THE SEQUENCE OF TENSES

1. The interpretation of tenses in complement clauses

1.1. *Traditional viewpoints*

Tense is usually said to be a deictic category, in that the truth of a tensed sentence is relative to speech time (that is, to the context of utterance). This is clearly the case in independent sentences. Complement clause tenses are not directly linked to Speech Time or Utterance Time (Ut-T). Instead, they are linked to higher tenses that are linked to ST or to even higher tenses, etc. Therefore, complement tenses are linked to Ut-T only indirectly. One of the most salient aspects of the systematic dependence of the complement clause on the main clause is the fact that the semantic interpretation of tenses in the complement clause depends on the main clause. This semantic dependence of complement tense on matrix tense also has a syntactic aspect, traditionally discussed under the rubric of the sequence of tenses (= SOT) of the Indicative Mood.

English is a language that manifests the sequence of the tenses (= SOT), in the sense that the presence of a particular tense in the main clause may place constraints on which tenses are allowed in the subordinate clauses, and also constraints on how tenses in subordinate clauses are interpreted. The simplest formulation of the sequence of the tenses rule says that a past tense in a main clause requires only past tenses in the subordinate clauses. There are two main ways of approaching the SOT:

a) The SOT may be viewed as an effect of indirect discourse. When reporting a person's statement under a past verb of saying, the reporter must back-shift all the present tenses in the reported statement to the corresponding past tenses. A recent statement of this position is the Longman Grammar (1999):

(1)   **Direct Discourse**   **Indirect discourse**
       Present $\rightarrow$ Past
       Present Perfect $\rightarrow$ Past Perfect
       Future $\rightarrow$ Future in the Past

These changes are apparent in examples of the following type:

(2)   a. Mary said: "I have a headache."
       Mary said that she had a headache.
       b. Mary said: "Happily, Paul has arrived."
       Mary said that happily, Paul had arrived.
       c. Mary said: "Paul will arrive tomorrow."
       Mary said that Paul would arrive the next day.

b) The second approach acknowledges the empirical fact that the scope of the SOT far exceeds indirect discourse. There are thousands of cases where the effect of the SOT is clear, even though there is no indirect discourse. Ross (1967:206) and Costa (1972) discuss a rule that can deal with SOT phenomena observed in sentential subjects like those in (3a-b), which do not have a direct discourse source.

(3)   a. *That the sun is out was obvious.
       b. That the sun was out was obvious.

According to Ross (1967) and Costa (1972), the SOT is an effect of a particular structural configuration an effect of subordination. Ross (1967) is the first among the modern linguists to explain the SOT in terms of a syntactic rule that applies when some structural conditions are satisfied, not in terms of indirect vs. direct discourse.

Considered from this structural angle, the SOT is a "rule" that requires that the Tense of the complement clause should "agree" with the past tense of a main clause, so that a past tense should always be followed by one of the past tenses. This is the formal syntactic requirement, but there is also an interpretative aspect. The essence of the latter is that the interpretation of the subordinate clause tenses depends on the (respective) main clauses. Traditionally, the following relations were noticed.

(4)   If the tense of the main clause is past, then,
        a) the Past Tense in a SC is used to express simultaneity with the main clause.
        b) The Past Perfect in a SC is used to express anteriority with respect to the main clause.
        c) the Future in the Past is used to express posteriority with respect to the main clause.

While the interpretative principles in (4a-c) are correct, they fail to give a complete and principled account of the data. This section presents a more comprehensive account of the interpretation of tenses in *that*-complement clauses, insisting on the relation between the main clause and the subordinate clause.

1.2. ***Motivating an SOT rule.*** As already announced, the SOT has an interpretative component, namely, to what extent the range of interpretation of tenses changes in embedded clauses, as well as a formal component, namely, how the grammar makes sure that only the "suitable" tenses appear in the subordinate clause.

