

A TWO-TIERED ANALYSIS OF SEQUENCE OF TENSES IN ENGLISH*

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1.0 Introduction

There have been two general approaches to the tense of the complement clause in English: the deictic approach and the sequence-of-tenses approach. Under the deictic approach, the tense of the complement clause has the same deictic center or speech point as the main clause and it has an independent interpretation. Under the sequence-of-tenses approach, the tense of the embedded clause is relative to the tense of the matrix clause. In order to account for the tense in the complement clause, especially when the main clause is in the past tense, various claims have accordingly been made. Thus, a transformational tense-agreement rule is applied at deep structure; the past tense of the complement clause is semantically null (Hornstein 1990) and it is put through the tense deletion rule which is the Rule of the Sequence of Tenses (SOT) (Ogihara 1995).

As a result, several authors, including Stowell (1995), have argued that when the main clause has a past-time reference, the English past morpheme has two meanings: a simultaneous reading (PRESENT) and a past-shifted reading (PAST). But these analyses do not provide a consistent explanation for the overt past tense form. In fact, I assume that the morphological differences between languages like English and languages like Russian and Japanese, must be reflected at all levels of structure, whether it is syntactic or interpretative.

In this paper, I make use of a two-tiered approach to tense as developed in Chung (*in prep*). This approach utilizes the mechanism of a Deictic Tense Projection (TP) and an Anaphoric Tense Projection (ATP). I argue that the Rule of the Sequence of Tenses in languages like English is a syntactic rule that copies the Deictic Tense Projection (TP) of the matrix clause into the embedded clause, in order to set up an anaphoric link within the clause boundary. And I claim that the past morpheme has one meaning, i.e. PAST. For the simultaneous reading, the rule is applied to the complement clause, whereas for the past-shifted reading, it is not.

2.0 Definition of the Sequence-Of-Tenses rule

In many languages, such as Russian, Korean, and Japanese, a subordinate clause has a time relation relative to the situation time of the matrix clause. English also shows this effect in complement clauses.

(1) (a) John will say that Mary left/has left.

(b) John will say that Mary will leave

(c) John will say that Mary is happy.

(Giorgi & Pianesi 1997)

The subordinate tenses in (1), present perfect (or past), future, and present, are interpreted as anterior, posterior and simultaneous, respectively, with respect to the time of saying, which is in the future.

However, unlike a number of other languages of the world, including Korean, Japanese, and Russian, English takes past tense morphemes in the complement clause when the main clause has a past tense, as in (2).

(2) (a) John said that he knew Mary.

(b) John said that Mary left.

(c) John said that Mary had left.

(d) John said that Mary would leave.

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In addition, while the event times of the subordinate clauses of (2c) and (2d) unambiguously represent past in the past (past-shifted) and future in the past, those of (2a) and (2b) are ambiguous: past-shifted or simultaneous with respect to the time of saying which is in the past.

According to Comrie (1985:111), English is like Russian except for the addition of the Sequence of Tenses rule. This rule is a syntactic rule, which takes the tense of the original speaker's words (*I will leave*), and puts them into the corresponding past tense (the future in the past, *I would leave*). As in traditional grammars, this rule is necessarily involved in the change of direct discourse into indirect discourse, and it cannot account for other complement clauses whose matrix verbs do not have a direct discourse (e.g., *John believed that Mary loved him*).

Conversely, according to Hornstein (1990), the sequence of tenses is 'tense shifting' relative to the event time of the main clause, which is not restricted to languages like English, but a universal phenomenon in the complement clause. The sequence-of-tenses structures have two basic characteristics: 1) the embedded clause displays a shifted temporal interpretation relative to the event time of the matrix clause; 2) the sequence of tenses applies not only when the main clause is in the past, but also when the main clause is non-past. But the difference is that in the former, there is a morphological change, whereas in the latter, no morphological change occurs, and the morphological change in tense form is superficial in the sequence of tenses construction (Hornstein 1990:123). This means that there is no Rule of the Sequence of Tenses specific to languages like English.

On the other hand, Ogihara (1995:673) says that the Sequence of Tenses rule optionally applies at LF (Logical Form) before the syntactic structure is interpreted, and that it is a tense deletion rule:

(3) The rule of SOT:

A tense morpheme α can be deleted if and only if α is locally c-commanded by a tense morpheme β (i.e., there is no intervening tense morpheme between α and β), and α and β are occurrences of the past tense morpheme (Ogihara 1995:673).

(4) (a) John PAST say that Mary PAST be sick.

