Remarks on Sequence of Tense in English*

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Abstract

In this paper, I present a Reichenbachian analysis of sequence of tense (SOT) phenomena in English. In the traditional view on SOT, SOT is triggered when a past tense is within the scope of another past tense. I claim that the licensing factor for SOT is not the past tense of a matrix clause, but the pastness of the event time of a matrix clause. On the basis of this claim, I propose the mechanisms for the licensing and temporal interpretation of SOT, and demonstrate how the proposed mechanisms can account for SOT-related phenomena, such as the ambiguity between simultaneous and shifted readings, double-access readings, and non-local SOT phenomena.

Keywords: sequence of tense, double access, simultaneous reading, shifted reading, deictic tense, non-deictic tense, Reichenbachian approach

1. Introduction

English is one of the languages that exhibit sequence of tense (=SOT) phenomena. The sentence (1) is an instance of SOT, and has the ambiguity between the readings (2a) and (2b).

(1) Taro said that Hanako was a college student.

(2) a. Taro said, “Hanako is a college student.”

b. Taro said, “Hanako was a college student.”

Enç (1987) calls the reading in (2a) a *simultaneous reading*, and the one in (2b) a *shifted reading*, respectively.

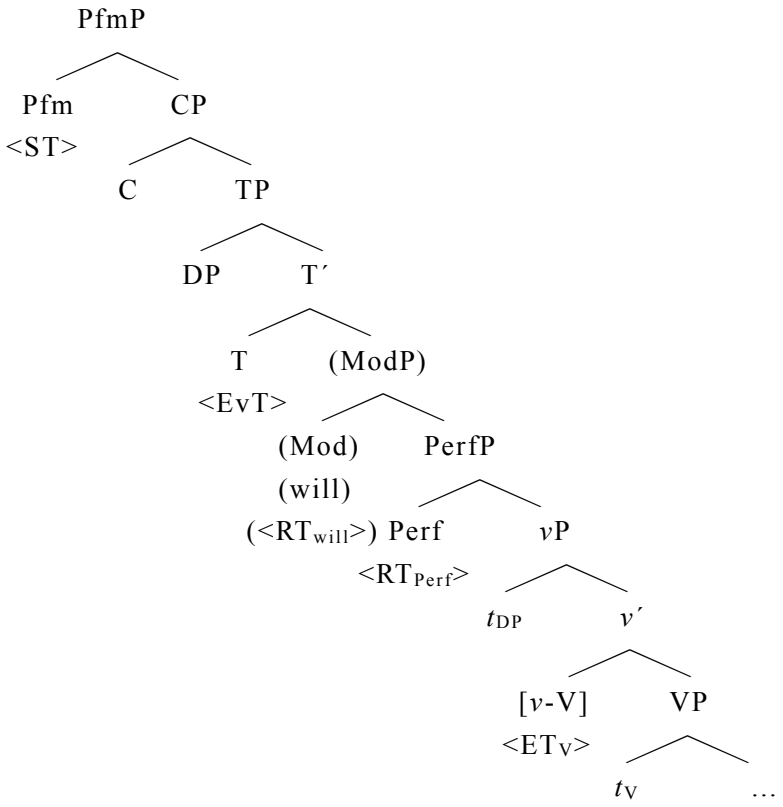
In what follows, I will present the basic framework for temporal interpretation, and demonstrate how this framework can account for SOT and related phenomena, focusing on what kind of factor is responsible for the licensing of SOT, and what kind of mechanisms are required to provide temporal interpretations to SOT sentences.

2. The Framework for Temporal Interpretation

As the theoretical framework for the discussion below, I assume the approach of Kaneko (2013), which is a revised and extended version of Kaneko (2009a, b). Here I give a brief outline of Kaneko (2013).

In Kaneko (2013), along the basic lines of Reichenbach (1947), the temporal interpretation of a sentence is represented as the ordering relations among temporal elements such as Speech Time, Event Time and so on, which are contained in relevant functional or lexical heads as shown in (3).

(3)



At the top of a root clause is Performative Phrase (=PfmP), which is concerned with the speech act of a speaker.[1] The head Pfm of PfmP contains Speech Time (=ST). The head T of TP contains an Evaluation Time (=EvT), which is the base point of the temporal interpretation of a clause. The head Perf of Perfect Phrase (=PerfP) carries a Reference Time (=RT_{Perf}), which corresponds to RT in the sense of Reichenbach (1947). When Perf has the feature [+Perf(ect)], the Perf is realized as the perfect auxiliary *have*, while Perf with the feature [−Perf(ect)] appears as a null element. The head V of VP contains an Event Time (=ET_V), which is equivalent to a Reichenbachian ET. The future modal *will* optionally occurs between TP and PerfP, and has a modal

Reference Time (=RT*will*), which indicates the time at which the future prediction in question is made.