The clearest argument for discussing the SOT is precisely the fact that tenses in embedded contexts may have readings that they do not have in independent sentences. Here are three examples:

(5)   a) John said that Mary *was pregnant*.
        a') Mary had been pregnant before the time of the saying (John said that Mary was pregnant when he married her).
        a")Mary was pregnant (at the time of the saying).
        b) John said to me (yesterday) that he would tell his mother tomorrow at lunch that they *were eating* their last meal together.
        c) John said that Mary *left*.

In the first sentence, there is an ambiguity. The Past Tense is open to a *shifted* (past) reading, as well as to a *simultaneous* (present) reading, as detailed in (5a') and (5a"). On the shifted reading, the Past Tense in (5a) shows anteriority to the time of the saying, so it is interpreted as a past. On the simultaneous reading, the past tense in (5a) shows simultaneity with the saying, therefore it is equivalent to a "present". Quite remarkable is the fact that the italicized past tense in the second sentence (5b) cannot be interpreted as a past at all, because it does not show anteriority to any reference point on any reading of the sentence. Actually *were eating* only expresses simultaneity with respect to the time of *would tell* (a future) in the main clause. Comparing (5a) and (5c) now, it appears that *left* in (5c) has only got the shifted reading, and there is no simultaneous reading. It is easy to notice that the relevant difference between (5a) and (5c) is that the predication in (5a) is stative, while the predication in (5c) is eventive. The aspectual class of the predication of the SC may influence the temporal interpretation of the subordinate clause.

One more phenomenon that needs mentioning is that the interpretation of tenses also depends on the syntactic type of the subordinate clauses. Tenses in relative clauses differ from those in complement clauses.

(6)   John gave a book to the boy who hit the ball.

The past tense in the relative clause is again interpreted in two ways, but what changes in the two readings is the point of orientation. The verb *hit* may refer to an event of hitting anterior

to John's giving him the book, or it may refer to a hitting preceding UT-T, but not necessarily anterior to the main clause event.

Conclusion:

Tenses in subordinate clauses may exhibit a different range of interpretations, deriving from: a) the position of the SC, that is, the syntactic configuration where the clause is projected (complement clause vs. relative clause); b) the nature of the predication in the SC (the feature ±stative). Roughly, tenses in subordinate clauses are oriented to the main clause tense, instead of being oriented to utterance time.

1.3. One cannot analyse the SOT as simply a rule that replaces a present tense by the corresponding past tense. Technically, we might start the derivation with a present and use the present at LF, and then change a present into a past morpheme at PF, under certain structurally defined circumstances. This solution will not do, however, since, as the type of examples below proves, a present under a past is not synonymous with a past under a past.

(7)   a. Bill said that Mary is pregnant.
        b. Bill said that Mary was pregnant.

Sentence (7b) is identical with (5a) above, exhibiting an ambiguity between a simultaneous and a shifted reading. In contrast, sentence (7a) does not have the shifted reading of (7b). Even more, the simultaneous reading of (7b) is different from the interpretation of (7a), since sentence (7a) is felicitous only in a context where Mary is still pregnant at the time of utterance, while sentence (7b) gives no information about Mary's present condition.

Conclusion

One cannot discuss the interpretation of tenses in terms of past tenses replacing present tenses, as proposed by the traditional formulation of the SOT in (1) and (3).

Instead one should reveal the range of meanings tenses exhibit in embedded clauses, relating them to their interpretations in root clauses.

2. Towards a formal account

The most general situation, informally described by the traditional account in (4) above is illustrated in the examples below:

(8)   a. John said that he sang a song.
        b. John said the he had sung a song.
        c. John said that he would sing a song.

The interpretation of the tense in the complement clause is straightforward. The tense in the complement clause is oriented towards that of the main clause, that is, the reference time of the complement clause is the event time of the main clause.

Several important clarifications are called for.