(b) John PAST say that Mary \emptyset be sick.

The Sequence of Tenses rule turns (4a) into (4b) when both event times of the main clause and the subordinate clause are simultaneous. If this rule does not apply, the tense of the subordinate clause has an anterior reading to that of the main clause. Ogihara's SOT rule accounts for the tense interpretation of the complement clause under the past tense. However, in fact, from an empirical perspective, it has a weak foundation in that it deletes a morpho-syntactically given tense even if it occurs at LF.

Moreover, Enç (1987:635–6) declares that "the sequence of tense rule is a late morphological rule that applies at PF [Phonetic Form], and the complements have present tense at S-Structure and at LF, ... since the correct reading is obtained only if the semantics is entirely blind to the past ... whose function seems to be rendering meaning opaque." According to Enç, the Sequence of Tenses rule is totally useless.

In contrast, Shaer (1998:12) provides a much more plausible view that the SOT rule is not a mere reflex of a semantically inert rule, but rather a temporal tracking device, which makes temporal relations transparent. In terms of the function of the Sequence of Tense rule, I agree with this view.

3.0 Recent analyses of tense morphemes in English

Recently the ambiguity of the past tense morpheme has been suggested. Stowell (1995, 1996) says that complement clauses of intentional verbs like *say* and *believe* always have a construal dependent on the tenses of their matrix clauses, whereas relative clauses usually have an indexical construal. The difference of interpretations between complement clauses and relative clauses depends on LF movement. This is because complement clauses never undergo LF movement, while relative clauses must be moved at LF out of the c-command domain of the matrix PAST.

The problem arises with the simultaneous interpretation of the past tense in the complement clause when the main clause is in the past, as Stowell says, because such an interpretation can have only the past-shifted reading under his analysis. So he claims that English has two different past tenses: a true past (PAST, past-shifted) and a

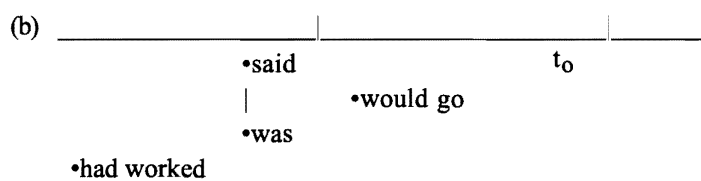
false past (PRESENT, simultaneous).¹ Semantically, present and past are, according to him, “polarity-sensitive elements encoding an LF-scope relation with respect to the true PAST tense, which is analogous to the behavior of *some* and *any* vis à vis negation” (1995:394). Thus his analysis is that *past* indicates the presence of PAST in a c-commanding LF position, while *present* indicates its absence with no difference in meaning.

In order not to admit the morphological difference that is a language-particular or parametric property, Stowell pays a higher cost. First, one past tense morpheme has two types of tenses that, in themselves, are opposed to each other in concept. Second, the motivation of LF movements is inconsistent. It is motivated by case for relative clauses, but by polarity for complement clauses.

Declerck (1995) analyzes the ambiguity of past tense from a slightly different perspective, saying that English past tense may be semantically ambiguous between an absolute interpretation and a relative interpretation.² According to Declerck, English has two past tenses, an absolute past tense and a relative past tense. The former is back-shifted but the latter is retained (simultaneous) in a past domain, while the past perfect tense is a pure relative past tense in English.³ The meaning of the past tense morpheme of a relative past tense is “STO (situation time) and Binding TO (time of orientation, or reference point) in a domain which is past with respect to t_0 (Speech point)” (Declerck 1995:32).⁴

According to Declerck (1995:6), the time of the matrix clause establishes a domain and serves as the ‘central’ TO (referred to by the absolute tense form). The times of the other clauses are temporally related (subordinated) to the TO. The analysis is given below (Declerck 1995:7).

(5) (a) John said that he had worked hard all day, that he was tired and that he would go to bed early.



The past perfect form *had worked* in the first *that*-clause of (5a) is a relative tense representing the time of its situation as anterior to the central TO (saying time). The past form *was* is also a relative tense form expressing a relation in the past domain, i.e. the relation of simultaneity. Finally, *would go* is a relative tense form, representing the time of situation as posterior to the central TO.

In fact, in languages like Korean that show pure relative temporal relations in the complement clause, the sentence in (5a) should be represented as (6a).

(6) (a) John said that he worked (PAST) hard all day,
that he is (\emptyset , PRESENT) tired and that he will (FUTURE) go to bed early.

