A Mixed Tense System: Two Roads to the Simultaneous Reading in Modern Greek

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1 Introduction

Temporal features are used to temporally locate an Inflectional Phrase relative to the time of the utterance or the time of the attitude. However, temporal features sometimes seem to remain semantically uninterpreted. Consider, for example, the following English sentence:

(1) 2 years ago, John thought that Mary was pregnant.

This sentence has two possible readings: the simultaneous and the back-shifted one. The former conveys simultaneity between John's thought and the embedded event, i.e., his thought two years ago was "Mary is pregnant". The latter conveys anteriority of the embedded event relative to John's thought, i.e., his thought two years ago was "Mary was pregnant". This paper focuses on the different strategies languages have to convey simultaneous readings. Notice that not all languages use an embedded past to convey simultaneous readings. Some languages, like Hebrew and Russian, directly make use of an embedded present that can be shifted, thus ending up referring to the "now" of the attitude holder rather than the time of the utterance.

This paper examines these two strategies to convey a simultaneous reading, focusing on data from Modern Greek (MG). First, we present the tense deletion and the shiftable present parameters. Then, building on Schlenker (1999) and Sharvit (2003, 2018), we provide an empirical description of MG, establishing that it has both strategies to obtain a simultaneous reading. This is theoretically important because it confirms that the two parameters are independent. What is more, we complete the characterization of MG present tense in the cross-linguistic typology of embedded tense, claiming that it behaves like Russian and unlike Japanese, since our data suggest that it does not shift in non-attitudinal environments. Finally, we discuss the theoretical implications of these data in conjunction with the cross-linguistic picture from Hebrew and Russian, providing an analysis in terms of *Prefer De Se*.

1.1 The Tense Deletion Parameter

The embedded past in (1) seems to remain uninterpreted, since it does not express anteriority. One explanation is that this is due to a Sequence of Tense (SOT) rule which deletes past tense features. However, it could also be that the embedded past is indeed interpreted (and not deleted), but relative to the time of the utterance rather than relative to the local "now" of the attitude holder. This would be a temporal *de re* reading. Therefore, there are in principle two ways to get a simultaneous reading with past-under-past: (i) temporal *de re*, where the embedded past is interpreted relative to the time of the utterance and (ii) temporal *de se*, where the embedded past is deleted by an SOT rule and thus remains uninterpreted. Here are the Logical Forms (LF) each mechanism yields for (1):[1]

(2) *De re:* [2 years ago] λt1 John think^{past}t1 λt0 that Mary be^{past}**t1** pregnant.

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[1] We provide simplified LFs and we represent tense features as superscripts by analogy with other features. Also, we take the t0 parameter to be the perspectival point, i.e., the "local now" to use the terminology of Abusch (1988) and Heim (1994). Finally, only the deleted past tense features on the verb are important in (3). The features on the lambda binder illustrate feature transmission.

(3) *De se:* [2 years ago] λt1 John think^{past}t1 λt0^{past} that Mary be$^{\sout{past}}$**t0** pregnant.

In temporal *de re*, where the temporal variable is not locally bound, the embedded past tense is indeed interpreted, but not with respect to John's temporal perspective. It is rather interpreted with respect to the same temporal perspective as the matrix past tense is. Therefore, John's thought and Mary's pregnancy are in our past, but the two could co-occur. In temporal *de se*, however, the embedded past tense is deleted by an SOT rule and then interpreted as a zero-tense with respect to John's local "now". Therefore, t0 ends up being simultaneous with t1, which on its turn precedes the time of the utterance by 2 years.

We should mention that there are two ways to implement an SOT rule that accounts for temporal *de se*. One is by feature deletion under c-command (Ogihara 1996, Sharvit 2003, 2018), another is by feature transmission under agreement (Abusch 1997, Grønn and von Stechow 2010). Semantically, whether a feature is deleted or inserted will not make any difference, so for the purposes of this paper, we will follow Ogihara (1996) and Sharvit (2003, 2018) in stating the SOT rule in terms of feature deletion, as illustrated in (3).

