results of an event must hold at RT. In the next section, we will look into how we can capture that relation between the event and its consequences.

3.5 What is a Consequent State?

We have mentioned briefly in Chapter 1 that the events have subeventive structures and can be represented by an event nucleus. Events can be coerced into other types of events either by composing or decomposing (Moens & Steedman, 1988). Composing is the creation of new event nuclei from the event's Aktionsart, and decomposing allows to extract the parts of an event nuclei, and possibly create new nuclei from them. These coercions can be induced by TAM markers, temporal adverbials, or other contextual means. It is a well-known fact that *for*-adverbials and *in*-adverbials can combine with different Aktionsarten. Whereas *for*-adverbials expect activities, *in*-adverbials require the event to be an achievement. Otherwise, they result with semantically odd expressions.

(40) a. John ran for 3 hours.
b. #John arrived at the station for 3 hours.
c. #John ran in 3 hours.
d. John arrived at the station in 3 hours.

(40b) and (40c) are admissible as long there is a context in which the underlying event can be coerced into the required Aktionsart. For instance, (40c) is only felicitous when the event *run* is understood as an achievement in itself. World knowledge about events in question plays a role in these decisions, however the unavailability of certain sentences in cases where there is no possible context shows that these aspectual coercions need to take place as a semantic requirement. Moens & Steedman (1988) provide an aspectual coercion table to show what kinds of type coercions are possible under which conditions.

We have discussed different kinds of perfect meanings in Chapter 2. The most prevalent and relevant kind for our purposes is the resultative perfect (or the perfect of result). In present perfect constructions such as below, the requirement is that the consequences hold at RT which is the speech time.

(41) I have lost my keys.

(41) is true only if the keys are still lost at the speech time, and cannot be truly uttered in a resultative perfect meaning if the keys have been found at ST (Iatridou et al., 2003). Achievement verbs like *lose* with associated consequences, easily occurs within perfect constructions.

Activity verbs such as *walk* cannot felicitously used in its resultative meaning. The oddness of *I have walked* is due to that the underlying eventuality lacks a clear consequent state. According to Moens & Steedman (1988), perfect coerces the underlying eventuality to a consequent state, and the interpretation fails when there is no lexical or contextual support.

(42) #I have walked in the park.

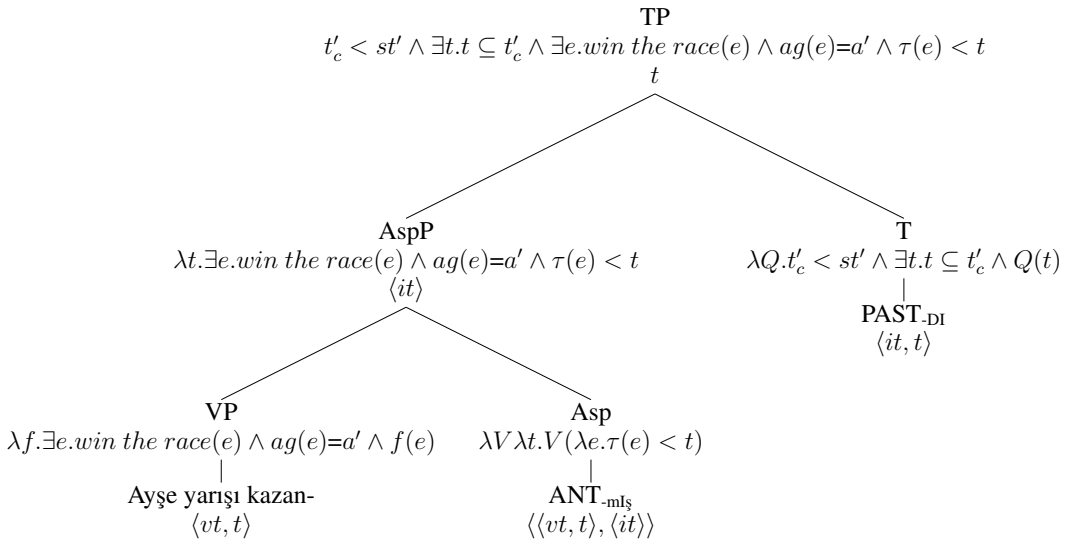
For (42) to be uttered felicitously the underlying eventuality, *walk in the park*, must be associated with some consequences first in order to be construed as an achievement. For instance, it may be that the speaker has planned to walk beforehand or its a part of her daily schedule or some other event is contingent upon the speaker's having walked in the park. In the aspectual transition schema of Moens & Steedman (1988), the event follows the path from activity to an accomplishment, and then after getting stripped from its inner complexity by transitioning to a point event, it gets associated with some consequences to compose an achievement nucleus.

To clarify what is understood by consequent states formally, let us beat the bushes for a while. The perfect constructions in our second approximation 3.4 express that RT can be any time interval that succeeds the culmination of the underlying event. Our latest meanings we have ascribed to the suffix *-mIş*, (30) and *-DI*, (31a), are repeated below.

(43) a. $[[\texttt{ANT}]]_{\text{-mIş}} = \lambda V \lambda t.V(\lambda e.\tau(e) < t) :: \langle\langle vt, t\rangle, \langle it\rangle\rangle$
b. $[[\texttt{PAST}]]_{\text{-DI}} = \lambda Q.t'_c < st' \wedge \exists t.t \subseteq t'_c \wedge Q(t) :: \langle it, t\rangle$
c. $[[\texttt{win the race}]] = \lambda f.\exists e.win\ the\ race(e) \wedge f(e) :: \langle vt, t\rangle$

We have defined VPs as sets of event predicates, $\langle vt, t\rangle$, following Champollion (2015). Anteriority denoting *-mIş*, (43a), takes a set of event predicates, $\langle vt, t\rangle$, and returns a set of times that succeed ET, acting as RT. Past tense marker (43b) existentially binds the time that acts as RT and includes it in a past relevant time interval.

(44) Ayşe yarış-ı kazan-mış-Ø-tı.
Ayşe race-ACC win-ANT-COP-PST
"Ayşe had won the race."



For instance, an expression like *Ayşe had won the race* can be predicated to any time after the event. This is in line with the conception of consequent states as states that begin at the culmination point of an eventuality and holds forever. Both Parsons (1990) and Vlach (1993) understand the consequent state as a state that holds permanently. Parsons (1990) calls this state *resultant state* and describes it as follows:

> For every event e that culminates, there is a corresponding state that holds forever after. This is "the state of e's having culminated," which I call the "Resultant state of e," or "e's R-state." If Mary eats lunch, then there is a state that holds forever after: the state of Mary's having eaten lunch.
> .
> (p.234)

He gives the definition below for resultant states.

(45) e's resultant state holds at t such that e culminates at some time at or before t

Parsons (1990)'s definition distinguishes the *target state* of the event from the resultant state. The target state of an event *throw a ball onto the roof* is the ball's being on the roof, which may cease after a while. However, *having thrown a ball onto the roof* is a state that holds forever after. Hence, for Parsons (1990), the resultant state holds forever after the event's culmination. However, if we assume that we can predicate a resultant state of any time interval after the event's culmination, it goes against our intuitions about states. Suppose the following example below. Arslan-Kechriotis (2006) assumes that sentences like (46a) associates with the perfect of result (resultative perfect) meaning.

(46) a. Ayşe yarış-ı kazan-mış ol-du.
Ayşe race-ACC win-PART become-PST
"Ayşe became someone who has won the race."

b. $t'_c < st' \wedge \exists e.become\ someone\ who\ has\ won\ the\ race(e) \wedge exp(e)=a' \wedge \tau(e) \subseteq t'_c$

LF that expresses the meaning of (46a) in our compositional scheme is given in (46b). In these structures there is only one time interval at issue, and that is ET that coincides with RT. In Reichenbachian sense, constructions like (46a) correspond to simple past tense, since ET is RT. Note that one can only specify the time of state-change or a time interval that includes it. (46b) expresses that there is an event which is *become someone who has won the race* whose experiencer is Ayşe, and whose run-time is included in the relevant time interval, t'_c. Its resultative meaning comes from the participle *-mIş* and auxiliary verb *ol-* compound. Although it attributes a state of having won the race, it is also possible for her to lose that attribute at a later time, by disqualification, and *become someone who has not won the race* and vice versa. The question of whether *having become someone who has won the race* is itself a resultant state in Parsons (1990)'s sense or not does not make things easier. We understand the tension between the everlasting resultant state and temporary resultant states as a tension between experiential perfect and resultative perfect readings. The source of both the resultative and the experiential meanings is the participle *-mIş*. Central issue is whether the perfect is used to denote the resultative perfect or the experiential perfect, which is the same problem we confront below.