(b)

John-un	haluchongil	yelsimhi	ilha-ess-ko,			
John-TOP	all day	hard	work-PAST-CONJ			
	kulayse	pikonha-ko/se	ilccik	ca-keyss-ta-ko	malha-ess-ta. ⁵	
	and.then	be.tired-CONJ	early	sleep-FUT-DECL-COMP	say-PAST-DECL	

¹ Stowell (1995:394) says that, unlike the Japanese past tense morpheme, which is a true tense, English present and past are not true tenses, and that, supposing that present and past are of the type Z (the head of the referential category ZP), the true predicative tenses PRESENT and PAST (the heads of TP) are phonetically null in English.

² More correctly, Declerck (1995:4) claims that English has two homophonous past tenses, an absolute and a relative, which happen to correspond to the same grammatical form.

³ Declerck (1995:8) says that while past perfect tense is a pure relative tense and future perfect an absolute-relative tense, nonfinite verb forms are tenseless. According to Comrie (1985), both perfect tenses are absolute-relative tenses and the tense of nonfinite verbs is a pure relative tense.

⁴ Declerck (1995) divides English tenses into two domains: present time-sphere tenses (the present tense, the present perfect tense, future tense, and future perfect) and past time-sphere tenses (the past tense or preterite, the past perfect, the conditional tense, and the conditional perfect).

⁵ Abbreviations: CONJ: Conjunctive, COMP: Complementizer, DECL: Declarative, FUT: Future.

With respect to the time of John's saying, the tense of his working is past (anterior), that of his being tired is present (simultaneous) and that of his going to bed is future (posterior). However, this is not the case in the English sentences where, instead, these tenses are past perfect, past, and future in past (represented by the past form *would*).

Declerck gives the relative past tense the same 'PAST' meaning that the past perfect tense has. However, one is retained in the past domain, having a simultaneous reading, while the other is back-shifted (anterior) without an explicit account. If the past perfect tense is a relative past tense, as Declerck claims, the past tense should be a relative present tense, with the meaning 'PRESENT' or 'SIMULTANEOUS'. The vague definition of relative past tense also cannot account for other relative tenses whose matrix tenses are in the future tense, even though Declerck's domain theory accounts for the temporal asymmetry between past and non-past tense in English. Thus, Declerck's analysis turns out to be not all that different from the previous analyses.

The overall problem of these analyses is that they ignore the relevant difference between languages like English and languages like Korean and Japanese. It seems to me that this difference should be either the Rule of the Sequence of Tenses, which, presumably, languages like English have, or it should be a kind of tense neutralization phenomenon that languages like Korean have. This difference should be recognized and accounted for structurally.

4.0 The predicative theory of tense

Several approaches have been taken to the grammatical category of tense. Among them are the tense-as-an-operator theory, the referential theory of tense (Partee 1973, 1984; Enç 1987), the adverbial theory (Hornstein 1990), and recently the predicative theory (Zagona 1990; Stowell 1995, 1996). In this paper I adopt the predicative theory of tense, following Stowell (1996).

The problem with the referential theory is that it cannot deal with the relational property of tense satisfactorily. Tenses are similar to nominals not only because they are referential, but because they both can have indexical properties as deixis. Reference—referring to some entity—alone cannot give the full interpretation of indexical elements. To take a spatial expression as an example, the meaning of *there* cannot be obtained fully without reference to *here* and the same reasoning is true of temporal expressions.

According to Nunberg (1993:8), the meaning of indexical expressions consists of three components: 1) the deictic component, 2) the classificatory component,⁶ 3) the relational component. He analyzes the meaning of *yesterday* "as the 'calendar day' (classificatory component) that 'precedes' (relational component) 'the time of speaking' (deictic component)". This means the relational component of *now* or the first person pronoun *I* can be a zero relation (\emptyset). Thus, if we want to capture the exact interpretation of tense, whether it is at LF or at Conceptual Structure, at least those two components—deixis and relation—should be considered structurally.

But in Enç's (1987) analysis, the role of COMP (the complementizer node) is not clear. The problem is that COMP may or may not have a temporal index, assuming that one is able to support the notion of COMP having a temporal index in the first place. This problem follows exactly from the view that tense is a referential entity.

Zagona (1990, 1995) has introduced the predicative theory of tense, in which tense takes an external temporal argument (construed as speech time) and an internal argument, i.e. VP, whose temporal index is construed as event time. Applying Binding Theory to the temporal arguments,⁷ she discusses tense in terms of the coreference and disjoint reference between the speech time and the event time. This, however, does not account for the main problem, the ambiguity of the past tense morpheme in the complement clause.⁸

⁶ Classification includes such (possibly inflectional) features as plurality, animacy, and grammatical and natural gender (Nunberg 1993:8-9).