But why would we posit an SOT rule in the first place if we can explain the data in terms of temporal *de re*? Abusch (1994, 1997) argues that an SOT rule is needed, because temporal *de re* cannot account for all attested simultaneous readings (Ogihara 1996, von Stechow 1995, 2003). She provides the following example (reconstructed from Kamp and Rohrer 1983):

(4) John decided a week ago that in ten days he would say to his mother that they were having their last meal together.

The most salient reading of this sentence in English is the simultaneous one, according to which John will say to his mother in three days from the time of the utterance "We are having our last meal together". The temporal relations are thus understood in the following way, where U is the time of the utterance:

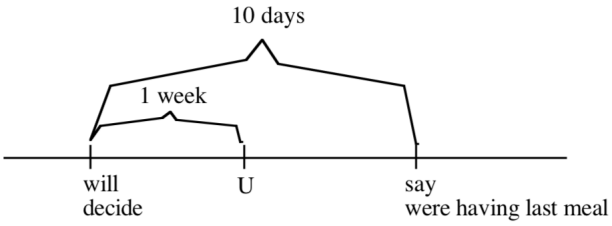

Figure 1: Temporal relations in (4). Picture by Abusch (1994).

The time of the meal is after any other time in the sentence. This example demonstrates that the embedded past tense can under certain circumstances remain truly uninterpreted. Indeed, if past tense features were computed semantically, the most embedded past tense, "were", would have to denote a point in time anterior to (i) the time of the utterance (temporal *de re*) or (ii) the time of the saying (temporal *de se*). Yet, the temporal relationships are understood in a way that excludes both (i) and (ii): the embedded past does not refer to any past moment at all. Therefore, the past tense seems to be there solely for morpho-syntactic reasons, being in a sense "deleted" in the semantic computation. Thus, we need to posit an agreement rule in the domain of tense, namely an SOT rule, which deletes the past tense features at the level of the LF. Such features are a mere agreement marker with the c-commanding matrix past. Here is the rule in its simplest form (reconstructed from Ogihara 1996, Sharvit 2018):

(5) **SOT rule:** When a tense morpheme is c-commanded by an agreeing tense morpheme (attached to an intensional predicate), it may be deleted at the level of the LF.

According to this rule, a past c-commanded by another past can be deleted at the LF and thus remain uninterpreted. Past tense features are transmitted through the binder to the embedded verb with the

bound time variable, but are then deleted by the SOT rule at the LF. That is precisely what happens with (4), as seen in the following LF:

(6) [a week ago] λt1 John decide^{past}t1 λt0$^{\sout{past}}$ he will$^{\sout{past}}$t0 say_λt0 that they have$^{\sout{past}}$t0 their last meal together.

Whenever a language has such a deletion rule, it is considered an SOT language.[2] Yet, not all languages display tense deletion. For example, Russian, Hebrew and Japanese are non-SOT languages; thus, all tense features have to be semantically interpreted. As we saw, an embedded past can be interpreted either *de re* or *de se*. In (4), however, the *de re* reading is blocked since the embedded past is not prior to the time of the utterance. Thus, the Hebrew equivalent of (4) would necessarily get a back-shifted reading. In other words, the embedded past would express anteriority with respect to the c-commanding one. Consider the following example from Hebrew (Sharvit 2003):

(7) Lifney šavua, Dan hexlit še be'od asara yamim, bizman aruxat ha-boker, hu
Before week Dan decide-PST that in ten days at-time food the-morning he
yomar le-imo še hu hitga'agea ele-ha.
will-tell to-his-mother that he miss-PST to-her
'Dan decided a week ago that in ten days at breakfast he would say to his mother that he missed her.'

In this case, what Dan will say in three days is "Mom, I missed you". Hebrew being a non-SOT language, the most embedded past is interpreted, expressing anteriority with respect to the time of his utterance. In other words, whenever a language does not have an SOT rule, such as Hebrew, Russian, and Japanese, examples like (7), where the *de re* reading of the embedded attitude is false, must have a back-shifted reading. This is summarized in the following table:

Past-under-past most salient reading	SOT languages	non-SOT languages
Simultaneous	YES	NO
Back-shifted	NO	YES

Table 1: Availability of simultaneous readings under past.