The temporal representation of a clause is constructed by composing the temporal specifications of T, Perf, and *will*.[2]

(4) a. T-[+Pres(ent)]: RT is simultaneous with EvT.[3] (RT, EvT)
b. T-[+Past]: RT is anterior to EvT. (RT < EvT)

(5) a. Perf-[−Perf]: ET_V is simultaneous with RT_{Perf}.
(ET_V, RT_{Perf})
b. Perf-[+Perf] (=have): ET_V is anterior to RT_{Perf}.
(ET_V < RT_{Perf})

(6) WILL: RT_{Perf} is posterior to RT_{will}. (RT_{will} < RT_{Perf})

When a clause is finite and its tense is deictic, the deictic evaluation time of the clause (=EvT_D) is identified with ST by the head Pfm of PfmP.[4]

(7) The Identification of Deictic Evaluation Time
The head Pfm of PfmP specifies that a deictic evaluation time EvT_D within its c-command domain is identical to ST. (ST=EvT_D)

This identification might be regarded as a kind of binding or agreement.

Let us see the sentence (8a) as an example.

(8) a. Bill will have bought a house.

b. [$_{PfmP}$ Pfm-<ST> [$_{CP}$[$_{TP}$ Bill [$_{T'}$ T-<EvT_D>-[+Pres] [$_{ModP}$ will-<RT_{will}> [$_{PerfP}$ have-<RT_{Perf}>-[+Perf] [$_{vP}$ t_{Bill} [$_{v'}$ [v-buy-<ET_{buy}>] [$_{VP}$ t_{buy} a house]]]]]]]]]

c. (ST=EvT_D) & (RT_{will}, EvT_D) & (RT_{will} < RT_{Perf}) & (ET_{buy} < RT_{Perf})

The future perfect sentence (8a) has the syntactic structure (8b), and its temporal representation (8c) is constructed by combining the pieces of information in (4a), (5b), (6) and (7).

3. Licensing and Temporal Interpretation of SOT

3.1. Licensing of SOT

In sequence of tense (SOT) sentences, the past tense of the finite complement clause of a matrix attitude verb indicates the *simultaneity* with the event time of the matrix verb or the *anteriority* to that event time, under particular circumstances.

In typical cases, the tense of a matrix verb is a past tense, as exemplified in (9). The sentence (9) has the ambiguity between the paraphrase (10) and the paraphrase (11).

(9) John heard that Mary was pregnant. (Hornstein (1990: 120))

(10) John heard “Mary is pregnant.” (ibid.)

(11) John heard “Mary was pregnant.” (ibid.)

Under the interpretation (10), the time of Mary’s pregnancy overlaps the event time of John’s hearing of the news, while under the interpretation (11), the time of Mary’s pregnancy is anterior to the event time of John’s hearing. Enç (1987) calls the interpretation (10) a

simultaneous reading and the interpretation (11) a *shifted reading*.

Along the lines of Kaneko (2009b, 2013), I propose that the distribution of SOT in English is accounted for by the following two conditions.

(12) The Licensing Condition for SOT[5]
When the event time of a matrix attitude verb is anterior to ST (that is, refers to some time in the past), its finite complement clause is a potential SOT domain.

(13) The Restriction on the Distribution of Deictic Past Tense
If a finite complement clause is a potential SOT domain, its tense must not be the deictic past tense T_D-[+Past].

Let us first consider (12). SOT has been traditionally considered to be triggered by the past tense of a matrix attitude verb.[6] It is true that typical instances of SOT are the cases in which a matrix past tense licenses SOT in the complement clause as exemplified in (9). However, it is not the case that only the past tense of a matrix verb triggers SOT. Huddleston and Pullum (2002) cite (15) as well as (14) as instances of SOT, and the temporal form of the matrix verb of (15) is not a past tense form but a present perfect form. Stowell (2007) also points out (16) as an instance of SOT.

(14) Jill said that she had too many commitments.
(Huddleston and Pullum (2002: 151))

(15) I have never said that she had too many commitments.
(ibid.: 153)

(16) John has often believed/thought/said that he was unhappy.
(Stowell (2007: 143))

The temporal interpretation system overviewed in Section 2 gives the temporal representation (17a) to the matrix clause of (14), and (17b) to the matrix clause of (15).

(17) a. $(ST=EvT_D)$ & $(RT_{Perf} < EvT_D)$ & (ET_{say}, RT_{Perf})
b. $(ST=EvT_D)$ & $(RT_{Perf,}\ EvT_D)$ & $(ET_{say} < RT_{Perf})$

Both instances of ET_{say} are anterior to ST and satisfy the licensing condition (12).

The sentence (18a) below, which Declerck (1991) cites as an instance of SOT, also shows that the triggering factor for SOT is not a past tense of a superordinate clause.

(18) a. Bill seems to have told Mary that he felt depressed.
(Declerck (1991: 175))
b. Bill seems to have told Mary: 'I feel depressed.'
(ibid.)