⁷ Binding Theory can be applied to tense as follows:

[+Past]: [-anaphoric], [+pronominal] => Binding Condition C applies.

[-Past]: [+anaphoric], [-pronominal] => Binding Condition A applies only to present tense.

As a result, past and future have disjoint reference, and hence they both are subject to Binding Condition C (Zagona 1995:403).

⁸ Here Zagona (1995:405) mentions LF movement—adjoining to the matrix VP—for the simultaneous meaning of the past tense of complement clauses, when the matrix clause is in the past tense.

Furthermore, what is significant in tense is not a matter of coreference or disjoint reference between time points, but the relationships between those temporal entities that can be captured in structure.

5.0 An alternative

Before turning to my analysis, I need to briefly clarify some terminological confusion regarding the concept of the Rule of Sequence of Tenses. In the analyses so far, there are two different concepts used for this term. One is the temporal dependency of the subordinate clause on the main clause, which means that tenses lower on the generative tree show a temporal relativity to higher tenses, not to the speech point. The other is a formal arrangement of the tenses of sequential clauses, which have temporal relationships in a sentence, allowing the tense form of lower clauses to agree with those of higher clauses.

I assume that the former is a cross-linguistic phenomenon concerning the interpretation of tense in the subordinate clause, as Hornstein (1990) notes. Tense in subordinate clauses is closely related to a hierarchical relationship in the structure. However, how this semantic interpretation is formalized can vary from language to language. Depending on the language, the Rule of Sequence of Tenses can be made use of for the former phenomenon, or not. Hence, languages like English have the rule optionally, whereas languages like Korean or Japanese do not. Henceforth, I refer to this rule as the SOT.

5.1 A two-tiered analysis of the SOT rule

Tense was first given its own syntactic projection TP under Pollock's (1989) Split Infl Hypothesis, in which Infl has two different sets of features ($[\pm \text{Tense}, \pm \text{Agr}]$), and each feature is the syntactic head of a maximal projection such as TP and AGRP.

From the deictic and the relational component of the meaning of indexical elements, it follows that tense must have the speech point as its given deictic center as well as another relational temporal point that refers to situation time or reference point. Just as a predicate must have only one subject (Extended Projection Principle), a tense always has a subject-like temporal entity, the external argument, and a complement-like temporal entity, the internal argument. In other words, tense is parallel to a lexical predicate, in that a tense has two temporal arguments. The parallelism between tenses and lexical predicates, however, is incomplete since a tense always has two arguments. And unlike lexical predicates, tenses are also functional categories, having a null form.⁹

In addition to the indexical property, another similarity between tenses and nominals that we cannot ignore is their anaphoric use. Once they establish an indexical relation, they can be referred to by anaphoric machinery, as long as they are accessible, and constraints on anaphors of course vary from language to language. This means that languages have different ways to constitute the anaphoric link, and the SOT rule is one of them.

Therefore, I further split this tense projection into two maximal projections, according to the feature $[\pm \text{Anaphoric}]$: Deictic Tense Projection (TP) and Anaphoric Tense Projection (ATP) (Chung *in prep*). Although Giorgi and Pianesi (1991) and Stowell (1995, 1996) provide two-tiered tense structures, their structures do not fully account for why they should be two-tiered. Here Anaphoric Tense means a relative tense that takes a time point other than the speech point as its reference point (a shifted deictic center S' or orientation time),¹⁰ and this is the external argument in Anaphoric Tense Projection, which is bound to a higher time point or a time given in context, depending on the language.

My argument (Chung *in prep*) is that each tense morpheme has its basic meaning in the simple sentence, such as the deictic present or past tense or the anaphoric present or past,¹¹ and this basic property can be modified