1.2 The Shiftable Present Parameter

A separate question that arises is whether a present-under-past sentence allows for simultaneous readings. In other words, can the embedded present tense in a given language refer to the same moment as the matrix past tense? This depends on whether the present tense is shiftable, in the sense that it can refer to the local "now" of the agent in indirect discourse (possible in Hebrew, Russian and Japanese, often impossible in French and English). If a non-SOT language has a shiftable present tense, then the simultaneous reading can be expressed with a present-under-past. Non-SOT languages usually achieve this reading via a shiftable present indeed. As for non-attitudinal environments, such as relative clauses, there is a further sub-division; Hebrew and Russian present tenses do not shift in such environments, while the Japanese present does. On the contrary, standard SOT languages, like English, usually have a non-shiftable present, which has to be evaluated at the time of the utterance.

1.2.1 Attitudinal Environments

The present tense is a matrix indexical in English, necessarily referring to the time of the utterance. By contrast, in non-SOT languages the present tense shifts under past tense attitude verbs. This is

[2] In our discussion of SOT, we use statives since eventive predicates often block simultaneous readings for aspectual reasons, independently of tense (Stowell 2007, Altshuler 2016).

the mechanism non-SOT languages use to express a simultaneous reading. Here's an example from Hebrew (Ogihara and Sharvit 2012):

(8) Lifney alpayim šana, Yosef gila še Miriam ohevet oto.
Before 2,000 year Yosef find-out-PST that Miriam love-PRS him.
'2,000 years ago, Yosef found out that Miriam loved (literally: loves) him.'

In this example, the indexical reading of the present tense is blocked by the temporal operator "2,000 years ago". The only plausible LF for (8) would thus be:

(9) [before 2,000 years] λt1 Yosef find-out^{past}t1 λt0 that Miriam love_**t0** him.

In other words, the present tense is interpreted relative to Yosef's local "now". What he found out is: "Miriam loves me (now)". The exact same pattern is observed in Japanese (Ogihara and Sharvit 2012) and in Russian (Grønn and von Stechow 2010).

It thus seems that SOT languages use a matrix indexical present (Schlenker 1999, Sharvit 2003), while non-SOT languages use a shiftable present. From a theoretical perspective, there are thus two parameters: (i) a deleted past and (ii) a shiftable present. These predict the following typology under attitudes (Sharvit 2003, 2018):

Parameters	English, French	Russian, Hebrew, Japanese	Modern Greek
Deleted Past	YES	NO	YES
Shiftable Present	NO	YES	YES

Table 2: Typology under attitudes.

MG is the only language observed so far where both parameters are active, having two roads to the simultaneous reading. Thus, it shows that the correlation between having either a deleted past or a shiftable present but not both is accidental. This is theoretically important, because it confirms that the two parameters are independent.

1.2.2 Non-attitudinal Environments

What happens with the present tense in non-attitudinal environments, like relative clauses? Will the present tense still shift in extensional environments, where there is no attitude report and thus no local "now"? Not necessarily. If a language has a shiftable present, it could only shift in attitudinal environments (Russian and Hebrew) or also in non-attitudinal ones (Japanese). For example, present-under-past may be used in relative clauses to refer to a past moment in Japanese, but not in Russian. Consider the following Japanese sentence from Ogihara and Sharvit (2012):

(10) Joseph-wa ryokoo-o aisuru zyosei-ni atta.
Joseph-TOP travelling-ACC love-PRS woman-DAT meet-PST
'Joseph met a woman who loved (literally: loves) travelling.'

This sentence has two possible readings: a simultaneous one, according to which the woman loved travelling at the time of the meeting (not necessarily now), and an indexical one, according to which the woman loves travelling now (not necessarily at the time of the meeting). On the contrary, present-under-past in relative clauses in Russian, English, Hebrew (and MG as we will argue) can only give rise to unshifted readings. Such sentences only have the indexical reading as illustrated by the following Hebrew example (Ogihara and Sharvit 2012):

(11) Be-yalduto pagaš Yosef iša še ohevet letayel.
In-childhood meet-PST Yosef woman that love-PRS traveling
'In his childhood, Yosef met a woman who loved (literally: loves) traveling.'