1) We know that Tense expresses order relations between Utterance Time and Assertion Time, while Aspect expresses relations between Assertion Time and Event Time. However, a moment's thought will reveal that Assertion Time is not distinct from Event Time, with the clear

exception of the perfective *have* form. The *have*-perfect explicitly places the Ev-T before Ass-T. For the simple forms, Ev-T is included in Ass-T, therefore they are non-distinct regarding their relative order to Ut-T. For the progressive forms, Ass-T is included in Ev-T, therefore they are again non-distinct regarding the relative order to Ut-T. Since the notion of Event-Time is more perspicuous, we will refer to Ev-T whenever aspect is not present, or to Ev-T/Ass-T when aspect is present but the two times have the same relation with respect to Ut-T.

2) The most significant change in the interpretation of tenses in subordinate clauses is that they are no longer deictic, i.e., oriented towards Ut-T. The several examples informally analysed so far show that subordinate tenses are oriented to the Ev-T of the main clause. Let us use the term *Reference Time* (=RT) to designate the external argument of Tense. The tense predicate then expresses a relation between Ass-T and RT. The value of RT in root clauses is Ut-T. While in a main clause, RT typically denotes the time of utterance, Ut-T, in a complement clause RT (often) denotes the event time of the matrix clause.

A large class of cases is precisely characterized by the fact that the reference(orientation) point (=RT) of the subordinate tense, therefore, the external argument of the subordinate Tense head, is not UT-T, but the Ev-T of the main clause. This is the class of *shifted readings* in (8), examined below in a more detailed and formal fashion:

2.1. *The shifted reading of the Past Tense*
Consider the following examples:

(9)   John said that he sang a song.
        Bill reported that they robbed another bank.

We continue to assume that the Tense head relates an internal argument, the assertion time (Ass-T) and an external argument, the reference time (RT).

(10)   Bill reported that John sang a song.

While the RT (external argument) of the matrix Past in (10) denotes the UT-T, the external argument (RT) of the complement clause Past does not; instead, it denotes the time of the main clause event, so that the time of the singing event precedes the time of the reporting. The interpretative principle of shifted readings can be stated as below:
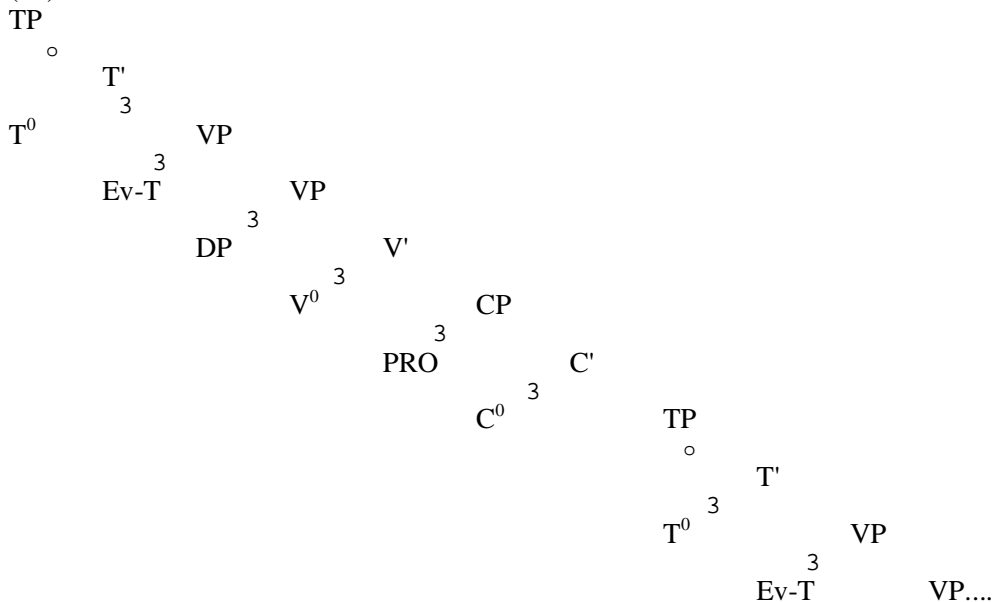
(11)   The RT (external argument) of the complement clause Tense head is coreferential with the matrix clause event argument (Ev-T).