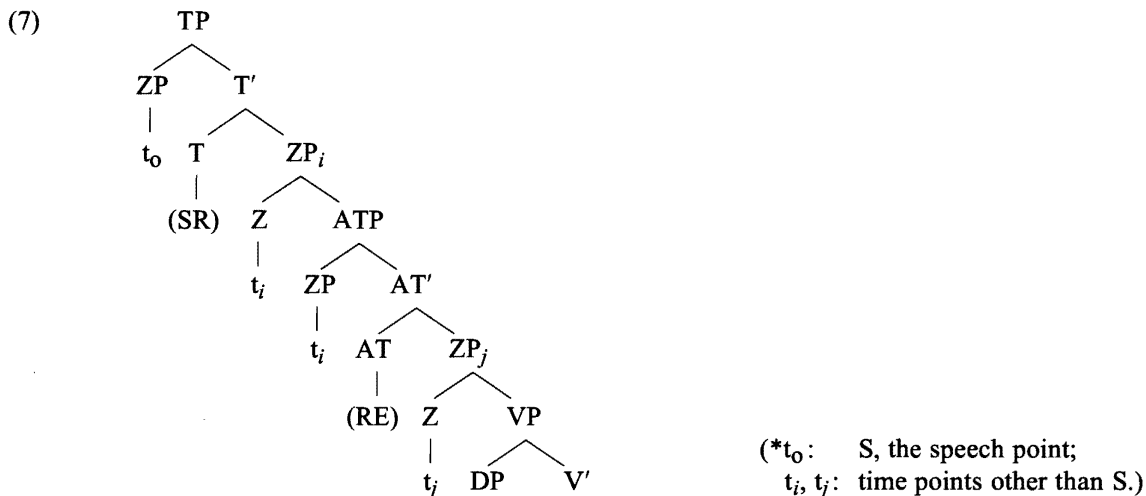
⁹ Zagana (1990, 1995) and Giorgi and Pianesi (1991) take the position that tense is a lexical category, not a functional category. According to Giorgi and Pianesi (1991:194), since tense, unlike AGR, assigns a T-role, it cannot be a functional category, and hence tense cannot have a null form. However, T-roles and Q-roles are different in nature. Tenses are predicative-like functional categories that are higher than predicates in structure. What is encoded by a null form in tense varies from language to language (Chung *in prep*).

¹⁰ As Comrie (1985:63) says, relative tenses can take the speech point as their reference point if no reference point is given explicitly by the context. Thus, relative tenses are tenses that do not necessarily take the speech point as its reference point but can take time points other than the speech point as their reference point, depending on the situation.

¹¹ English simple tenses are basically deictic, represented as S_E , E_S , and S_E , and they are represented as S_R , R_S , and S_R , only when they have lower anaphoric tense. On the other hand, perfect tenses (represented by the

by the position where the tense is placed. Hence even anaphoric tense can be deictic when there is no potential higher tense available to bind it. In the same way, deictic tense can be anaphoric when it has a higher tense that c-commands it. On the other hand, depending on the language, deictic and anaphoric tense can have distinctive roles, and in addition, different languages can have different constraints on usage.

I propose that every clause, whether it is a main clause or a subordinate clause, can have two temporal structures, a deictic tense structure and an anaphoric tense structure, and that the basic tense structure is as follows (Chung *in prep*):¹²



Here each tense has two time-denoting arguments, ZPs—external and internal. The head T takes the speech point as its external argument and the external argument of AT is bound to the internal argument of T. When a clause has only deictic tense, the T has only the SE relations, i.e. relations between the speech time and the situation time.

The SOT rule copies the deictic tense projection of the main clause, in order to give the reference point of the subordinate tense the anaphoric link to the situation time of the main clause within the same clause, which means that the domain of an anaphoric link¹³ is a clause, not the whole sentence. On the other hand, in case the rule does not apply, the domain of the anaphoric link is a whole sentence, as in languages that do not have the SOT rule.¹⁴ I define the rule of sequence of tenses as in (8) below:

(8) The Rule of Sequence of Tenses:

Where α, β are finite clauses, and α is in the past tense,

- (i) copy the TP of α into β if and only if the external argument of the tense of β is linked to the internal argument of the tense of α , and
- (ii) the external argument of ATP of β is linked to the internal argument of the higher tense in β .

The example sentences in (1), in which this SOT rule does not apply, repeated here below, have the temporal structures as in (9), following.

past participle *have*) are anaphoric, represented as E_R. (See Chung *in prep* on the role of the reference point in tense.)

¹² Here I do not address the positions of auxiliary verbs, because languages differ in how tenses are grammaticalized. Some languages make use of auxiliary verbs, while others make use of particles or suffixes. This temporal structure is slightly different from Stowell's (1995, 1996), even though I adopt his temporal argument, ZP (zeit-phrase), which is a referential time-denoting category (Stowell 1996:280).

¹³ Here it is not important whether the term 'binding' or 'link' is used. What matters is a kind of binding, which gives more flexibility in coreference than the Binding theory gives, since temporal arguments are not the same as nominals and, thus, not subject to the same Binding Conditions.