This means that the woman must love traveling now, at the time of the utterance (not necessarily in Yosef's childhood). To summarize, we have the following typology:

Shiftable Present	Japanese	English, Russian, Hebrew, Modern Greek	English
Attitudinal Environments	YES	YES	NO
Non-attitudinal Environments	YES (optionally)	NO	NO

Table 3: Shiftable present in non-attitudinal environments.

2 Empirical Findings

We provide MG data to establish that the present tense is shiftable, but only in attitudinal environments, and that there is an SOT rule. All data report our native judgments as well as those of four other native speakers, unless stated otherwise. Also, we assume there was unanimity in judgments, unless stated otherwise. The consultants heard the sentence pronounced by a native speaker and were asked to make a binary acceptability judgment (acceptable/unacceptable). The raw data can be accessed here.

2.1 Attitudinal Environments

2.1.1 Shiftable Present

MG present tense is shiftable in attitudinal environments, like Hebrew and unlike English. That is, a present tense embedded under a past tense attitude verb can be read *de se*, i.e., evaluated with respect to the "now" of the attitude holder. This is illustrated in the following examples:

(12) To 1960, o Yanis iksere oti i Maria ine omorfi.
The 1960, the Yanis know-PST that the Maria is-PRS beautiful
'In 1960, Yanis knew that Maria was (literally: is) beautiful.'

(13) Prin dheka khronia, i Maria mu ipe oti ine enkios.
Before ten years the Maria to-me tell-PFV-PST that is-PRS pregnant
'Ten years ago, Maria told me that she was (literally: is) pregnant.'

Both sentences have a simultaneous reading: what Yanis knew is "Maria is beautiful" and what Maria said is "I am pregnant". The "now" of the attitude holder. Therefore, MG present tense, unlike English present tense, can be shifted in attitude reports.

2.1.2 Deleted Past

Having established that present-under-past can trigger a simultaneous reading under attitudes verbs, two questions arise:

1. Does past-under-past also trigger a simultaneous reading in MG?
2. If so, does it still have a simultaneous reading when a *de re* reading of the embedded past tense is blocked? In other words, does it have an SOT rule?

The answer to both questions is "yes". In fact, the most salient reading of simple past-under-past sentences is the simultaneous one:

(14) To 1960, o Yanis iksere oti i Maria itan enkios.
The 1960, the Yanis know-PST that the Maria is-PST pregnant
'In 1960, Yanis knew that Maria was pregnant.'

What John knew is "Mary is pregnant". The back-shifted reading, though possible, is considerably less salient and would require a contextually salient interval preceding 1960 to be licensed.

However, as mentioned previously, simultaneous readings of simple past-under-past sentences like (14) could be accounted for by a *de re* LF. In other words, it could be that MG is a non-SOT language, but that the most embedded past is interpreted with respect to the time of the utterance rather than with respect to the local "now" of Yanis. However, Sharvit (2018) provides an example, where such a *de re* interpretation of the past is false and yet a simultaneous reading is accessible:

(15) Prin mia evdhomadha, o Jorghos ipe oti se dheka meres tha eleghe
Before one week the Jorghos say-PST that in ten days will say-IPFV-PST
stin kopela tu oti sinadjiondusan ja teleftea fora.
to-the girlfriend of-his that meet-IPFV-PST for last time.
'A week ago, Jorghos said that in ten days he would say to his girlfriend that they were meeting for the last time.'

What Jorghos planned to say is "We are meeting for the last time"; the embedded past remains uninterpreted. Therefore, this sentence has the simultaneous reading, despite the past tense features on the most embedded verb. Importantly, "were " cannot be read *de re* in this case since the time of the meeting is not anterior to the time of any salient moment (including the time of the utterance). Therefore, the fact that a simultaneous reading is possible can only be explained with the existence of an SOT rule, which deletes the past tense features at the level of the LF. Up until now, this is exactly the reasoning we had applied to English. What is interesting in MG, however, is that there is another way to express (15), namely using the shifted present:

(16) Prin mia evdhomadha, o Jorghos ipe oti se dheka meres tha eleghe
Before one week the Jorghos say-PST that in ten days will say-IPFV-PST
stin kopela tu oti sinadjiondude ja teleftea fora.
to-the girlfriend of-his that meet-PRS for last time.
'A week ago, Jorghos said that in ten days he would say to his girlfriend that they were (literally: are) meeting for the last time.'