The problem is how to express the principle in (11) formally. We adopt the general assumption that, in syntax, the arguments of the Tense and Aspect heads are time phrases, i.e., time denoting DPs/PPs/AdvPs. Time phrases are referential phrases, and as such, their interpretation is determined by the general principles that regulate the interpretation of referential phrases: Control Theory and Binding Theory.

Since the RT of a clause is often not overtly expressed, a natural possibility is to suggest that this empty reference time is a Time Phrase analogue of PRO. Let us notate it RT-PRO, and assume that RT-PRO is an operator in SpecC. When it occurs in a main clause, RT-PRO is a deictic operator ; when it occurs in a complement clause, the RT-PRO is bound by another time phrase, namely, by the Ev-T of the main clause (=MC). As seen in the diagram

below, the Ev-T of the MC is the closest c-commanding Time Phrase, so it is the desired binder of RT-PRO, being a suitably local antecedent.

(12)

```
TP
 o
        T'
         3
T⁰              VP
          3
       Ev-T          VP
                3
            DP          V'
                  3
                V⁰          CP
                      3
                    PRO          C'
                            3
                          C⁰          TP
                                       o
                                          T'
                                           3
                                        T⁰          VP
                                               3
                                            Ev-T          VP....
```

The shifted reading still analyses the past as "past", because it locates one interval, the Ev-T/As-T of the subordinate clause prior to another interval, the RT of the subordinate clause (=SC), an RT which is the same as the main clause EV-T. The shifted reading is thus expected on any analysis of the RT as a PRO time operator. This operator has no antecedent in independent clauses, and therefore it must be deictic picking up an index from the context, but it will be bound by an antecedent in the case of subordinate clauses.

From an aspectual point of view, the shifted reading is unconstrained, being possible for all types of predications. Thus, the shifted reading is the only one for perfective predications (eventive predications, accomplishments, achievements).

(13)   John said that Mary finally gave up smoking.
         John declared that the patient died early in the morning.

The shifted reading is also open for stative past sentences, provided that they are licensed by an independent time phrase (cf. Giorgi&Pianesi (1997)). Thus in the example below, *it was raining* is licensed by the adverbial clause *when he left*, which is the Ass-T of the complement clause. On the other hand, the RT-PRO in Spec C is bound by the main clause Ev-T, so that the rain is understood as prior to the John's saying.
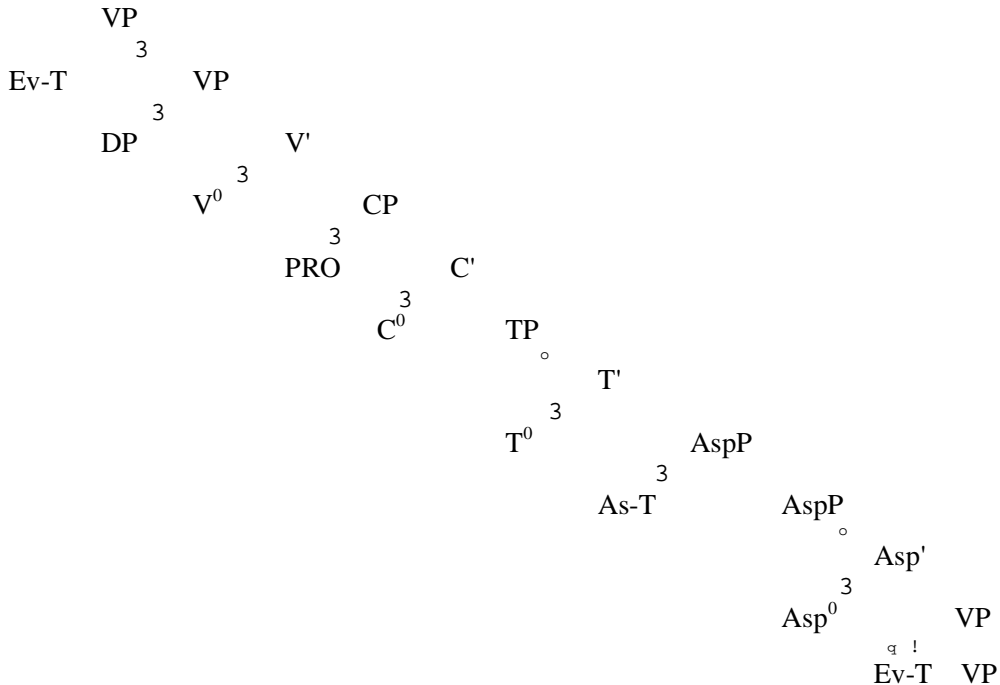
(14)   John said that it was raining when he left.