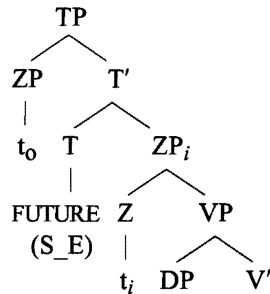
¹⁴ In Arabic, imperfective relative simultaneous tense can be bound to the event time of the preceding sentence (Kinberg 1992).

- (1) (a) John will say that Mary left/has left.
 (b) John will say that Mary will leave.
 (c) John will say that Mary is happy.

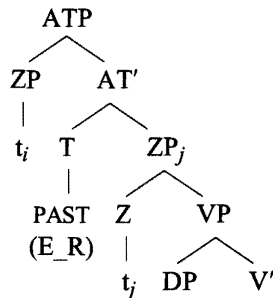
(Giorgi & Pianesi 1997)

- (9) (a) The main clause of (1a):

[(1a) John will say that Mary left/has left.]



- (b) The complement clause of (1a):



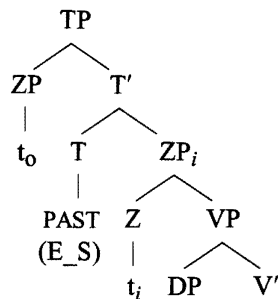
The structures in (9) show that the external argument (t_i) of the subordinate tense is bound to the internal argument of the matrix tense itself, denoting that the tense of the complement clause constitutes an anaphoric link to that of the main verb. The internal argument (t_j) of the subordinate tense has an anterior relation to the external argument.

Using the SOT rule, we can account for the data in (2c) and (2d), repeated below. The temporal structure of the complement clauses of (2c) and (2d) is a combination of a deictic tense and an anaphoric tense.

- (2) (c) John said that Mary had left.
 (d) John said that Mary would leave.

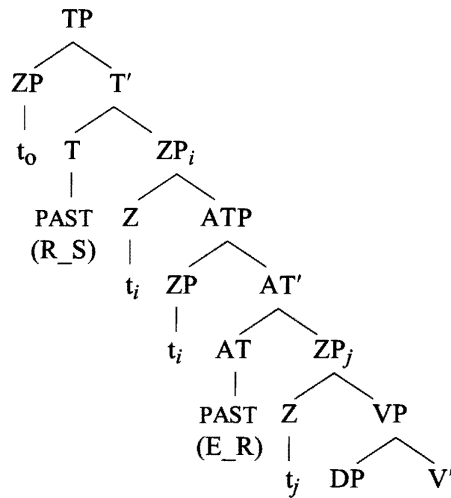
- (10) (a) The main clause of (2c):

[(2c) John said that Mary had left.]



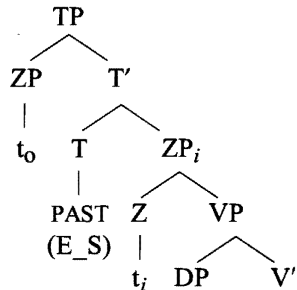
(b) The complement clause of (2c):

[(2c) John said that Mary had left.]

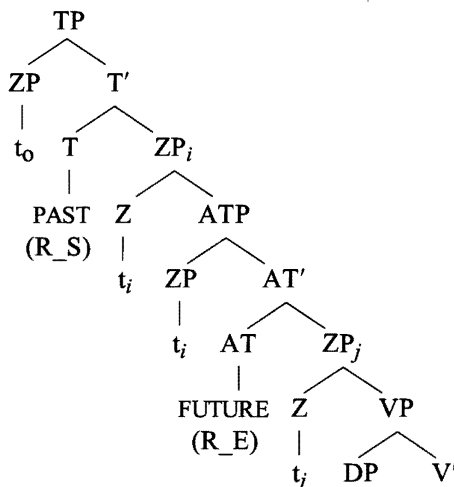


(11) (a) The main clause of (2d):

[(2d) John said that Mary would leave.]



(b) The complement clause of (2d):



The TPs (deictic tense projections) in the complement clauses of (10b) and (11b) are copied from those of the main clauses by the SOT rule. Thus, the external arguments (t_i) of the ATPs (anaphoric tense projections) are directly linked to the internal arguments of the adjoining higher TPs in the same clauses, with respect to which the ATPs have a past and a future time reference, respectively. In terms of tense interpretation, SOT structures as in (10) and (11) and non-SOT structures as in (9) are, in fact, the same in that the event time of the complement clause is dependent on the event time of the matrix clause.