We therefore confirm what Schlenker (1999) and Sharvit (2003, 2018) have mentioned, namely that MG displays an optional SOT (Tsilia 2021).

2.2 Non-attitudinal Environments

As mention in section 1.2.2, there is a further sub-division between languages that have a shiftable present tense: there are Russian-type languages, where the present tense shifts only in attitudinal environments, and Japanese-type ones, where the present tense may shift everywhere. We provide data that establish that MG is a Russian-type language.

MG present tense is shiftable in attitudinal environments, referring to the "now" of the attitude holder rather than the utterance time. What about non-attitudinal environments? Relative clauses qualify as such; indeed, present-under-past may be used to trigger a simultaneous reading in relative clauses in Japanese, but not in Russian, Hebrew or English. In these languages, using present-under-past in relative clauses only gives rise to an indexical reading, meaning that the present tense is interpreted at the time of the utterance, behaving like a matrix indexical. For example:

(17) Mark met a woman who is smiling.

This can only mean that the woman is smiling at the time of the utterance, and hence has an indexical reading. Importantly, it cannot convey the meaning that "Mark met$_t$ a woman who is$_t$ smiling". The same is observed in Hebrew (Ogihara and Sharvit 2012) and Russian (Schlenker (1999), Kondrashova (2006), Altshuler (2016) a.o.).

MG present-under-past in relative clauses behaves like English, Hebrew and Russian (Tsilia 2021). Consider the following example:

(18) Prin 20 khronia o Pavlos sinerghastike me enan andra pu (itan/#ine)
Before 20 years the Pavlos collaborate-PFV-PST with a man who is-PST/#PRS
proedros, ke o opios ine tora stin syntaxi.
president, and the who is-PRS now to-the retirement.
'20 years ago, Pavlos collaborated with a man who was president, and who is now retired.'

This example with an embedded present is semantically deviant since the indexical reading is blocked. The only possible reading is one according to which the man is president at the time of the utterance, which is incompatible with him being retired. Going one step further, the same point can be made in complement clauses that appear under non-attitudinal constructions:

(19) Ta perasmena khristughena, sto ikogheniako trapezi, itan psemata oti i
The last Christmas at-the family table is-PST lies that the
Anula (itan/#ine) lipimeni.
Anula-diminutive be-PST/#PRS sad.
'Last Christmas, at the family table, it was not true that Anula was sad.'

The indexical reading of the embedded present also being blocked here, the example is deviant, since it does not have a simultaneous reading. This data-point is particularly important, since it demonstrates that the phenomenon is purely semantic. More specifically, it is not the case that present tense systematically shifts in complement clauses. It only shifts if the complement clause is preceded by an attitude verb. In fact, the simultaneous reading re-appears with past-under-past, in both relative and complement clauses.[3] Therefore, it seems that MG has a Russian- rather than a Japanese-type present tense, disallowing shifting in non-attitudinal environments.

3 Analysis

We established that MG has an SOT rule as well as a shiftable present in attitudinal environments.[4] What are the theoretical implications of these data and how do they fit in the cross-linguistic picture? The availability of simultaneous readings with deleted past in English and with shifted present in Hebrew suggests that tense semantics has a *de se* component (Abusch 1988, Ogihara 1996). We argue that based on MG and English, we could in principle have three rather than two roads to the simultaneous reading: (i) a *de se* deleted past, (ii) a *de re* past, and (iii) a *de se* shifted present. Cross-linguistic typology, and more specifically, the fact that a *de re* past is less salient in non-SOT languages, such as Hebrew and Russian, will urge us to adopt a *Prefer De Se* rule, following Ogihara and Sharvit (2012). This will yield the prediction that there are two rather than three roads to the simultaneous reading in MG.