(47) a. Cuma gün-ü Ayşe yarış-ı kazan-dı.
Friday day-POSS Ayşe race-ACC win-PST
"On Friday, Ayşe won the race."
$friday' < st' \wedge \exists e.win\ the\ race(e) \wedge ag(e)=a' \wedge \tau(e)=friday'$

b. Cumartesi gün-ü Ayşe yarış-ı kazan-mış-Ø-tı.
Saturday day-POSS Ayşe race-ACC win-ANT-COP-PST
"On Saturday, Ayşe had won the race."
$saturday' < st' \wedge \exists t.t \subseteq t'_c \wedge \exists e.win\ the\ race(e) \wedge ag(e)=a' \wedge \tau(e) < t$

It only asserts that ET precedes RT, and RT is included within the relevant time, t'_c. The problem is, as we put forward before, it cannot guarantee the resultative perfect reading. It is ambiguous with respect to the relation between the event and RT, but it is certain that there is a relation between the two. We need a mechanism that can capture both meanings, resultative perfect and experiential perfect.

Let us take a step back and consider when are perfect constructions used and what is meant by perfect constructions. Moens (1987) gives an example for aspectual coercion on the verbs that denote eventualities that have culminations.

(48) John has reached the top. (p.98)

Although the most salient reading is that John is at the top at the speech time, Moens (1987) remarks that it is possible to utter (48) even if it is apparent that John is not at the top at the speech time, in which case, "the speaker is asking the hearer to think of other consequences that reaching the top may have". What happens is that the event nucleus of *reach the top* is coerced to a point event therefrom a new event nucleus is composed with new associated consequences.

This kind of aspectual coercion that involves a mapping from culmination point to consequent states have been argued for perfect morphology by Moens (1987) and Moens & Steedman (1988). We will accept that *-mIş* corresponds to the perfect morphology that coerces the underlying eventuality to a consequent state, the nature of which relies on lexical and contextual world knowledge. Nevertheless, it is apparent that this coercion occurs, from cases where infelicitous uses of perfect are possible.

(49) # The star has twinkled. (Moens & Steedman, 1988)

Its past perfect counterpart in Turkish sounds odd as well.

(50) #Yıldız göz kırpmıştı.
"The star had twinkled."

Remember that we were aiming for a uniform way to capture both the resultative perfect meaning and the experiential perfect meaning that are induced by past-perfect sentences in Turkish. Now, we are at a point where we can conceptualise the relation between the event and RT as part of an aspectual coercion mechanism, namely from culminated events to consequent states.

We need a mapping relation between events and consequent states. The consequent state relation cannot be expressed by a function that takes an event and returns a state. Since they can be predicated to certain times and they can be denied for other times, we need a binary relation between an event and a set of eventualities that are consequent states.

In this section, we have pointed out that even though the past perfect expressions are inherently ambiguous between resultative perfect and experiential perfect readings, they are consistent in the perfect relation between the event and RT. Since our previous scheme that we put forward in second approximation 3.4 cannot capture that relation, we argued for an aspectual coercion mechanism that have been associated with perfect morphology (Moens, 1987; Moens & Steedman, 1988). In the next section, we will formalise and integrate this consequent state relation.

3.6 Third Approximation

G&P (1997) argue for a consequent state that can be said to be holding at times and denied at other times. This is in contrast with Parsons (1990)'s everlasting resultant states. Resultant states as states that hold forever after the culmination point of the event, will lead us into the same problem with what we have confronted when we discussed the perfect interpretations of past perfect sentences. Below, we give briefly our adaptation of G&P (1997)'s argument against an everlasting consequent state in (51) (Giorgi & Pianesi, 1997, p.92).

(51) a. Cuma gün-ü Ayşe yarış-ı kazan-dı.
Friday day-POSS Ayşe race-ACC win-PST
"On Friday, Ayşe won the race."

b. Cumartesi gün-ü diskalifiye ol-du.
Saturday day-POSS disqualified become-PST
"On Saturday, she got disqualified."

c. #Pazar gün-ü yarış-ı kazan-mış-Ø-tı.
Sunday day-POSS race-ACC win-ANT-COP-PST
"On Sunday, she had won the race."

Since, (51a) initiates a resultant state that holds thereafter, which is a state of *having won the race* that is attributed to the subject, it leaves us no option but accept that (51c) is true. However, in its most salient reading, it must be false. For the relation between the core event and its consequent state are contingent and not necessarily holds forever, G&P (1997) define the consequent state as a binary relation between two eventualities. This relation may hold or not hold at different times.

We will follow G&P (1997)'s proposal and take consequent states as a set of eventualities that are associated with a culminated event. We have seen how one and the same culminated event can be construed as different event nuclei that have distinct consequent states. Hence, the binary relation CS relates the culminated event with a set of eventualities that act as consequent states. For our purposes, we will employ two simple principles;

(1) $CS(e_2, e_1)$ holds between e_1 and e_2, iff e_2 is a consequent state of e_1.

(2) For all eventualities, if $CS(e_2, e_1)$, then $lb(e_2) = rb(e_1)$

(2) ensures that the consequent state temporally succeeds the event, and that no event has the same consequent state (Giorgi & Pianesi, 1997, p.98). Now we are in a position to capture the two perfect interpretations of complex tensed expressions constructed with *-mIşDI*. We repeat the example (37) below.

(52) a. Ahmet saat 3'te oda-ya gir-di.
Ahmet hour 3-LOC room-DAT enter-PST

"Ahmet entered the room at 3 o'clock."

b. Ahmet saat 4'te oda-dan çık-tı.
Ahmet hour 4-LOC room-ABL exit-PST
"Ahmet left the room at 4 o'clock."

c. #Ahmet saat 5'te oda-ya gir-miş-Ø-ti.
Ahmet hour 5-LOC room-DAT enter-ANT-COP-PST
"Ahmet had entered the room at 5 o'clock."
$t'_c < st' \wedge \exists t.t \subseteq t'_c \wedge t$=5$\wedge \exists e.enter\ the\ room(e) \wedge ag(e)$=$a' \wedge \tau(e) < t$

Given (52a) and (52b), felicitousness of (52c) is at issue. (52c) cannot assert the resultative meaning where Ahmet is in the room at RT. It has only the experiential reading. The experiential reading only concerns with the state that is attributed to Ahmet due to him being a participant of the event. Comparing (53) with (52c), (53) is ambiguous between two readings in the context given in (52).

(53) Ahmet saat 3:30'da odaya girmişti.
"Ahmet had entered the room at 3:30."

Hence, we suggest that the main difference between a resultative perfect reading and experiential perfect reading is the consequent state allowed by the context. The context does not allow for resultative perfect interpretation in (52c) as readily as it does for (53).

In line with discussions above, we redefine *-mIş* as encoding a relation between the core event and a consequent state:

(54) $[[\texttt{PERF}]]_{\text{-mIş}} : \lambda V \lambda f.V(\lambda e_1.\exists e_2.CS(e_2, e_1) \wedge f(e_2)) :: \langle\langle vt, t\rangle, \langle vt, t\rangle\rangle$

It is a function that takes a set of event predicates and returns a set of predicates for that event's consequent state. The continuation of the underlying event gets closed and continuation variable f provides continuation for the future predications of consequent states. So, later in the derivation, it closes the door to predications related to the underlying event, and opens the door to predications related to consequent states.