Shifted readings based on Principle (11) also obtain for the Past Perfect and Future in the Past in the complement clause. The RT-PRO argument of the complement clause will again be controlled by the event time of the MC. Consider the following examples:

(15)   a. John said that Bill had already left at the time of the theft.
         b. John said that Bill would be there.

Consider sentence (15a), where the subordinate clause contains a Past Perfect, in the configuration below.

(16)

```
        VP
          3
Ev-T            VP
          3
        DP              V'
              3
            V⁰              CP
                  3
                PRO             C'
                      3
                    C⁰      TP
                        ∘
                            T'
                          3
                        T⁰              AspP
                              3
                            As-T            AspP
                                  ∘
                                      Asp'
                                    3
                                  Asp⁰          VP
                                      ᵩ !
                                    Ev-T   VP
```

Given the interpretation of the Perfect aspect, the Ev-T of the subordinate clause (Bill's leaving) precedes the Ass-T of the subordinate clauses. The Tense head relates the Ass-T of the subordinate clause to the RT, which is the RT-PRO in SpecC of the SC: The RT- PRO of the SC is again the same as the Ev-T of the main clause. So, by the shifted reading, the Assertion Time of the subordinate clause (the time of the theft) precedes this RT-PRO of the SC, which is the Ev-T of the MC (the time of the saying.

Remark. This is not the only temporal value of the Past Perfect, but it is simply an interpretation based on the shifted reading.

The interpretation of the Future in the Past is hardly problematic. The RT of the Future in the Past is the Ev-T of the main clause, so the subordinate clause Ev-T/Ass-T is after this RT.

2.2. ***The simultaneous reading***

When a complement clause contains a stative verb, and both the matrix and complement clause are in the Past Tense, the interpretation of the complement clause Past Tense is ambiguous between a simultaneous and a past shifted reading:

(15)   John said that Bill was sick.

The simultaneous reading of the Past is problematic, since in such cases the Past appears to be a disguised Present. It is in such cases that a rule that "shifts" tenses appears to be called for. There are two ways of dealing with the simultaneous reading, briefly presented below:

2.2.1 One approach, illustrated by Enc (1987), could be called the *always past theory*. The idea is to try to show that even in such cases, the past tense still functions as a past, i.e. still locates the Assertion Time of the SC before some interval of the main clause.

In Enc's 1987 view, tenses are directly viewed as referential expressions, rather than as binary relational predicates. Thus, a past tense denotes a time interval that is prior to some other

interval, which needs to be specified to interpret the sentence. It is further assumed that all the elements necessary for Tense interpretation are present in the LF of the sentence. The reference interval for T, i.e., the interval with respect to which the Past Tense interval is anterior is, as before, assumed to be in C (cf. Enc (1987, 641), also Guéron (1995)). Enc supposes that C can *optionally* carry a temporal index, and when it does, it yields a reference interval, which functions as RT for the local Tense, which is thus bound by C^0. Only a local C^0, which governs Tense can function as an 'anchor' or RT for Tense. Thus Tense denotes an interval oriented towards some other interval, which may be specified by the local C^0. Tenses for which no RT has been specified are said not to be "anchored" and cannot be interpreted. Enc states the following Anchoring Principle, which may be viewed as an identification requirement for tenses.