According to Declerck, (18a) has the simultaneous reading (18b). I assume that infinitival clauses are not tensed (cf. Wurmbrand (2007), Kaneko (2009b)). The plausible trigger of SOT in this case is *have told*, but it does not carry a past tense.

I propose here, along the lines of Ransom (1986) and Wurmbrand (2014), that a matrix predicate that takes an infinitival complement clause requires the infinitival clause to contain a covert modal element.

Suppose that *seem* selects the functional projection FP whose head has a feature [+mod-seem] and takes an infinitival TP as its complement. The infinitival complement contains a covert modal expressing a kind of epistemic modality without futurity (Mod_{seem}), which agrees with the feature [+mod-seem] of F. I assume that the infinitival *to* is the amalgam of the infinitival T and Mod_{seem}.

(19) [seem [$_{FP}$ F-[+mod-seem][$_{TP}$ t_{Bill} [$_{T'}$ T [$_{ModP}$ Mod_{seem} [$_{PerfP}$ have [$_{vP}$ *v*-tell [$_{CP}$ that …]]]]]]]]

Suppose further that a matrix predicate such as *seem* specifies that the evaluation time of its infinitival complement (EvT_{to}) is identical to its event times, as in (20a). This identification is parallel to the identification of a deictic evaluation time by Pfm above. The infinitival T and Mod_{seem} have the temporal specifications (20b) and (20c), respectively.

(20) a. The Identification of EvT_{to}: EvT_{to} is identical to the ET of the matrix verb. (EvT_{to}=$ET_{matrixV}$)
b. Infinitival T: RT is simultaneous with EvT_{to}. (RT, EvT_{to})
c. Mod_{seem}: RT_{Perf} is simultaneous with $RT_{Modseem}$.
(RT_{Perf}, $RT_{Modseem}$)

Given (20a)-(20c), (18a) has the following temporal representation.

(21) Matrix Clause: (ST=EvT_D) & (RT_{Perf}, EvT_D) &
(ET_{seem}, RT_{Perf})

Infinitival Clause: (ET_{seem}=EvT_{to}) & ($RT_{Modseem,}$ EvT_{to})
& (RT_{Perf}, $RT_{Modseem}$) & (ET_{tell} < RT_{Perf})

In (21), the auxiliary *have* in the infinitival clause specifies that ET_{tell} is anterior to ST, which satisfies the licensing condition (12).[7]

In sum, the licensing factor of SOT is not the past tense of a matrix clause. What triggers SOT is that the event time of a matrix is anterior to ST.

Let us turn to the restriction (13), repeated here as (22).

(22) The Restriction on the Distribution of Deictic Past Tense
If a finite complement clause is a potential SOT domain, its tense must not be the deictic past tense T_D-[+Past].

It has been observed that an embedded past tense in SOT brings about a simultaneous reading or a back-shifted reading, but it does not allow for a "forward-shifted" reading under which the event or state described in the embedded clause occurs at some past time between the matrix event time and ST, while a past-under-past in a relative clause allows for any of the three readings (cf. Enç (1987: 638), Higginbotham (2002: 208), Ogihara and Sharvit (2011: 641)).

For example, according to Higginbotham (2002), the sentence (23) is ambiguous between a simultaneous reading and a shifted reading, but it lacks a forward-shifted reading as the sentence (24) shows.

(23) Gianni said that Maria was ill.

(Higginbotham (2002: 208))

(24) *Two years ago, Gianni said that Maria was ill last year.
(ibid.)

In contrast to this, the sentence (25) has the three-way ambiguity, and the sentence (26) has the forward-shifted reading as the sentence (26) shows.

(25) Gianni saw a woman who was ill. (ibid.)
(26) Two years ago, Gianni saw a woman who was ill last year.
(ibid.)

Ogihara and Sharvit (2011) also illustrate the three-way ambiguity of a past tense in a relative clause. (27a) corresponds to a simultaneous reading, (27b) to a back-shifted reading, and (27c) to a forward-shifted reading.

(27) a. In 1989, Joseph met a woman who loved him then.
(Ogihara and Sharvit (2011: 641))
b. In 1989, Joseph met a woman who loved him in the 70s.
(ibid.)
c. In 1989, Joseph met a woman who loved him in the 90s.
(ibid.)

These observations can be accounted for by the restriction (22). The restriction (22) prohibits the deictic past tense T_D-[+Past] from occurring in a potential SOT domain. As a result, a past tense in a potential SOT domain must be the non-deictic past tense T_{ND}-[+Past], which obligatorily brings about a simultaneous reading or a

back-shifted reading as will be shown in section 3.2. A past tense in a relative clause, in contrast, can be the deictic past tense T_D-[+Past], which can refer to any past time depending on context.

3.2. Temporal Interpretation of SOT

Let us now turn to the temporal interpretation of SOT. The temporal interpretation of SOT is dealt with by the following two interpretation rules.