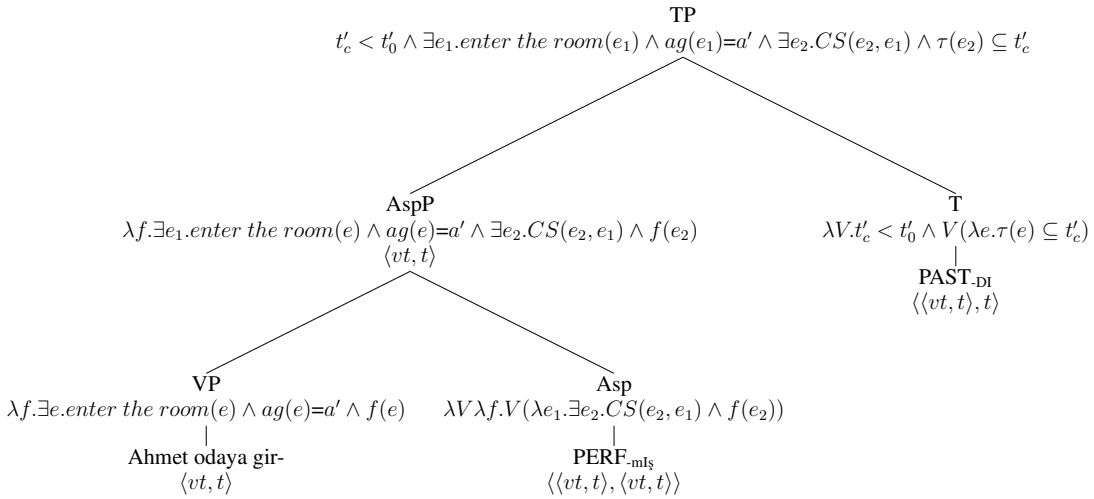
The LF of temporally unspecified expression *Ahmet odaya girmişti* is given in (56). We assume that past tense locates the event within a contextually relevant time frame, t'_c, in the past when it is not given explicitly. In this case, the eventuality it locates within a contextually relevant time frame is the consequent state.

(55) $[[\texttt{PAST}]]_{\text{-DI}} = \lambda V.t'_c < st' \wedge V(\lambda e.\tau(e) \subseteq t'_c) :: \langle\langle vt, t\rangle, t\rangle$

(56) Ahmet oda-ya gir-miş-Ø-ti.
Ahmet room-DAT enter-PERF-COP-PST
"Ahmet had entered the room."
$t'_c < st' \wedge \exists e_1.enter\ the\ room(e_1) \wedge ag(e_1)$=$a' \wedge \exists e_2.CS(e_2, e_1) \wedge \tau(e_2) \subseteq t'_c$

'There exists an *enter the room* eventuality, e_1, whose agent is Ahmet and there exists an eventuality, e_2, which is in *CS* relation with e_1, and the time e_2 holds is included in a past time interval that is contextually relevant, t'_c.'

(57)



Our representation for *at 3 o'clock*, repeated below, can directly combine with both VP or AspP to specify ET or RT while respecting the scope relations. The partial derivations at the level which PPs are adjoined in ET and RT-readings are given in (59) and final LFs in (60) whose full derivation trees are given in Chapter 4.

(58) [[Saat 3'te]] =
$\lambda V \lambda f.\exists t.t$=3 o'clock $\wedge V(\lambda e.\tau(e)$=$t \wedge f(e)) :: \langle\langle vt, t\rangle, \langle vt, t\rangle\rangle$

(59) a. [$_{\text{VP}}$ Saat 3'te [$_{\text{VP}}$ Ahmet odaya gir]] =
$\lambda f.\exists t.t$=3 $\wedge \exists e.enter\ the\ room(e) \wedge ag(e)$=$a' \wedge \tau(e)$=$t \wedge f(e)$
PP adjoins to VP. It denotes a set of predicates for *enter the room* eventualities whose agent is Ahmet and whose run time is at 3 o'clock.

b. [$_{\text{AspP}}$ Saat 3'te [$_{\text{AspP}}$ [$_{\text{VP}}$ Ahmet odaya gir] -miş]] =
$\lambda f.\exists t.t$=3 $\wedge \exists e_1.enter\ the\ room(e_1) \wedge ag(e_1)$=$a' \wedge \exists e_2.CS(e_2, e_1) \wedge \tau(e_2)$=$t \wedge f(e_2)$
PP adjoins to AspP. It denotes a set of predicates for consequent states of an *enter the room* eventuality whose agent is Ahmet, such that the consequent state holds at 3 o'clock.

(60) Ahmet saat 3'te odaya girmişti.

a. ET is 3 o'clock:
$t'_c < st' \wedge \exists t.t$=3 $\wedge \exists e_1.etr(e_1) \wedge \tau(e_1)$=$t \wedge \exists e_2.CS(e_2, e_1) \wedge \tau(e_2) \subseteq t'_c$

b. RT is 3 o'clock:
$t'_c < st' \wedge \exists t.t$=3 $\wedge \exists e_1.etr(e_1) \wedge \exists e_2.CS(e_2, e_1) \wedge \tau(e_2)$=$t \wedge \tau(e_2) \subseteq t'_c$

In this section, we have employed a binary consequent state relation, $CS(e_2, e_1)$, between events and consequent states that is originated from G&P (1997), in order to disambiguate the different consequent states the perfect constructions express. In this, we have treated both resultative perfect and experiential perfect fundamentally the same, but distinguished in the consequent states that they denote. In the next chapter, we will discuss what has been achieved, and what has been left unanswered.

CHAPTER 4

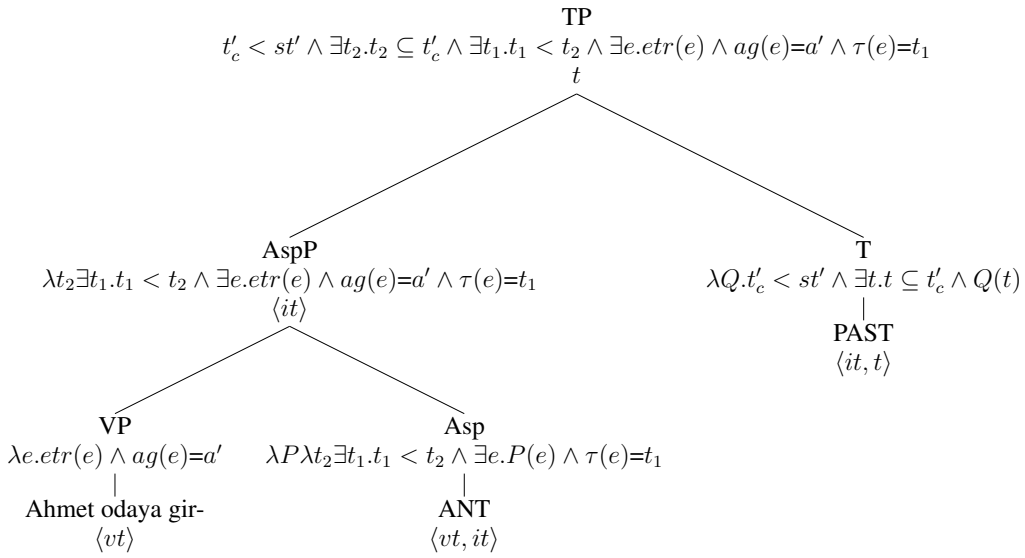
DISCUSSION

We have begun our investigation with a compositionality problem which D&S (2023) have also put forward, hence we start off by revisiting the problem in Section 4.1. Then, we present some of the predictions concerning ET and RT readings in Section 4.2, and their interaction with negation and double negation in Section 4.3. In Section 4.4, we consider why some temporal adverbials felicitously occur as RT-denoting whereas some do not, namely durative temporal adverbials constructed with *kadar* such as *saat 2'den 3'e kadar*. Then, in Section 4.5, we discuss the present perfect meaning of *-mIş*, that are mostly salient in inferential contexts. We address the underspecification of the kind of evidentiality for the suffix *-mIş* and discuss two of the arguments that Sener (2011) provides for two distinct evidentiality marker in Section 4.6. In Section 4.7, we briefly talk about double *-mIş* constructions where the verbal suffix *-mIş* and the copular evidential marker *-(y)mIş* co-occur.