3.1 Two or Three Roads to the Simultaneous Reading?

Since MG is an optional SOT-language, the embedded past in attitude reports may be semantically deleted, as in (15). We can also get a simultaneous reading in MG using a shiftable present in a present-under-past sentence. So far, both of these strategies use *de se* LFs. Yet, as we explained in section 1, a *de re* LF of the embedded past can also explain simultaneous readings in simple past-under-past cases. Therefore, there should in principle be three rather than two possible LFs giving rise to a simultaneous reading. Consider the possible LFs for the past-under-past (14) and the present-under-past (12):

[3] We should note here that unlike the relative clause, the complement clause in (19) was not unanimously acceptable (3 out of 5 consultants accepted it), even with an embedded past. This disagreement in judgments motivated an experimental investigation in Tsilia (2021).

[4] The optionality of MG is problematic for pragmatic accounts of SOT, such as the Altshuler and Schwarzschild (2013) cessation implicature account. According to this account, the back-shifted reading of past-under-past sentences appears as a cessation implicature, whenever a viable present tense alternative is available. However, as Altshuler (2016) states in a footnote (p.136), MG is problematic for this account, since no cessation implicature is triggered, despite a present tense alternative being available.

(20) *de se* past-under-past: [In 1960] λt1 Yanis know^{past}t1 λt0$^{\sout{past}}$ that Mary be$^{\sout{past}}$t0 pregnant.

(21) *de re* past-under-past: [In 1960] λt1 Yanis know^{past}t1 λt0 that Mary be^{past}t1 pregnant.

(22) *de se* present-under-past: [In 1960] λt1 Yanis know^{past}t1 λt0 that Mary be^{pres}t0 pregnant.

There is a third *de re* road to the simultaneous reading, deriving a simultaneous reading without an SOT rule. Based on simple past-under-past sentences in MG and English, we could hypothesize that simultaneous readings with past-under-past are derived from a *de re* LF. However, this would not suffice to account for cases where the *de re* LF is false, as in (15). Such examples have a simultaneous reading in MG and in English and yet a *de re* interpretation of the most embedded past is blocked. Therefore, if (15) is felicitous and has a simultaneous reading, we need to posit an SOT rule. In other words, not all simultaneous readings are *de re* readings of the embedded past. Some embedded pasts are truly deleted. The question that remains open is: are there any simultaneous *de re* readings at all in SOT languages?

3.2 *Prefer De Se*

There are reasons to posit that a *de re* LF is blocked by the *de se* ones and thus that there are only two roads to the simultaneous reading, both *de se*. Otherwise, our cross-linguistic typology would over-generate simultaneous readings for non-SOT languages, such as Hebrew and Russian. Indeed, if the embedded past could be read *de re* in MG, yielding simultaneous readings, this would also be predicted to be possible in non-SOT languages. Yet, past-under-past in Hebrew and Russian primarily yield back-shifted instead of simultaneous readings.[5] Consider the following Hebrew example (see also Ogihara and Sharvit (2012)):[6]

(23) Be šnat alpa'im, Yosef yada še Miriam haita be-heraion.
In year 2000, Yosef know-PST that Miriam be-PST pregnant.
'In 2000, Yosef knew that Miriam had been (literally: was) pregnant.'

This means that Miriam had been pregnant at some time before 2000, and that what Yosef knew is "Miriam was pregnant". In other words, the embedded past is interpreted *de se*, not *de re*, i.e., the pregnancy is in the past from the point of view of the attitude holder, Yosef in this case. The same was true for one of our consultants in Russian:[7]

(24) V dvuxtysjačnom godu Ivan znal, čto Maša byla beremenna.
In 2000 year Ivan know-PST that Masha be-PST pregnant.
'In 2000, Ivan knew that Masha had been (literally: was) pregnant.'