(28) The Identification of Non-Deictic Evaluation Time
An attitude verb specifies that a non-deictic evaluation time EvT_{ND} of its complement clause is identical to its event time $ET_{matrixV}$. ($ET_{matrixV}$=EvT_{ND})

(29) The SOT Adjustment Rule (Optional)
If the non-deictic past tense T_{ND}-[+Past] occurs in a potential SOT domain, convert (RT < EvT_{ND}) to (RT, EvT_{ND}).

The identification rule (28), which is a kind of lexical redundancy rule, states that a matrix attitude verb functions as the identifier for the non-deictic evaluation time of its complement clause.[8] This identification is parallel to the identification of a deictic evaluation time by Pfm (7) and the identification of the infinitival evaluation time by a matrix verb (20a). The SOT adjustment rule (29) converts anteriority of the non-deictic past tense T_{ND}-[+Past] into simultaneity. (29) might be considered to correspond to past tense deletion of Ogihara (1996).

By way of illustration, let us consider (30). (30) has the syntactic

structure (31), and the temporal representation (32), in which the identification rule (28) specifies that EvT_{ND} is identical to ET_{say}.

(30) Gianni said that Maria was ill.

(31) [$_{TP}$ Gianni T_D-[+Past] [$_{PerfP}$ Perf-[−Perf][$_{vP}$ t_{Gianni} say [$_{TP}$ Maria T_{ND}-[+Past] [$_{PerfP}$ Perf-[−Perf] t_{Maria} be ill]]]]]

(32) Matrix Clause: ($ST=EvT_D$) & ($RT_{Perf} < EvT_D$) & (RT_{Perf}, ET_{say})
Complement Clause: ($ET_{say}=EvT_{ND}$) & **($RT_{Perf} < EvT_{ND}$)** & (RT_{Perf}, ET_{be})

If the SOT Adjustment Rule (29) does not apply to the temporal representation of the complement clause, we hold (33), which corresponds to the shifted reading of (30). If the adjustment rule applies, the bold-faced part of (32) is converted to (RT_{Perf}, EvT_{ND}).

(33) Matrix Clause: ($ST=EvT_D$) & ($RT_{Perf} < EvT_D$) & (RT_{Perf}, ET_{say})
Complement Clause: ($ET_{say}=EvT_{ND}$) & **(RT_{Perf} , EvT_{ND})** & (RT_{Perf}, ET_{be})

The temporal representation (33) corresponds to the simultaneous reading of (30).

The sentence (34) below contains the future modal *will* in the complement clause. (34) has the simultaneous reading corresponding to the paraphrase (35).

(34) John told me last April that he would graduate in May (but he didn't graduate after all). (Baker (1995: 541))

(35) John told me last April, "I will graduate in May" (but he didn't graduate after all). (ibid.)

The sentence has the temporal representation (36), in which EvT_{ND} of the complement clause is identified with ET_{say} by the identification rule (28).

(36) Matrix Clause: $(ST=EvT_D)$ & $(RT_{Perf} < EvT_D)$ & (RT_{Perf}, ET_{tell})
Complement Clause: $(ET_{tell}=EvT_{ND})$ & **$(RT_{will} < EvT_{ND})$** & $(RT_{will} < RT_{Perf})$ & $(RT_{Perf}, ET_{graduate})$

The SOT Adjustment Rule applies to the bold-faced part in (36), and we obtain the temporal representation (37), which corresponds to the simultaneous reading of (34).

(37) Matrix Clause: $(ST=EvT_D)$ & $(RT_{Perf} < EvT_D)$ & (RT_{Perf}, ET_{tell})
Complement Clause: $(ET_{tell}=EvT_{ND})$ & **(RT_{will}, EvT_{ND})** & $(RT_{will} < RT_{Perf})$ & $(RT_{Perf}, ET_{graduate})$

The bold-faced part in (37) indicates that the future prediction in this reading is made at the past time identified with the event time of the matrix clause.

It is expected that if we do not apply the SOT Adjustment Rule to sentences such as (34) above, we obtain a shifted reading. Freidin

(2012: 259, note 3) observes that the sentence (38) is ambiguous between a simultaneous reading and a back-shifted reading.

(38) John said he would help. (Freidin (2012: 259, note 3))

According to Freidin, under the simultaneous reading, John said, "I will help," while under the back-shifted reading, John said, "I would help."

Our analysis can account for sentences such as (39) below, in which the licenser and identifier for SOT, *(have) told*, does not take a past tense form.

(39) Abigail seems to have told Fred that John would attend the party. (Baker (1995: 545))

(40) Abigail seems to have told Fred, "John will attend the party." (ibid.)

According to Baker (1995:545), (39) has the simultaneous interpretation (40). (39) has the initial temporal representation (41).