4.1 Compositionality Problem Revisited

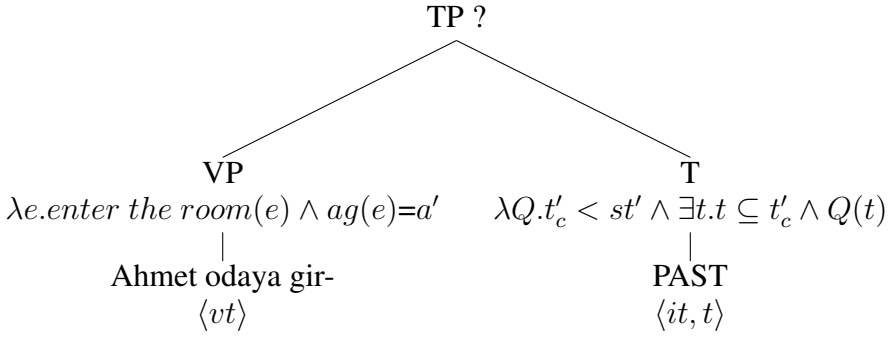
As we have discussed in Section 2.3, D&S (2023) identify a compositional difficulty concerning VP and T head's semantic types. In neo-Davidsonian approach, VPs denote event predicates, $\langle vt \rangle$. T head, on the other hand expects time predicates, and it is of type $\langle it, t \rangle$. It is not an issue when participial verbal forms are of concern as it is shown below (1).

(1) Ahmet oda-ya gir-miş-Ø-ti.
Ahmet room-DAT enter-PERF-COP-PST
"Ahmet had entered the room."



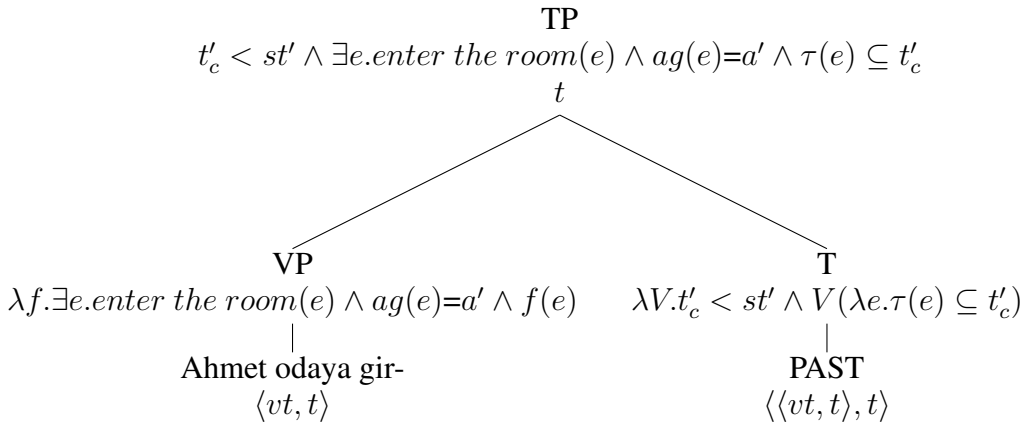
On the other hand, in morphologically aspectless expressions, Asp head is not present. Consequently, there emerges a type mismatch between VP and T head (2).

(2) Ahmet oda-ya gir-di.
Ahmet room-DAT enter-PST
"Ahmet entered the room."



D&S posit an intermediary projection level above VP to solve this type mismatch. We do not encounter with this problem, since we have construed VPs as sets of event predicates and Tense as a function from sets of event predicates via Champollion (2015) as we demonstrate in (3).

(3) Ahmet oda-ya gir-di.
Ahmet room-DAT enter-PST
"Ahmet entered the room."



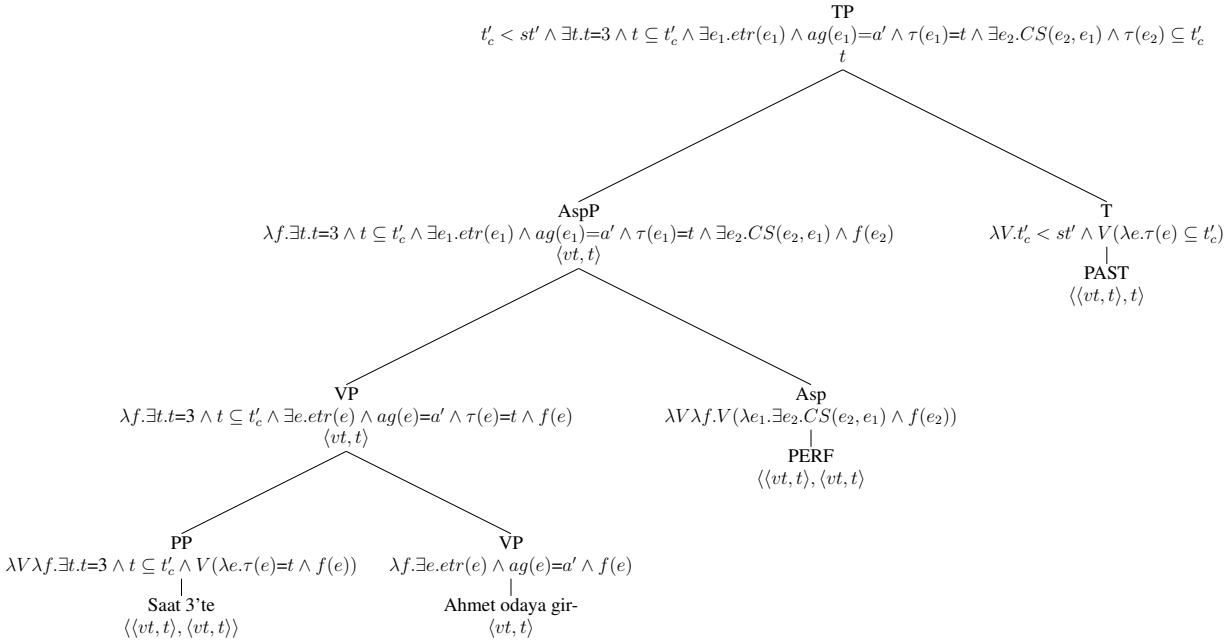
Here, we have assumed that the past tense marker *-DI* and *-(y)DI* has the same denotation. Göksel (2002) claims that the copular *-(y)DI* is a composite form which is formed by the verbal marker *-DI* that attaches to the remnant verb stem *y*. The aspectual difference between the two forms has been noted as one of (im)perfectivity (Göksel & Kerslake, 2005). *-DI* is a perfective marker, whereas *-(y)DI* is an imperfective marker since it locates RT within a past situation.

This aspectual difference is predicted in our account, not by any distinctness of the two forms, but rather by the type of eventualities that *-DI* operates over. It locates an event's run-time within a past time interval when it attaches to the verb stem directly. This perfective denotation is reflected as imperfectivity when it is in the copular form due to the properties of states. We have pointed out that states are differentiated from events by their lack of intrinsic dynamicity. In this sense, states are akin to abstract properties. They can be instantiated at any time that they hold. Hence, when it is asserted that the time at which a state holds is included within a time interval, it is always possible that it is included within a larger time interval as well.

4.2 ET and RT-Denoting Readings

When a locative temporal adverbial such as *at 3 o'clock* occurs in a past perfect sentence such as (4), it is ambiguous in terms of what it specifies. It may modify ET or RT depending on the level it occurs. If it occurs at VP level, it modifies the underlying event's run-time. Otherwise, it modifies the time at which consequent state holds. Our account maintains the right truth-conditions when a temporal adverbial denotes ET or RT, whose derivations are given in (4) and (6) respectively.