(18) **The Anchoring Principle**
Each tense must be anchored

Since Tense denotes an interval and is viewed as a time-denoting nominal, its interpretation is again determined by Binding and Control. The referent of Tense is determined with respect to the RT interval specified in C^0. Since C^0 governs Tense, the anchoring conditions for Tense exploits the (binding theoretic) notion of *governing category*, as follows:

(19) **Anchoring Conditions:**
a. Tense is anchored if its bound in a local domain (its governing category), or if its local Comp is anchored. Otherwise it is unanchored.
b. If C^0 has a GC, it is anchored iff it is bound within the GC.
c. If C^0 does not have a GC, it is anchored iff it denotes speech time.

(20) A governs B iff
a. A is a head X^0,
b. A c-commands B, and
c. A and B are contained in all the same maximal projections.

In root clauses, C^0 does not have a governor; therefore it has no governing category. As a result, C^0 can only be anchored if it denotes speech time. C^0 picks up a value from the context, which serves as RT for Tense; C^0 thus acts as the binder of Tense. Things are different in embedded clauses. If Control and Binding are involved in the interpretation of subordinate clause tense, we expect the syntactic configuration of the clause to make a difference (for instance, there will be contrasts between the interpretation of complement clauses and relative clause tenses).

Anchoring Complement Tenses.
Consider again the ambiguous sentence (5), repeated here as (21):

(21) John heard that Mary was pregnant (at the time).

Enc's strategy is to prove that two indexing procedures are available for binding the complement Tense. The embedded Tense may relate to the MC Tense through the mediation of its C^0 (the shifted reading) or it can be directly bound by the MC Tense (the simultaneous reading). Here are the details:
Consider first the possibility of anchoring Tense through its C^0 (cf. (19a)). First an index is determined for the subordinate clause C^0, and then the subordinate clause C^0 binds the subordinate Tense. In the clausal complement of a verb, the C^0 of the subordinate clause is governed by the main verb, so C^0 has a governing category. The governing category of C^0 is the main clause (since it contains the governor of C^0, (the main verb), and an accessible SUBJECT, which is the Inflection of the main clause). Therefore, C^0 must be bound by an antecedent in the main clause. A possible antecedent for the embedded C^0 is the matrix Tense, which is the closest

relevant c-commanding time phrase. If the matrix Tense binds the subordinate C^0, C^0 will be anchored. In its turn, C^0 will serve as an anchor for the complement Tense. (22) illustrates this anchoring possibility for (21).

(22) $[C^0[$ NP $[PAST_i$ $[V$ C^0_i $[NP$ $[PAST_j$

        The matrix C^0 in (22) denotes utterance time (UT-T), so the matrix Past Tense denotes a time prior to Speech Time. This past time is the time of hearing in example (21). The subordinate C^0 is bound and thus co-indexed with the matrix Tense, denoting the same past interval. This interval will serve as RT for the subordinate clause Tense. The complement Tense will then be interpreted as anterior to the interval designated by subordinate C^0 and by the matrix clause Tense. This is the structure of the shifted reading. Thus in (21), the matrix Past Tense denotes the time of the hearing (anterior to utterance time), while the complement Tense designates the time of Mary's pregnancy, supposed to be before the hearing.
        The simultaneous reading represents a different anchoring possibility, relating the SC Tense to the MC Tense without the mediation of the SC C^0. The Tense of the complement in (21) is itself governed by its C^0, so, having a governor, it too will have a governing category. The governing category of Tense is the smallest projection containing the governor of Tense, which is the SC C^0, and an accessible SUBJECT; this projection is the main clause. Since the complement Tense itself has a governing category (the main clause), it can directly find in it an antecedent with which it is coindexed. Again the matrix Tense is a possible antecedent, and this anchoring strategy yields the indexing in (23).