(41) Root Clause: $(ST=EvT_D)$ & (RT_{Perf}, EvT_D) &
(ET_{seem}, RT_{Perf})
Intermediate Clause: $(ET_{seem}=EvT_{to})$ & $(RT_{Modseem}, EvT_{to})$
& $(RT_{Perf}, RT_{Modseem})$ & $(ET_{tell} < RT_{Perf})$ (cf. (21))
SOT Clause: $(ET_{tell}=EvT_{ND})$ & **$(RT_{will} < EvT_{ND})$** &
$(RT_{will} < RT_{Perf})$ & (RT_{Perf}, ET_{attend})

The SOT Adjustment Rule applies to the bold-faced part in (41),

resulting in the derived representation (42).

(42) Root Clause: $(ST=EvT_D)$ & (RT_{Perf}, EvT_D) &
(ET_{seem}, RT_{Perf})
Intermediate Clause: $(ET_{seem}=EvT_{to})$ & $(RT_{Modseem}, EvT_{to})$
& $(RT_{Perf}, RT_{Modseem})$ & $(ET_{tell} < RT_{Perf})$
SOT Clause: $(ET_{tell}=EvT_{ND})$ & **(RT_{will}, EvT_{ND})** &
$(RT_{will} < RT_{Perf})$ & (RT_{Perf}, ET_{attend})

This temporal representation corresponds to the simultaneous reading of (39).

3.3. Double Access Phenomenon

It has been observed that there are cases in which a present tense appears in a potential SOT domain as in (43) and (44) below.

(43) John heard that Mary is pregnant. (Hornstein (1990: 120))
(44) Jill said she has too many commitments.
(Huddleston and Pullum (2002: 155))

These sentences must have *double access* readings, under which the content described in a complement clause is interpreted to hold true both at the utterance time and at the matrix event time. In (43), for example, Mary's pregnancy holds true at the utterance time as well as at the event time of John's hearing of the news in the past. In this section, I discuss two points, without going into details about the mechanisms of this phenomenon.[9]

Consider first (45) below.

(45) On Monday John told me that he will come to the meeting on Friday. (Baker (1995: 550))

In this sentence, his coming to the meeting is predicted to occur on Friday, and, therefore, this event does not occur either at the utterance time or at the event time of John's telling on Monday. At first sight, this sentence seems to lack a double access reading. However, the future prediction about his coming to the meeting holds true at the utterance time as well as at the matrix event time. The sentence (46) illustrates the same point.

(46) I said in Section 6.4 that we will treat a noun phrase with *the* as a generalized quantifier, so for example, *the dog Jones bathed* is represented as [The x: DOG(x) & BATH(j, x)]. (Kate Kearns, *Semantics*, 2nd ed., Palgrave (2011), p. 111)

This sentence is uttered on page 111 of the text. The treatment of noun phrase with *the* as a generalized quantifier is discussed on pages 113-114. What holds true at the utterance time (page 111) as well as at the matrix event time (page 104) is the future prediction about the treatment of a noun phrase with *the* as a generalized quantifier.

These sentences indicate that we must take into consideration modality such as future prediction as one of the notions that participate in double access readings.

Let us turn to the nature of present tenses in double access readings.

(47) John heard that Mary is pregnant.

If the present tense of the complement clause in (47) were non-deictic and its evaluation time were identified with the matrix event time, the sentence would have only a simultaneous reading, excluding the reading in which Mary's pregnancy holds true at the utterance time.

One might argue that the embedded present tense in (47) is ambiguous between deictic one and non-deictic one. If such an analysis were correct, we would expect (47) to have the ambiguity instead of the double access reading. We would expect also that double access sentences might be disambiguated in some contexts. In relation to this, consider (48) below.

(48) Leo decided a week ago that he will go to the party (*yesterday). (Wurmbrand (2007: 3))

If a double access reading were a kind of ambiguity, (48) would be disambiguated by the existence of *yesterday*, and (48) would be acceptable under the simultaneous reading, contrary to the fact.

In light of this, I conclude that an embedded present tense in a double access sentence is deictic, and propose the restriction (49).[10]

(49) The Restriction on the Distribution of Non-Deictic Present Tense
If a finite complement clause is embedded in a potential SOT domain, its tense must not be the non-deictic present tense T_{ND}-[+Pres].

Given the two restrictions (13) and (49), we can show the distribution of finite tenses in SOT domains as follows.

(50) The Distribution of Finite Tenses in Potential SOT Domains

	Present	Past
Deictic	double access	excluded by (13)
Non-deictic	excluded by (49)	SOT

3.4. Non-local SOT

We have been concerned so far with SOT cases in which the licenser of a potential SOT domain and the identifier of the evaluation time of an SOT clause are exactly the same.

(51) John heard that Mary was pregnant.

In (51), the matrix verb *heard* licenses the finite complement clause as a potential SOT domain and identifies the evaluation time of the complement clause.

However, it has been pointed out that in some cases the licenser is not the local matrix predicate that takes an SOT clause as a complement.[11]

(52) Rachel intended to tell us that she wouldn't be able to attend the meeting. (Baker (1995: 545))

(53) Rachel intended to tell us, "I won't be able to attend the

meeting." (ibid.)