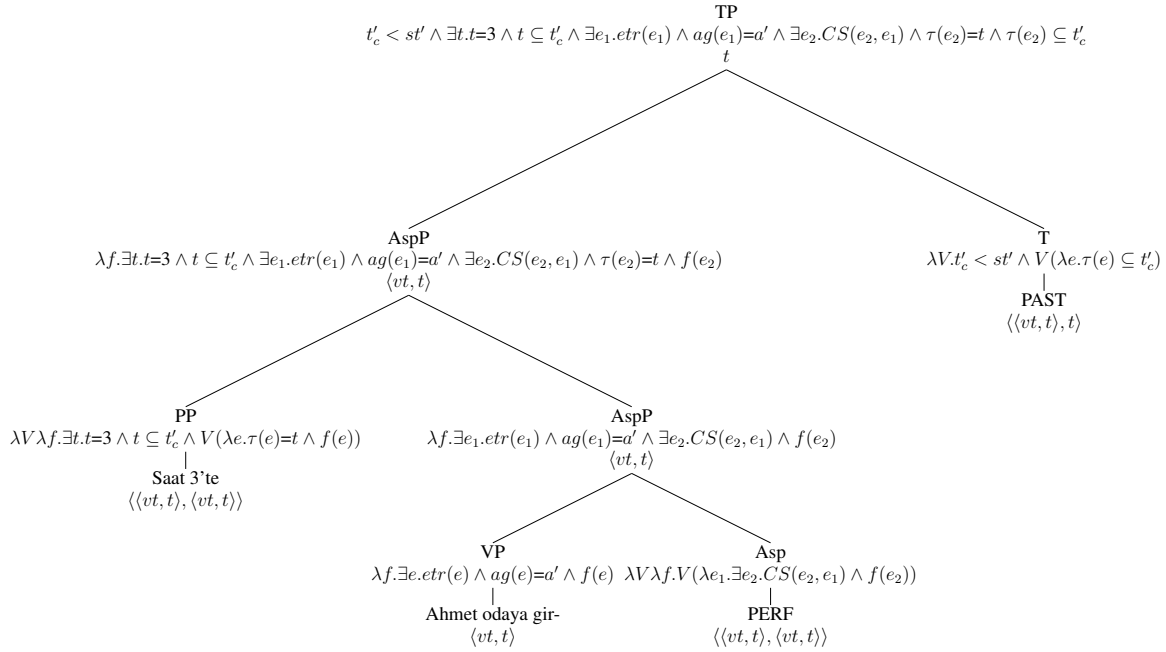
(4) Saat 3'te Ahmet oda-ya gir-miş-Ø-ti. (ET=3 o'clock)
hour 3-LOC Ahmet room-DAT enter-PERF-COP-PST
"Ahmet had entered the room at 3 o'clock."



(5) a. $t'_c < st' \wedge \exists t.t{=}3 \wedge t \subseteq t'_c \wedge \exists e_1.etr(e_1) \wedge ag(e_1){=}a' \wedge \tau(e_1){=}t \wedge \exists e_2.CS(e_2, e_1) \wedge \tau(e_2) \subseteq t'_c$

b. "There is a time, t, such that t is 3 o'clock in the relevant time frame t'_c, and there exists an *enter the room* eventuality, e_1, whose agent is Ahmet, and whose run-time is t, and there exists an eventuality, e_2, such that $CS(e_2, e_1)$ and the time e_2 holds is included in the relevant time frame t'_c."

(6) Saat 3'te Ahmet oda-ya gir-miş-Ø-ti. (RT=3 o'clock)
hour 3-LOC Ahmet room-DAT enter-PERF-COP-PST
"Ahmet had entered the room at 3 o'clock."



(7) a. $t'_c < st' \wedge \exists t.t{=}3 \wedge t \subseteq t'_c \wedge \exists e_1.etr(e_1) \wedge ag(e_1){=}a' \wedge \exists e_2.CS(e_2,e_1) \wedge \tau(e_2){=}t \wedge \tau(e_2) \subseteq t'_c$

b. "There is a time, t, such that t is 3 o'clock in the relevant time frame t'_c, and there exists an *enter the room* eventuality, e_1, whose agent is Ahmet, and there exists an eventuality, e_2, such that $CS(e_2, e_1)$ and the time e_2 holds is t."

Our main motivation behind the introduction of CS relation is to capture different consequent states that a culminated event can relate to. We have discussed resultative perfect and experiential perfect readings of the same past perfect expression as fundamentally denoting different consequent states. For instance, in a context where the consequent state is most saliently understood as a state of *Ahmet being in the room*, it returns true as long as this state holds at RT. Otherwise, in a context where it is understood as a state of *Ahmet having been in the room*, then this state is what is of concern.

(8) a. Ayşe saat 3'te yarışı kazandı.
"Ayşe won the race at 3 o'clock."

b. Ayşe saat 4'te diskalifiye oldu.
"Ayşe got disqualified at 4 o'clock"

c. Ayşe saat 5'te yarışı kazanmıştı.
"Ayşe had won the race at 5 o'clock."

Given that (8a) and (8b), our reluctance (or willingness) to accept (8c) as true depends on the consequent state that CS relation captures. In a context where there are consequences of *Ayşe being the winner for a while*, for instance in a betting context, (8c) is

acceptable as true. Because whether her status as a winner persists or not is irrelevant to the consequences. However, without such a context, the most salient consequent state of *winning a race* is being a winner which is cancelled by (8b). Hence, (8c) mostly tends to be interpreted as false.

4.3 Times and Negation

In Section 3.3, we have talked about that participial verbal forms can take two negations in Turkish. One of these is the negation suffix *-mA* which attaches to the verb stem and the other is the negation particle *değil* which occurs above AspP. Since, Aspect head places existential quantifier of the consequent state and CS relation in narrow scope below the existential quantifier of the underlying event, both negations, *-mA* and *değil*, take scope over both the underlying event and its consequent state. Our schema also takes into consideration various combinations of temporal adverbials in ET and RT-denoting positions with negations, while keeping the semantics intact.

Here, we give one example, and let the others to the reader.

(9) Saat 3'te, Ahmet oda-ya gir-me-miş Ø değil-di.
hour 3-LOC Ahmet room-DAT enter-NEG-PERF COP not-PST
"At 3 o'clock, it was not the case that Ahmet had not entered the room."
$[_{\texttt{TP}}\ [_{\texttt{NegP}}[_{\texttt{AspP}}$Saat 3'te$[_{\texttt{AspP}}[_{\texttt{NegP}}[_{\texttt{VP}}$ Ahmet odaya gir] -me] -miş]] değil] -di]

1. $[[\texttt{Ahmet enter the room}]] = \lambda f.\exists e.etr(e) \wedge ag(e)=a' \wedge f(e)$
2. $[[\texttt{NEG}]] = \lambda V \lambda f.\neg V f$
3. $[[_{\texttt{NegP}}[[\texttt{Ahmet enter the room}]]\texttt{NEG}]] = \lambda f.\neg\exists e.etr(e) \wedge ag(e)=a' \wedge f(e)$
4. $[[\texttt{PERF}]] = \lambda V \lambda f.V(\lambda e_1.\exists e_2.CS(e_2, e_1) \wedge f(e_2))$
5. $[[_{\texttt{AspP}}[[_{\texttt{NegP}}[[\texttt{Ahmet enter the room}]]\texttt{NEG}]]\texttt{PERF}]] =$
$\lambda f.\neg\exists e_1.etr(e_1) \wedge ag(e_1)=a' \wedge \exists e_2.CS(e_2, e_1) \wedge f(e_2)$
6. $[[\texttt{at 3 o'clock}]] = \lambda V \lambda f.\exists t.t{=}3 \wedge t \subseteq t'_c \wedge V(\lambda e.\tau(e){=}t \wedge f(e))$
7. $[[_{\texttt{AspP}}\ \texttt{at 3 o'clock}[[_{\texttt{AspP}}[[_{\texttt{NegP}}[[\texttt{Ahmet enter the room}]]\texttt{NEG}]]\texttt{PERF}]]]] =$
$\lambda f.\exists t.t{=}3 \wedge t \subseteq t'_c \wedge \neg\exists e_1.etr(e_1) \wedge ag(e_1){=}a' \wedge \exists e_2.CS(e_2, e_1) \wedge \tau(e_2){=}t \wedge f(e_2)$
8. $[[_{\texttt{NegP}}\ [[_{\texttt{AspP}}\ \texttt{at 3 o'clock}[[_{\texttt{AspP}}[[_{\texttt{NegP}}[[\texttt{Ahmet enter the room}]]\texttt{NEG}]]\texttt{PERF}]]]]\texttt{NEG}]] =$
$\lambda f.\neg\exists t.t{=}3 \wedge t \subseteq t'_c \wedge \neg\exists e_1.etr(e_1) \wedge ag(e_1){=}a' \wedge \exists e_2.CS(e_2, e_1) \wedge \tau(e_2){=}t \wedge f(e_2)$
9. $[[\texttt{PAST}]] = \lambda V.t'_c < st' \wedge V(\lambda e.\tau(e) \subseteq t'_c)$
10. $[[_{\texttt{TP}}\ [[_{\texttt{NegP}}\ [[_{\texttt{AspP}}\ \texttt{at 3 o'clock}[[_{\texttt{AspP}}[[_{\texttt{NegP}}[[\texttt{Ahmet enter the room}]]\texttt{NEG}]]\texttt{PERF}]]]]\texttt{NEG}]]\texttt{PAST}]] =$
$t'_c < st' \wedge \neg\exists t.t{=}3 \wedge t \subseteq t'_c \wedge \neg\exists e_1.etr(e_1) \wedge ag(e_1){=}a' \wedge \exists e_2.CS(e_2, e_1) \wedge \tau(e_2){=}t \wedge \tau(e_2) \subseteq t'_c$