Why do speakers of non-SOT languages dispreferr a *de re* simultaneous reading of the embedded past? This observed competition between a *de se* present- and a *de re* past-under-past to derive the simultaneous reading could be the result of *Prefer De Se*, a rule stating that a *de se* LF is preferred over a *de re* one when they yield similar truth conditions. In other words, when you can express *de se* truth conditions, you prefer to do so.[8] We will therefore assume that the preferred LFs are

[5]There are exceptions to this, since there are Hebrew and Russian speakers who get simultaneous readings of past-under-past sentences. For most speakers, however, back-shifted readings are preferred, while simultaneous ones are marked (Altshuler 2016, Grønn and von Stechow 2010, Ogihara and Sharvit 2012). Even though the status of past-under-past in non-SOT languages is not completely clear, there is a contrast with SOT languages, which needs to be explained.

[6]We thank Nur Lan for his time and his help.

[7]We thank Lena Pasalskaya for her time and her help. We should note that in Russian, there is within-speaker variation. Importantly, the back-shifted reading is preferred for some but not all speakers. This could motivate an experiment in future research.

[8]We could at first sight give an implicature account of this, yet in such a case the effect would be predicted to disappear under negation which is not the case.

(20) and (22). (21) is blocked by an independently motivated (Schlenker 1999) *Prefer De Se* rule (Schlenker 1999, Ogihara and Sharvit 2012):[9]

(25) **Prefer De Se:** Whenever this is compatible with the situation reported, prefer a *de se* over a *de re* LF.

Ogihara and Sharvit (2012) use this strategy to explain the unavailability of simultaneous readings of past-under-past in Hebrew. Since the embedded present gives a *de se* LF, while the embedded past does not in Hebrew, *Prefer De Se* would explain why past-under-past sentences, like (23), have a back-shifted reading.

The rule does not apply universally. There are cases where a *de re* LF may be preferred over a *de se* one, namely when the latter fails to report the original utterance. *De se* truth conditions are a strict subset of *de re* ones, so there are scenarios in which only a *de re* LF yields the correct truth conditions. In such cases, the *Prefer De Se* rule will not apply. We only prefer a *de se* LF if it can be uttered felicitously. For example, let's say we are on Friday, but Mark falsely believes it's already Sunday and he says "On Friday, it was raining". Now consider the following attitude report:

(26) Mark said that it was raining on Friday.

In this case, a *de se* LF would predict that Mark's utterance were "Today, it is raining", which is wrong in this context. A *de re* LF, however, would predict the correct report. Therefore, whenever *de re* LFs are the only ones compatible with the situation reported, *Prefer De Se* does not make its effects felt.

3.3 Predicted Logical Forms

Given our analysis, *de re* LFs are dispreferred for simultaneous readings, *de se* LFs being the most available ones. There are two roads to a *de se* LF in MG: either a shifted present as in (22) or a deleted past as in (20). Both are preferred over a *de re* LF, because of *Prefer De Se*. Therefore, MG has two rather than three roads to the simultaneous reading. The preference for a shiftable present in non-SOT languages is also explained. Our prediction for (16) and (15) is that we can choose between the following *de se* LFs, since *Prefer De Se* has blocked a *de re* past-under-past one:

(27) *de se* past-under-past, simultaneous reading:
[A week ago] λt1 Jorghos say^{past}t1 λt0$^{\sout{past}}$ he will$^{\sout{past}}$t0 sayλt0$^{\sout{past}}$ they meet$^{\sout{past}}$t0 for the last time.

(28) *de se* present-under-past, simultaneous reading:
[A week ago] λt1 Jorghos say^{past}t1 λt0$^{\sout{past}}$ he will_t0 sayλt0 they meet^{pres}t0 for the last time.

This sentence is only expressible using an embedded past in English. We therefore predict that in English only the equivalent of the first LF, (27), is accessible. As for non-SOT languages, like Hebrew, *Prefer De Se* blocks a *de re* LF of past-under-past. Since there is no SOT rule, such sentences end up having a back-shifted reading. The simultaneous reading in Hebrew is expressible only through the equivalent of the second LF, (28). The same holds for Russian, or at least those Russian speakers who prefer the back-shifted reading of past-under-past.

To sum up, the preference for a shifted present tense over a *de re* past in non-SOT languages is derived thanks to a *Prefer De Se* rule. The latter also derives the availability of two rather than three roads to a simultaneous reading in MG. There are two ways to get a *de se* LF in MG: either a shifted present tense or a deleted past. One of the two is preferred over a *de re* LF, if they are both compatible with the situation reported.