According to Baker (1995), (52) has the interpretation equivalent to that of (53). Although the identifier of the evaluation time of the *that*-clause is the local matrix predicate *tell*, the SOT licensor is the predicate of the root clause *intended*.

Notice here that non-local SOT is blocked in some circumstances.

(54) John promised me yesterday that he will tell his mother tomorrow that they were having their last meal together (when ...). (original underlines) (Wurmbrand (2007: 5))

(55) John promised me yesterday to tell his mother tomorrow that they were having their last meal together. (original underlines) (ibid.)

According to Wurmbrand (2007), (54) has no simultaneous reading of SOT, and we cannot interpret the event time of their having meal last time together as simultaneous with the event time of his telling (tomorrow). In other words, (54) lacks the interpretation: *John promised me to say to his mother tomorrow: "We are (now) having our last meal together."*(Wurmbrand (2007: 5)) In contrast, (55) has the simultaneous reading that (43) lacks.

In light of (52), (54), and (55), I tentatively conclude that if a clause that contains a deictic tense intervenes between an SOT licensor and an SOT clause, the licensing is blocked, and revise the licensing condition (12) as follows.

(56) The Revised Licensing Condition for SOT

> When the event time of an attitude verb is anterior to ST (that is, refers to some time in the past), a finite clause in its c-command domain is a potential SOT domain, unless a deictic tense intervenes between the attitude verb and the finite clause.

The revised licensing condition (56) accounts for the contrast between (54) and (55). In (54), the intermediate finite clause, which is c-commanded by the predicate of the root clause *promised*, is a potential SOT domain. As the Restriction on the Distribution of Non-Deictic Present Tense (49) prohibits the non-deictic present tense T_{ND}-[+Pres] from occurring in this clause, the present tense of the intermediate clause must be deictic. As a consequence, the most deeply embedded clause cannot be a potential SOT domain, because the intervening deictic present tense blocks the SOT licensing by *promised*. In the case of (55), in contrast, the most deeply embedded clause is a potential SOT domain, because there is no deictic tense between the clause and the predicate of the root clause *promised*.[12]

4. Conclusion

In this paper, I have presented the Reichenbachian analysis of SOT in English within the framework of Kaneko (2009b, 2013), and demonstrated that the licensing factor for SOT is not the past tense of a matrix clause, but the pastness of the event time of a matrix clause. In addition, I have argued that the non-deictic present tense as well as the deictic past tense is excluded from potential SOT domains and that non-local SOT phenomena are accounted for by essentially the same mechanisms for local SOT phenomena.

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Notes

1) For PfmP, see Kaneko (2009b, 2011). PfmP may contain the argument positions that correspond to the speaker and the hearer (addressee) of a sentence, as proposed originally in the Performative Hypothesis (Ross (1970)). For recent relevant discussion, see Alcázar and Saltarelli (2014).

2) For temporal interpretation of modals under this framework, see Kaneko (2009a).

3) I assume that 'A is simultaneous with B' means 'A overlaps B'.

4) The characterization of the relation between ST and EvT_D as identification departs from that in Kaneko (2009b, 2013, 2014), where ST and EvT_D are related in terms of simultaneity. For discussion of the internal and distributional properties of English tenses, see Kaneko (2013).

5) In Kaneko (2009b, 2014, in press), the licensing condition for SOT

is given a different definition, but the characterization of the licenser of SOT is essentially the same.

6) For recent discussion, see Enç (2004), Ogihara (2011), Ogihara and Sharvit (2012).

7) Predicates such as *want*, whose infinitival clauses show future orientation, select FT whose heads require other kinds of modality involving futurity. *Want*, for example, selects FP whose head contains a feature [+mod-want], which agrees with Mod_{want} within the infinitival complement clause. Mod_{want} has the temporal specification (i) below.

(i) Mod_{want}: RT_{Perf} is posterior to RT_{want}. ($RT_{Modwant} < RT_{Perf}$)

The sentence (ii) has the temporal representation (iii).

(ii) Maria wants to win the game. (Ransom (1986: 1))

(iii) Matrix Clause: ($ST=EvT_D$) & (RT_{Perf}, EvT_D) &
(ET_{want}, RT_{Perf})
Infinitival Clause: ($ET_{want}=EvT_{to}$) & ($RT_{Modwant,}$ EvT_{to}) &
($RT_{Modwant} < RT_{Perf}$) & (ET_{win}, RT_{Perf})

The analysis proposed here departs from the one presented in Kaneko (2009b). In Kaneko (2009b), *seem* and *want* specify the temporal relations between their event times and the evaluation times of the infinitival complement clauses as in (iva) and (ivb), repectively.

(iv) a. SEEM: the evaluation time of the infinitival complement

(EvT_{to}) is simultaneous with the event time of *seem*.

(EvT_{to}, ET_{seem}).

b. WANT: the evaluation time of the infinitival complement

(EvT_{to}) is posterior to the event time of *want*.

($ET_{want} < EvT_{to}$).