The final LF: $t'_c < st' \wedge \neg\exists t.t{=}3 \wedge t \subseteq t'_c \wedge \neg\exists e_1.etr(e_1) \wedge ag(e_1){=}a' \wedge \exists e_2.CS(e_2, e_1) \wedge \tau(e_2){=}t \wedge \tau(e_2) \subseteq t'_c$

It can be paraphrased as: "For all times, t, such that if t is 3 o'clock within the relevant time, then there exists an *enter the room* event, e_1, whose agent is Ahmet and whose consequent event, e_2 holds at t and the run-time of e_2, is in the relevant time"

4.4 Temporal Adverbials

As D&S (2023) observe, some temporal adverbials are reluctant to denote RT, such as *saat 2'den 3'e kadar* 'from 2 to 3 o'clock'.

(10) Ahmet saat 2'den 3'e kadar koş-muş-Ø-tu.
Ahmet hour 2-ABL 3-DAT until run-PERF-COP-PST
"Ahmet had run from 2 to 3 o'clock."

If we accept that these temporal adverbials are functions from time predicates to time predicates, we cannot explain why they cannot modify a time predicate that are denoted by AspP. However, now we have a rather clear explanation on the basis of the fact that what is projected at AspP is a state.

Individual-level predicates like *be intelligent* or *to know* describe persistent states that are conceived as inherent to the individual, whereas stage-level predicates like *be sick*, *be drunk* are temporary states. This reflects on their behaviour when interacting with temporal adverbials.

(11) a. Saat 2'den 3'e kadar hasta-y-dı.
hour 2-ABL 3-DAT until sick-COP-PST
"He was sick from 2 to 3 o'clock."
b. *Saat 2'den 3'e kadar zeki-y-di.
hour 2-ABL 3-DAT until intelligent-COP-PST
*"He was intelligent from 2 to 3 o'clock."

Whereas the state (11a) can felicitously be denoted by the temporal adverbial, it is not so in (11b). It is a result of the kinds of state that is predicated of the subject. In a similar manner, *having run* denotes a predicate that cannot be stripped off from the subject, once it occurs. Thus, it can be said that it attributes an individual-level predicate to the subject. G&P (1997, pp.96-97) argue that "participial clauses can be seen as the relation holding between the event and the subject" based on the interaction between *for*-adverbials and the individual-level predicates.

However, this cannot explain why punctual temporal adverbials can modify the time of consequent states, because individual-level predicates cannot be modified by them either.

(12) a. *Ahmet saat 3'te zeki-y-di.
Ahmet hour 3-LOC intelligent-COP-PST
*"Ahmet was intelligent at 3 o'clock."
b. *Ahmet saat 3'te İngilizce bil-iyor-Ø-du.
Ahmet hour 3-LOC english know-IMPF-COP-PST
*"Ahmet knew English at 3 o'clock."
c. Ahmet saat 3'te ofis-ten ayrıl-mış-Ø-tı.
Ahmet hour 3-LOC office-ABL leave-PERF-COP-PST
"Ahmet had left the office at 3 o'clock."

In Chapter 2.3, we have briefly argued that the incompatibility between durative adverbials like "from 2 to 3 o'clock" and RT might be due to that these adverbials denote closed time intervals and binds the beginning and the ending of the eventuality it modifies. Considering that the consequent states that we talk about are already bound at their left boundary (see (2) in Section 3.6), and open-ended at their right boundary, it is expected that they cannot be modified by closed time intervals. And due to its individual-level predicate denotation, its temporal parts cannot be presented with these adverbials as well. However, due to their homogeneous inner structure, they can be instantiated by punctual temporal adverbials such as *at 3 o'clock*.

4.5 The Present Perfect Use of *-mIş*

In Section 2.2, we have mentioned that in inferential contexts, RT cannot be a past time. Otherwise, the inferential meaning dissappears, together with the present perfect meaning (Sener, 2011). In (13), the following sentence *But I found them* implies that the event —*lose my glasses*— is in the past with its consequent states. Since RT cannot be the present time for the former sentence, inferential interpretation is not available.

(13) #Gözlük-ler-im-i kaybet-miş-im. Ama bul-du-m.
glasses-PL-1SG.POSS-ACC lose-PERF/EVD-1SG but find-PAST-1SG
"I have lost my glasses. But I found them."

(Sener, 2011, p.26)

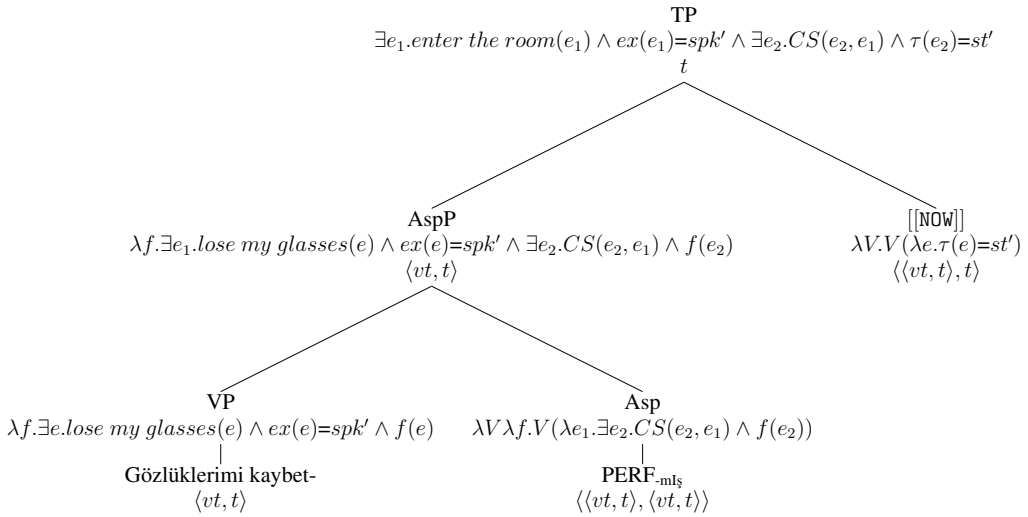
Similarly, if the occurence of the event becomes obvious to the speaker through its consequences now, it is not acceptable for temporal adverbials that denote a past time to specify the event time. This parallels with the present perfect of English. In the example below, if the sentence is uttered in an inferential context where the speaker becomes aware that she lost her glasses, *yesterday* is not acceptable.

(14) *(Dün) gözlük-ler-im-i kaybet-miş-im.
(yesterday) glasses-PL-1SG.POSS-ACC lose-PERF/EVD-1SG
"*(Yesterday) I have lost my glasses."

Based on the assumption that the lack of any tense marker signals present tense, let us posit that there is a NOW closure, (15), which we apply when true tenses do not occur after maximal projection of AspP. We do not show agreement in the derivation below.

(15) $[[\texttt{NOW}]] = \lambda V.V(\lambda e.\tau(e)\text{=}st')$

(16) *(Dün) gözlüklerimi kaybetmişim.
"*(Yesterday) I have lost my glasses."



Yesterday cannot join to derivation at any point of the derivation as expected, since we have considered that indexical time intervals such as *yesterday* is denoted, implicitly or explicitly, by the past tense marker *-DI*. Infelicity of sentences like (13) in inferential contexts can be predicted by this requirement. However, it is syntactically and semantically possible for a temporal adverbial that denotes a past time, such as *at 3 o'clock* -with the implicit *yesterday* that comes from discourse-, to modify ET. If it joins at VP to modify ET, there appears a discrepancy where the speaker asserts both ET's and RT's time. ET is specified explicitly and RT is implicitly. These cases transgress the pragmatic principle of *p-definiteness constraint* (Klein, 1992), which postulates that both TSit (ET) and TT (RT) cannot both be independently situated in fixed positions at the timeline. This pragmatic principle excludes expressions like below;

(17) a. *At seven, Chris had left at six.
b. *Chris has left at six.