However, in terms of syntactic effect of the SOT rule, the anaphoric linking is possible within one finite clause, thus paralleling nominal anaphors. This means that the external argument of ATP—here, the reference point of anaphoric tense—and its antecedent are in the same clause. Thus, as Shaer (1998) points out, the SOT rule makes it easier to track the temporal antecedent of the reference point of anaphoric tense.

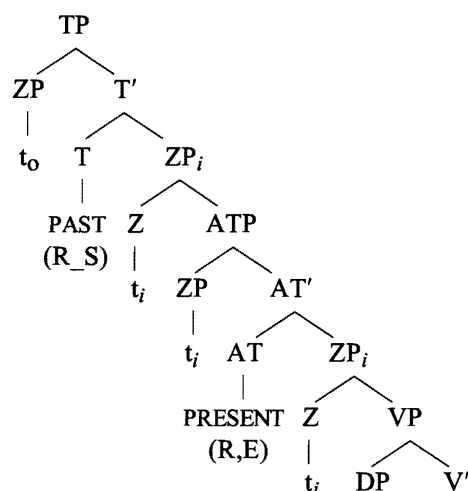
On the other hand, (2a) and (2b) are ambiguous because the event time of the complement clause can be either simultaneous with or prior to that of the main clause. Thus, the complement clauses have two different structures, as in (12).

(2) (a) John said that he knew Mary.

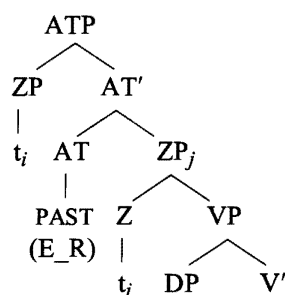
(b) John said that Mary left.

(12) (a) Simultaneous with the event time of the main clause:¹⁵

[(2a) John said that he knew Mary.]



(b) Prior to the event time of the main clause :



Because of the application of SOT in (12a), the reference point (t_i) of the ATP is linked to its antecedent via the copied TP that is the adjoining higher tense in the same clause. To this past reference point, the ATP has a PRESENT relation, which is represented by a phonetically null form, \emptyset .

In contrast, the complement clause in (12b) has only ATP, which means that, without copying the TP of the main clause (i.e., no application of SOT), the reference point or external argument of ATP is bound to the internal

¹⁵ Many scholars including Stowell say that the eventive verb in the complement clause under past tense has only a past-shifted reading. On the other hand, in British English, when the matrix verb is *believe*, a back-shifted meaning is blocked and the simultaneous meaning only is allowed: in fact the eventive verb in (i) seems unacceptable (Giorgi and Pianesi 1997:286–7).

(i) John believed that Mary left. => SHIFTED: *British E; American E

(ii) John believed that Mary was pregnant. => SHIFTED: *British E; American E

argument of the TP of the main clause itself. In the case in which the SOT rule does not apply, an event in the context usually implies the temporal relation between the main clause and the subordinate clause. This optionality of the SOT rule in its obligatory environment is related to an interaction between the lexical properties of the verbs, the uniqueness of the English present tense, and a particular contextual implication.¹⁶

In sum, whether or not the SOT rule applies, the tense of the complement clause is dependent on that of the main clause. Thus, like other languages, English has this dependency in tense interpretation as a default rule. On the other hand, the SOT rule is a syntactic mechanism in which an anaphoric link is constituted within a finite clause in order to aid the interpretation of tense dependency between the matrix clause and the embedded clause.

5.2 The double-access reading and the SOT rule

Regarding the application of the SOT rule, English has a clear asymmetry in its tense system, just as it does in terms of the morphology of tense. This past/non-past asymmetry is a common phenomenon in languages. In the same fashion, the tense phenomena in the SOT domain—when the main clause is in the past—and those in the non-SOT domain exhibit different features, even though both have similar tense interpretations. I assume that the double-access readings also are related to the SOT rule.¹⁷

The dependent interpretation is the default interpretation. However, embedded tenses can be interpreted at any time independent of the matrix tenses when other elements intervene. When the matrix clause is not in the past tense, there is no morphological distinction between dependent and independent interpretations. Here the dependent reading is the unmarked reading, whereas in order to have an independent reading, the embedded clause needs extra elements which override the default reading, as in (13) below.