Given (iva) along with the temporal interpretation system introduced above, (18a) has the temporal representation below.

(v) Matrix Clause: ($ST=EvT_D$) & (RT_{Perf}, EvT_D) & (ET_{seem}, RT_{Perf})

Infinitival Clause: (ET_{seem}, EvT_{to}) & (RT_{Perf}, EvT_{to}) & ($ET_{tell} < RT_{Perf}$)

In (v), ET_{tell} is anterior to ST, because it is anterior to RT_{Perf} of the complement clause, which is simultaneous with ST. Under this approach, a matrix predicate specifies the temporal ordering relation between its event time and EvT_{to} of its infinitival complement, instead of identifying EvT_{to} as in (20a).

I adopt the analysis introduced in this section, because we can say generally that a matrix predicate identifies the non-deictic evaluation time of its complement clause.

8) The Identification of Non-Deictic Evaluation Time (29) applies not only to SOT cases but also to other cases in which their complement clauses contain a non-deictic tense. Consider (i) below, which is paraphrased as (ii).

(i) John will tell everyone on Thursday that he overslept on

Tuesday. (Baker (1995: 540))

(ii) John will tell everyone on Thursday, “I overslept on Tuesday.” (ibid.)

The past tense of the complement clause of (i) does not indicate the anteriority to ST, but the anteriority to the event time of John’s telling in the future. This is captured by the Identification of Non-Deictic Evaluation Time, which specifies that the non-deictic evaluation time EvT_{ND} of the complement clause is identical to the event time ET_{tell} of the matrix clause.

9) For discussion on double access phenomena, see Enç (1987), Abusch (1988, 1997), Giorgi (2010), Khomitsevich (2007), Ogihara (1996), Ogihara and Sharvit (2012), among others. See also note 10 below.

10) Given that the embedded present tense in a double access sentence is deictic, we must account for the simultaneous part of a double access reading. A possible solution for this problem is to propose, along the lines of the proposal of Uribe-Echevarria (1994: Chapter 3), that the embedded complement clause of a double access sentence moves out of the matrix clause at LF.

(i) [$_{PfmP}$ Pfm [$_{CP}$ that Mary is pregnant] [John heard [$_{CP}$ that Mary is pregnant]]]

Suppose that when a matrix predicate licenses a potential SOT domain, the predicate obligatorily identifies the evaluation time of its complement

clause. In order to satisfy this requirement, the embedded tense of the copy CP in the trace position is reanalyzed as non-deictic, and its evaluation time is identified with the event time of the matrix predicate, which results in the simultaneous part of a double access reading. The evaluation time of the deictic present tense in the moved CP is identified with ST by Pfm, leading to the ST-linked part of a double access reading. As the two copies of CP form a chain, the contents of the two copies must be compatible with each other, and each of them must be well-formed. In this analysis, (48) with *yesterday* in the complement clause has the representation (ii) at LF.

(ii) [$_{PfmP}$ Pfm [$_{CP}$ that he will go to the party yesterday][Leo decided a week ago [$_{CP}$ that he will go to the party yesterday]]]

In the extracted CP, the evaluation time of the deictic present tense carried by *will* is identified with ST by Pfm, and the prediction expressed by *will* is about the future relative to the utterance time, which contradicts the meaning of *yesterday*.

If we adopt this analysis, however, we must answer some questions, one of which is why the embedded CP moves out of the matrix clause. I will leave the detailed examination of this analysis for future research.

11) For non-local SOT phenomena, see Abusch (1988), Enç (2004), and Khomitsevich (2008).

12) Consider the following sentence.

(i) John promised me yesterday that he would tell his mother

tomorrow that they <u>were</u> having their last meal together. (original underlines) (Wurmbrand (2007: 6))

As Wurmbrand (2007: 6) notes, this sentence has the simultaneous interpretation: *John promised me to say to his mother tomorrow: "We are now having our last meal together."* It has been argued (e.g, Abusch (1988)) that the past tense carried by *would* in the middle clause triggers SOT in the lowest clause. Under our analysis, however, the middle clause contains no licenser for SOT, because the event time of *tell* is posterior to the utterance time. Instead, *promised* in the root clause, the event time of which refers to the past time identified by *yesterday*, licenses SOT in the lowest clause as well as SOT in the middle clause. Notice that the past tense of the middle clause is non-deictic, and does not block the licensing of non-local SOT in the lowest clause.

References

Abusch, Dorit (1988) "Sequence of Tense, Intensionality and Scope," *WCCFL* 7, 1-14.

Abush, Dorit (1997) "Sequence of Tense and Temporal De Re," *Linguistics and Philosophy* 20, 1-50.

Alcázar, Asier, and Mario Saltarelli (2014) *The Syntax of Imperatives*, Cambridge University Press, Cambridge.

Baker, C. L. (1995) *English Syntax*, 2nd ed., MIT Press, Cambridge, Mass.

Declerck. Renaat (1991) *Tense in English: Its Structure, and Use in*

Discourse, Routledge, London.