(Klein, 1992)

For their Turkish counterparts below, we must note that they are only acceptable in certain contexts. For the past perfect sentence in (18a), the utterance is only acceptable if the speaker points out that the main proposition *-Ahmet had left at six o'clock-* held true at RT to the best of her knowledge, with the implicature that the speaker

suspects whether the proposition was true in the first place. (18b) is acceptable in reportative contexts but not acceptable in contexts where the subject becomes aware of a past event through its present consequences.

(18) a. *?Saat yedi-de, Ahmet saat altı-da git-miş-Ø-ti.
hour seven-ABL Ahmet hour six-ABL go-PERF-COP-PST
*"At seven o'clock, Ahmet had left at six o'clock."
"At seven o'clock, (it was true that) Ahmet had left at six o'clock."

b. *?Ahmet saat altı-da git-miş.
Ahmet hour six-ABL go-PERF/EVD
*"Ahmet has left at six."
"(It is reported to me that) Ahmet left at six."

In short narrative contexts, as in (19), the consequent state is not anchored to now, unlike the present perfect-like expression in (16). But rather it is situated together with the event within the contextually relevant past time interval that either comes from the discourse or expressed explicitly. It necessitates that the consequent state of the preceding event holds at the time of the succeeding event.

(19) (Dün) Bir yemek pişir-miş-im, herkes çok beğen-di.
(yesterday) a meal cook-PERF-1SG everyone very like-PST
"(Yesterday) I cooked such a meal, everyone liked it very much."

4.6 Inferentiality and Reportativity

So far, we have only touched upon the topic of evidentiality at a superficial level. We have mentioned that, in Chapter 2, whereas the suffix *-mIş* is ambiguous between inferential and reportative readings when it is suffixed to the verb stem without further marking, as in (20a), the copular marker *-(y)mIş* indicates reportative evidentiality in general, as in (20b).

(20) a. Ahmet gel-miş.
Ahmet come-PERF/EVD
"Ahmet came / has come (apparently / reportedly)."

b. Ahmet gel-iyor-Ø-muş.
Ahmet come-IMPF-COP-EVD
"Ahmet is / was coming (reportedly)."

Sener (2011) argues that there are two evidential *-mIş* markers. One denotes inferentiality, *-mIş*$_{\text{inf}}$, and the other denotes reportativity, *-mIş*$_{\text{rep}}$. She calls the *-mIş*$_{\text{inf}}$, an *inferential-present perfect* marker due to its behaviour with past denoting temporal

adverbials such as *dün*, 'yesterday'. When an evidential expression as in (21) occurs with a past denoting adverbial, only the reportative evidential meaning survives.

(21) a. *(Dün) gözlük-ler-im-i kaybet-*miş*$_{\text{inf}}$-im.
(yesterday) glasses-PL-POSS.1SG-ACC lose-PERF/EVD-1SG
"*(Yesterday) I have lost my glasses."

b. (Dün) gözlük-ler-im-i kaybet-*miş*$_{\text{rep}}$-im.
yesterday glasses-PL-POSS.1SG-ACC lose-PERF/EVD-1SG
"(It is reported to me that) I lost my glasses, yesterday."

This present perfect aspect and inferential evidentiality is intertwined to the degree that, Sener (2011) suggests that this inferential *-mIş*$_{\text{inf}}$ encodes an English-like present perfect aspect, besides the indirect evidential information source. However, it is doubtful that the unavailability of adverbial *dün* is related with the inferential evidentiality. Rather it seems restricted with the present perfect use of *-mIş*. Consider the context below as an example for a context where it is possible to infer the time of the event.

(22) Context: The police has successfully tracked a suspect to an apartment but the suspect is not in the apartment. Officers have no idea how to proceed and call a confident Sherlock-like police detective. He checks the expiration dates of instant noodles packages in the garbage bin, finds the bill of a plane ticket, a note from a relative of the suspect among other evidences. After a much detailed investigation in the apartment, he claims that:

Dün şüpheli daire-yi terket-*miş*$_{\text{inf}}$.
yesterday suspect apartment-ACC leave-PERF/EVD

"(I infer that) yesterday the suspect had left the apartment."

In the case above, *-mIş* is felicitously used in an inferential context with the past time denoting adverbial *dün*. It suggests that only when *-mIş* is used with a meaning that corresponds to the present perfect, an adverbial like *dün* is infelicitous. Hence, the perfect encoding of *-mIş* and the inferential evidentiality that it induces can be seperated.

Another evidence that Sener (2011) provides for the existence of the two distinct evidential markers, involves assertabillity facts. Only when *-mIş* is used in an inferential context, denying the proposition results in contradiction on the speaker's part.

(23) a. Context: Seda tells Ayşe (the speaker) that Sinan fell off the bike:

Sinan bisiklet-ten düş-*müş*$_{\text{rep}}$, ama gerçekte öyle birşey
Sinan bicycle-ABL fall-PERF/EVD but in.reality such something
yok.
not.exist

"(It is reported to me that) Sinan fell / has fallen off the bike, but in fact nothing like that happened."

b. Context: Seda sees Sinan getting up from the ground with his bike and his backpack spread around. Although Seda hasn't seen Sinan fall, she infers that he has fallen off the bike. Seda says:

#Sinan bisiklet-ten düş-*müş*$_{\text{inf}}$, ama gerçekte öyle birşey
Sinan bicycle-ABL fall-PERF/EVD but in.reality such something
yok.
not.exist

#"(I infer that) Sinan fell / has fallen off the bike, but in fact nothing like that happened."

(Sener, 2011, p.98-99)

It indicates that, in inferential context of (23b), the speaker commits to the truth of the proposition, unlike (23a) where the commitment of the speaker to the proposition's truth is not necessary. It is naturally so, because in a reportative context, the source of knowledge is the person who makes the claim in the first place, whereas in an inferential context it is the speaker herself. Although this accounts for the different distribution of two kinds of evidentials, namely inferential and reportative evidentials, *-mIş* displays a wide range of uses in some of which inferential and reportative evidential meanings are missing. Consider the example below:

(24) Context: The speaker knows that the listener has work experience in reputable companies, and encourages the listener about the upcoming job interview by stating the situation which he is in.

En iyi şirket-ler-de çalış-mış-sın, sen-den iyi-si-ni
most good company-PL-LOC work-PERF-2SG, you-ABL good-POSS-ACC
bul-a-ma-z-lar.
find-PSB-NEG-AOR-3PL

"(It is obvious that) you have worked at the best companies, they cannot find someone better than you."

In the context above, the speaker asserts something that both she and the listener know as a matter of fact. Neither a report nor an inference is in question in this case. There is no sudden realization of a situation either. The suffix *-mIş* can surely be used to express events that are directly experienced as in (24), or that are obvious to the speaker. The kind of evidential meaning, whether it is inferential, reportative, or perceptual, appears to be secondary to the core meaning of *-mIş*. Furthermore, both *-mIş* and the copular evidential marker *-(y)mIş* are able to convey a wide range of evidential meanings. Hence, *-mIş* and the copular marker *-(y)mIş* cannot be differentiated purely on the basis of their varying evidential meanings. Below we give reportative, inferential and perceptual contexts for the use of copular *-(y)mIş*, respectively.

(25) a. Reportative Context: A police detective is informed in detail about the doings of the murderer before he goes to the crime scene, by officers who watched camera recordings. At the crime scene he says:

b. Katil şu pencere-den kaç-acak-Ø-mış.
murderer that window-ABL run.away-FUT-COP-EVD
"(It is reported to me that) the murderer was going to escape from that window."

(26) a. Inferential Context: Our confident police detective comes into the crime scene without any information beforehand and after investigating clues claims that:

b. Katil şu pencere-den kaç-acak-Ø-mış.
murderer that window-ABL run.away-FUT-COP-EVD
"(I infer that) the murderer was going to escape from that window."

(27) a. Perceptual Context: The police detective watches the camera recordings and says that:

b. Katil şu pencere-den kaç-acak-Ø-mış.
murderer that window-ABL run.away-FUT-COP-EVD
"(It appears / turns out that) the murderer was going to escape from that window."