- (13) (a) One day John will say that he is treating me like this.
 (b) Seth will finally meet the woman who lives down the street from you.
 (c) The police will believe that he was killed yesterday.
 (d) Little Wilt will regret that he will be tall. (Shaer 1996:239)

Strong deictic elements (*this, now, from you, yesterday*) or deictic implications from the context or the event (*regret*) are the only way to distinguish the independent (deictic) readings. This is exactly the way that non-SOT languages have to solve the ambiguity between deictic readings and anaphoric readings in complement clauses.

On the other hand, in the obligatory SOT domain, i.e. when the main clause is in the past, there is a morphological distinction between dependence and independence (although, among many speakers, there is a recent trend that ignores this distinction).

- (14) (a) John said that Mary is sick.
 (a') John said that Mary was sick.
 (b) John said that Mary will leave.
 (b') John said that Mary would leave.

¹⁶ For non-stative verbs, the English present tense usually does not imply an ongoing event at the speech point but a slightly bounded one at the moment of speech, which is different from languages like Korean, where the present tense means an exactly progressive event. This fact is related to the shifted meaning of past tense when it is embedded within past tense. However, I think we have to recognize the different trend in American English where without SOT application, the complement clause has a relative past sense even under the past tense because of characteristics of the eventive verbs (boundedness) which can predict the situation; as Shaer (1998) puts it, because of 'recoverability'.

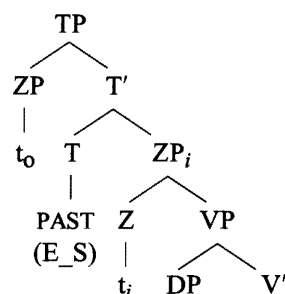
¹⁷ The double-access reading is a double mapping of the situation time of the subordinate clause onto the speech point on one hand, and onto the matrix clause on the other. In the case of present tense embedded under the past tense (e.g., *John said that Mary is pregnant*), the situation of the subordinate clause is interpreted both as holding *now* at the speech point and, at the same time, simultaneous with the past time referred to by the matrix clause (Giorgi and Pianesi 1997:281).

This morphological distinction does not allow the potential ambiguity that the non-SOT environments have, which implies that the same deictic elements are not necessarily required, and that such deictic elements as in (13) do not completely override the default reading, even if they are present.

Due to these differences between the SOT domain and the non-SOT domain, the possibility of the double-access reading is stronger in the SOT domain than in the non-SOT domain. That is the reason why the sentences in (14a) and (14b) can have a double-access reading. The complement clauses of (14a, a') are represented as in (15).

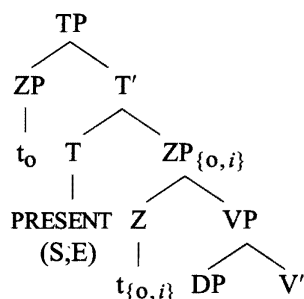
(15) (a) Non-SOT domain of (14a):

[(14a) John said that Mary is sick.]



(b) Double-access reading of (14a'):

[(14a') John said that Mary was sick.]



The SOT rule does not apply to the complement clause since it has an independent interpretation. Thus, the complement clause has a deictic tense with a strong possibility of a dependent interpretation. The internal argument of AT (anaphoric tense) has a zero relation to its own external argument, i.e., it is simultaneous with the speech point. At the same time it is linked to the internal argument of the matrix tense, due to the default interpretation. Thus this double-access reading shows a similarity to the anaphoric relation of a 'split antecedent' reading, as in (16).

(16) John_i told Mary_j that they_{i,j} should leave.

(Higginbotham 1983:400)

6.0 Conclusion

The SOT rule is a formal mechanism to capture the cross-linguistic phenomenon of the dependency of embedded tenses on matrix tenses—a default interpretation, which is closely related to syntactic hierarchy. Secondly, it is not a useless LF or PF rule, as previously claimed, but rather a syntactic rule that establishes an anaphoric link in a finite clause, in order to make it easy to track down the temporal antecedent. At the same time, the SOT is an important mechanism that prevents the ambiguity between a deictic reading (independent interpretation) and an anaphoric reading (dependent interpretation) that exists in non-SOT languages. The optional application of the SOT rule in its obligatory environment is related to the predictability of the temporal relationship between the matrix clause and the complement clause.

In terms of application of the SOT rule, English has an asymmetry between past and non-past tense. In this respect, we cannot say that English is a SOT language. Rather, English has a SOT domain and a non-SOT domain. With regard to independent interpretation, the two domains have different dynamics between the default rule and a deictic interpretation, which is also closely related to the degree of possibility of the double-access reading.

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