Enç, Mürvet (1987) "Anchoring Conditions for Tense," *Linguistic Inquiry* 18, 633-657.

Enç, Mürvet (2004) "Rethinking Past Tense," *The Syntax of Time*, ed. by Jacqueline Guéron and Jacqueline Lecarme, 204-215, MIT Press, Cambridge, Mass.

Freidin, Robert (2012) *Syntax: Basic Concepts and Applications*, Cambridge University Press, Cambridge.

Giorgi, Alessanda (2010) *About the Speaker: Toward a Syntax of Indexicality*, Oxford University Press, Oxford.

Higginbotham, James (2002) "Why is Sequence of Tense Obligatory?" *Logical Form and Language,* ed. by Gerhard Preyer and George Peter, 207-227, Oxford University Press, Oxford.

Hornstein, Norbert (1990) *As Time Goes By: Tense and Universal Grammar*, MIT Press, Cambridge, Mass.

Huddleston, Rodney, and Geoffrey K. Pullum (2002) *The Cambridge Grammar of the English Language*, Cambridge University Press, Cambridge.

Kaneko, Yoshiaki (2009a) "Eigo Hōjodōshi no Jisei Kaisyaku ni tsuite (On the Temporal Interpretation of Modals in English)," *The Annual Reports of Graduate School of Arts and Letters, Tohoku University*, vol. 58, 118-152.

Kaneko, Yoshiaki (2009b) *Eigo Jodōshi Shisutemu no Shosō: Tōgoron-Imiron Intāfēsu Kenkyū* (*Aspects of Auxiliary System in English: Studies on Syntax-semantics Interface*), Kaitakusha, Tokyo.

Kaneko, Yoshiaki (2011) "Suikōku PfmP no Setsu toshite no Tokusei ni tsuite (On the Clausal Nature of Performative Phrase)," *The Annual Reports of Graduate School of Arts and Letters, Tohoku University*,

vol. 60, 52-66.

Kaneko, Yoshiaki (2013) “Eigo ni okeru Jisei no Naibu Sosei to Sono Bunpu Tokusei ni tsuite (On the Internal Features and Distributional Properties of English Tenses),” *The Annual Reports of Graduate School of Arts and Letters, Tohoku University*, vol. 62, 29-60.

Kaneko, Yoshiaki (2014) “Eigo ni okeru Jisei no Itchi no Ninka to Jisei Kaishaku ni tsuite (On the Licensing and Temporal Interpretation of Sequence of Tense in English),” *The Annual Reports of Graduate School of Arts and Letters*, *Tohoku University*, vol. 63, 79-100.

Kaneko, Yoshiaki (in press) “Eigo ni okeru Jisei no Itchi no Shotokusei to Jisei Kaishaku (Syntactic Properties and Temporal Interpretation of Sequence of Tense in English),” *Festschrift for Professor* Yukio Oba (working title), Eihosha, Tokyo.

Khomitsevich, Olga (2008) *Dependencies across Phases: From Sequence of Tense to Restriction on Movement,* LOT, Utrecht.

Ogihara, Toshiyuki (1996) *Tense, Attitudes, and Scope*, Kluwer Academic Publishers, Dordrecht.

Ogihara, Toshiyuki (2011) “57. Tense,” *Semantics: An International Handbook of Natural Language Meaning*, ed. by Claudia Maienborn, Klaus von Heusinger, and Paul Portner, 1463-1484, Walter de Gruyter, Berlin.

Ogihara, Toshiyuki, and Yael Sharvit (2012) “Chapter 22: Embedded Tenses,” *The Oxford Handbook of Tense and Aspect*, ed. by Robert I. Binnik, 638-668, Oxford University Press, Oxford.

Ransom, Evelyn N. (1986) *Complementation: Its Meanings and Forms*, John Benjamins, Amsterdam.

Reichenbach, Hans (1947) *Elements of Symbolic Logic*, Macmillan, New York.

Ross, John Robert (1970) “On Declarative Sentences,” *Readings in English Transformational Grammar*, ed. by, Roderick A. Jacobs and Peter S. Rosenbaum, 222-272, Ginn and Co, Waltham, Mass.

Stowell, Tim (2007) “Sequence of Perfect,” *Recent Advances in the Syntax and Semantics of Tense, Aspect and Modality*, ed. by Louis de Saussure, Jacque Moeschler, and Genoveva Puskás, 123-146, Mouton de Gruyter, Berlin.

Uribe-Echevarria, María (1985) *Interface Licensing Conditions on Negative Polarity Items: A Theory of Polarity and Tense Interactions*, Doctoral dissertation, University of Connecticut.

Wurmbrand, Susi (2007) “Infinitives are Tenseless,” *U. Penn Working Papers in Linguistics* 13, 1-13.

Wurmbrand, Susi (2014) “Tense and Aspect in English Infinitives,” *Linguistic Inquiry* 45, 403-447.

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