Note that, in neither inferential context nor perceptual context, it is not acceptable to reject the proposition in the scope of evidential without making a contradiction. It is only acceptable in reportative context. AnderBois (2014) argues that this is a cross-linguistically observable behaviour in reportative evidentials and can be accounted for by pragmatics of perspective shifts, rather than at the level of semantics. Meriçli (2016, p.60-61) remarks that the non-commitment to the truth of the proposition on the part of the speaker in reportative contexts in the case of Turkish suggests that, it must be due to the pragmatics of asserting a proposition on the basis of a report. Thus, it appears as unlikely that the non-commitment to the truth of the proposition in reportative evidentials suggests the existence of two distinct markers, one for inferentiality and one for reportativity.

In all of the contexts above, in (25), (26) and (27), the speaker makes an assertion about the past state of the world based on various kinds of evidences. Unlike their counterparts where the copular past marker *-(y)DI* occurs instead of the copular evidential marker *-(y)mIş*, it is possible to make assertions about the present state of the world as well. Such assertions are possible, for instance, in mirative uses such as *Kızınız çok iyi piyano çalıyormuş* 'Your daughter plays the piano very well (as it becomes apparent to me)', or in reportative contexts like *Ahmet bize gelecekmiş* 'Ahmet is going to come to ours (according to what he says)'.

Leaving aside the pragmatics of the kinds of evidence on the basis of which the speaker makes the assertion, the shared semantics of all the uses of the copular evi-

dential marker *-(y)mIş* appears to be resting on what they assert, that is an inferred, perceived, or reported state of the world either anchored to a past time or present.

4.7 Double -mIş Constructions: *-mIşmIş*

The expressions where *-mIş* and copular evidential marker *-(y)mIş* occur together require some discussion. *-mIşmIş* constructions signal that the speaker holds a disbelief towards the truth of the core proposition.

(28) Güya Ahmet sınav-a çalış-mış-Ø-mış.
Supposedly Ahmet exam-DAT study-PERF-COP-EVD
"Supposedly Ahmet studied / has studied for the exam."

However, it is not necessary that the speaker does not believe that the proposition is true. It may be just to point out that the proposition is dubious to a certain degree or the speaker is aware that the proposition accepts scrutinizing. Either way, unlike the cases where denying the proposition results in contradiction, the speaker does not commit to the truth of the proposition and likely does not believe that it is true. The non-commitment can be explained by that in these constructions *-(y)mIş* can only denote reportative evidentiality. As Şener (2011, pp.136-137) remarks, *-(y)mIş* results in infelicity in inferential contexts. In an inferential context like below (29), where it is apparent to the speaker that Ahmet has studied for the exam, the use of *-mIşmIş* is infelicitous.

(29) Context: The speaker finds course materials and notes spread all over Ahmet's desk.

#Ahmet sınav-a çalış-mış-Ø-mış.
Ahmet exam-DAT study-PERF-COP-EVD
#"(Supposedly) Ahmet has studied for the exam."

Since reportative contexts bring with itself a non-commitment to the proposition, it doesn't express any commitment on the part of the speaker. The strong disbelief that is associated with it, however, is implied due to the speaker's choice of using *-mIşmIş* instead of a single *-mIş*. (30a) is underspecified in terms of the kind of evidence on the basis of which the speaker makes the assertion. Hence, it is possible that it denotes inferential, perceptual or reportative evidentiality. In a reportative context, it is sufficient for the speaker to use a single *-mIş* to signal that she does not commit to the truth of the proposition. However, (30b) ensures that the speaker's utterance is understood as denoting reportative evidentiality which leads to the implication that the speaker likely does not believe that the proposition is true.

(30) a. Ahmet sınav-a çalış-mış.
Ahmet exam-DAT study-PERF/EVD

"(It is said to me that) Ahmet studied / has studied for the exam."

b. Ahmet sınav-a çalış-mış-Ø-mış.
Ahmet exam-DAT study-PERF-COP-EVD
"(It is said to me that) Ahmet studied / has studied for the exam."

One of the advantages of our proposal is that it allows for us to treat *-mIşmIş* unit as composed of verbal suffix *-mIş* and the copular evidential marker *-(y)mIş*. The former encodes that there is a consequent state that holds at RT, which may coincide with ST or be located within a past time interval. The copular marker *-(y)mIş*, as a pragmatic necessity, can only indicate reportative evidentiality in these structures and denotes that the speaker has reportative evidence for the proposition. Hence, the main difference between (30a) and (30b) lies in the purely evidential meaning of the copular marker *-(y)mIş*.

CHAPTER 5

CONCLUSION AND FUTURE WORK

In this thesis work, we answered the question *what is the aspectual meaning of the perfective/evidential suffix -mIş* and proposed a compositional account that captures its aspectual properties. We argued against a previous account (Demirok & Sağ, 2023) on the basis that it leads to difficulties related to in-situ interpretation of scope-taking elements like negation and for-adverbials. Instead, we proposed to employ quantificational event semantics (Champollion, 2015) to stay true to the surface level structure when dealing with quantifying expressions.

Furthermore, we demonstrated that Reichenbachian anteriority analysis for the suffix *-mIş* cannot account for the observation that the consequence of the underlying event needs to hold at the reference time. Thus, we argued that the suffix *-mIş* that attaches to the verb stem aspectually encodes a meaning similar to the English Perfect. We suggested that it achieves this through an aspectual coercion mechanism which has been put forward by Moens & Steedman (1988). The suffix *-mIş*, as a Perfect marker, coerces the underlying event to a consequent state. In order to capture this semantic restriction, we offered a *consequent state* relation, similar to Giorgi & Pianesi (1997), that holds between the underlying event and a consequent state. This consequent state is either determined by the lexical meaning of the underlying event or by world knowledge.

While this thesis contributes to the understanding of the semantics of the verbal suffix *-mIş*, it is important to recognise certain limitations inherent in the study. One limitation concerns our assumption about the verbal suffix *-DI*. We have assumed that *-DI* encodes past tense and perfectivity. It is perfective in the sense that *-DI* denotes that the event time is included in a contextually relevant past time interval. Our position amounts to that the marker *-DI* occupies both aspect and tense positions as a tense/aspect complex form. We have also assumed that both the verbal suffix *-DI* and its copular counterpart *-(y)DI* have the same denotation. Hence, they are the same lexical element. Together with the assumption that participial form projects a state, the noted aspectual distinction between perfective *-DI* and imperfective *-(y)DI*, in our proposal, amounts to the event/state distinction. However, our proposal cannot account for the pluperfect structures formed by *-DIydI* that are frequently mentioned in the literature (Göksel & Kerslake, 2005; Lewis, 2001). It is also a viable option to proceed with the assumption that these two are semantically distinct markers.

Second limitation is related to the scope of the work. We have excluded the copular evidential marker *-(y)mIş*, hence, have not attempted a semantically uniform account that captures both the semantics of *-mIş* and *-(y)mIş*. Parallel to *-DI* and *-(y)DI*, it is possible that the copular evidential marker *-(y)mIş* is derived from a composition of the semantically null copula *Ø* and the verbal *-mIş*. However, our account does not make it clear how the verbal *-mIş* may relate to its copular counterpart *-(y)mIş*. One potential answer may be lying in the continuations of the world states. Similar to *consequent state* relation that maps an event to its consequent state, it is possible that *-(y)mIş* maps a past (or present) world state to its possible future states, by means of which, for instance, one makes assertions in an inferential context such as (26). This could be a promising subject for further investigation.

We have analysed the participial form constructed with the suffix *-mIş* as denoting a state and offered a compositional account for the expressions with morpheme combination *-mIşDI*. Other participial forms that are constructed with future marker *-(y)AcAK* or imperfective marker *-Iyor* require further research. These participial forms, similar to *-mIş*, exhibit stative properties.

Another line of work may follow the suffix *-mIş*'s relation to reasoning, particularly *abductive reasoning*, which has been suggested by Meriçli (2016) as well. Abduction is a form of reasoning that concerns with inference to the best explanation under uncertainty (Walton, 2014). In this sense, it is a type of probabilistic reasoning. This type of reasoning plays a crucial role in generating hypotheses, and by extension both in children's learning and scientific knowledge. Ultimately, further research into this relationship could offer deeper insights into how linguistic structures like -mIş engage cognitive processes in human reasoning and knowledge formation.

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