[9]This rule was used in Schlenker (1999) to explain disjoint reference effects triggered by logophoric pronouns. For example, in "John hopes he$^{de.re}$ will be elected" the logophoric pronoun "he" needs to be disjoint from "John".

4 Conclusion

In this paper, we established that MG has two roads to the simultaneous reading. Both present- and past-under-past are acceptable to convey the simultaneous reading in an attitudinal environment, because of the co-existence of two independent parameter settings in MG: (i) a deleted past and (ii) a shiftable present. The latter does not shift in non-attitudinal environments, like relative clauses, behaving like Russian present tense. Thus, MG has a mixed tense system, having the deleted past of English and the shiftable present of Russian and Hebrew. We claimed that based on MG, there could in principle be three roads to the simultaneous reading: (i) a deleted past, (ii) a *de re* past, and (iii) a shifted present. Yet, cross-linguistic data from non-SOT languages, which disprefer the second strategy, led us to adopt a *Prefer De Se* rule. Thus, we finally claimed that MG only has two roads to the simultaneous reading, namely a deleted past and a shifted present.

References

Abusch, Dorit. 1988. Sequence of tense, intensionality and scope. In *The Proceedings of the 7th West Coast Conference on Formal Linguistics*.

Abusch, Dorit. 1994. Sequence of tense revisited: Two semantic accounts of tense in intensional contexts. *Ellipsis, Tense and Questions* DYANA-2 Deliverable:87–139.

Abusch, Dorit. 1997. Sequence of tense and temporal de re. *Linguistics and Philosophy* 20:1–50.

Altshuler, Daniel. 2016. *Events, States and Times*. De Gruyter.

Altshuler, Daniel, and Roger Schwarzschild. 2013. Moment of change, cessation implicatures and simultaneous readings. In *Proceedings of Sinn und Bedeutung 17*, 45–62.

Grønn, Atle, and Arnim von Stechow. 2010. Complement tense in contrast: The SOT parameter in Russian and English. *Oslo Studies in Language* 2:245–267.

Heim, Irene. 1994. Comments on abusch's theory of tense. *Ellipsis, Tense and Questions* DYANA-2 Deliverable:143–170.

Kamp, Hans, and Christian Rohrer. 1983. Tense in texts. In *Meaning, Use, and Interpretation of Language*, 250–269. De Gruyter.

Kondrashova, Natalia. 2006. Is Russian a split SOT-language? In *Proceedings of FASL 14*. University of Michigan.

Ogihara, Toshiyuki. 1996. *Tense, Attitudes, and Scope*. Springer.

Ogihara, Toshiyuki, and Yael Sharvit. 2012. Embedded tenses. In *The Oxford handbook of tense and aspect*, 638–668. Oxford University Press.

Schlenker, Philippe. 1999. Propositional attitudes and indexicality: a cross categorial approach. Doctoral dissertation, Massachusetts Institute of Technology, Cambridge, MA.

Sharvit, Yael. 2003. Embedded tense and Universal Grammar. *Linguistic Inquiry* 34:669–681.

Sharvit, Yael. 2018. Sequence of tense: Syntax, semantics, pragmatics. In *Pronouns in Embedded Contexts at the Syntax-Semantics Interface*, volume 99 of *Studies in Linguistics and Philosophy*, 215–247. Springer.

von Stechow, Arnim. 1995. On the proper treatment of tense. *Semantics and Linguistic Theory* 5:362–386.

von Stechow, Arnim. 2003. Feature deletion under semantic binding: Tense, person, and mood under verbal quantifiers. In *Proceedings of the Thirty-third Annual Meeting of the North East Lingusitic Society*, 379–403. Ahmrest, MA: Massachusetts Institute of Technology.

Stowell, Tim. 2007. The syntactic expression of tense. *Lingua* 117:437–463.

Tsilia, Anastasia. 2021. Embedded tense: Insights from Modern Greek. Master's thesis, PSL Research University.

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