(23) $[C^0$ $[NP$ $[PAST_i$ $[V$ $[C^0$ $[$ NP $[$ $PAST_i$

        This time the Past of the complement clause denotes the same interval as the Past in the main clause, an interval which is located before the UT-T/RT specified by the matrix Comp. Since the Past of the SC is co-indexed with the time of the MC, the effect is a simultaneous reading. At the same time, through this indexing trick, the Past of the simultaneous reading is still viewed as a past, rather than as a disguised present, since it is past with respect to the UT-T in the main clause C^0, (instead of being past with respect to the subordinate C^0 as before).
        Though very successful and elegant, Enc's analysis faces both empirical and conceptual problems. The most serious problem is the one raised by example, like (24), where the Past in italics does not show anteriority with respect to *any* interval denoted by the sentence, but it simply shows simultaneity with respect to the main clause future verb. In such cases it is difficult to escape the traditional view that the Past is a disguised Present in sequence of tenses (=SOT) situations.

(24)   John said to me (yesterday) that he would tell his mother (tomorrow at lunch) that they *were eating* their last meal together.

        Sentence (24) is a counterexample to the claim that the Past always shows anteriority to some RT. On the simultaneous reading of (24) the time of eating coincides with the time of telling (*tomorrow at lunch*) and precedes no other time referred to in the sentence. Such examples force us to come back to a more traditional view of the sequence of tenses. In an SOT analysis, the complement clause past tenses on *would* and *were* can be analyzed as semantic Present Tenses, which surface as morphologic past as a result of the repeated application of the SOT rule.
        One conceptual problem for Enc's analysis is that it relies on different indexing strategies for the same syntactic configuration, and, as such, it is stipulative.
        2.2.2 The second approach to the simultaneous reading is to adopt some version of the SOT, since we have concluded that some version of the SOT is needed. Consider (25) once more:

(25)   John said that Mary was pregnant.

When *was* in (25) is used for the simultaneous reading, it seems not to be the right tense for semantic interpretation. What is needed is a "present tense" form or, even better, a *tenseless* verb form that would automatically indicate simultaneity *relative to the time of the matrix predicate*. Such a mechanism of subordinate tense interpretation is proposed by Ogihara (1989).
Ogihara (1989) interprets the SOT rule as an optional mechanism deleting the past tense morpheme of a subordinate clause. The rule applies after spell-out, to create an LF suitable to semantic interpretation. The effect is to create a *tenseless form*, interpreted as simultaneous with the matrix:

(26)   a. John said that Mary was pregnant.
         b. John Past say that Mary Past be pregnant.
         c. John Past say that Mary φ be pregnant.
(27)   Sequence of Tenses (SOT)
         A past tense locally c-commanded by another past tense at LF is optionally deleted.

The rule regards any past tense not just Past Tense simple. Consider the following Past Perfect example.

(28)   a. John told me that Mary had been there.
         b. John Past tell me that Mary Past have been there.
         c. John Past tell me that Mary φ have been there.

Since the SC is tenseless, the Assertion Time of the SC is the same as the Ev-T of the main clause (the time of John's telling), so that the perfect aspect simply locates the subordinate event before this time. In such examples, the Past Perfect is a shifted Present Perfect or a shifted Past.
This mechanism could also operate in Future in the Past examples, but the interpretation of this tense is no different from that obtained in the shifted readings, i.e., it will express posteriority with respect to the main clause Ev-T.
At first, the rule proposed by Ogihara does not resemble what the traditional grammarians had in mind: it is a rule that deletes a past tense in a certain configuration, not a rule that changes a present tense into a past tense, but this difference follows from the logic of the grammar, which constructs an LF (rather than an S-Structure) suitable for semantic interpretation.
An alternative course might have been to generate a present in the embedded clause through to LF, and allow a rule of the phonological component to convert this present into a past. The disadvantage of this alternative, is that we would in fact be producing a double-access reading sentence (=DAR), a sentence of type (7a) above at LF, and as already shown, the simultaneous reading is not synonymous with the DAR.
The rule is optional, since we must allow that certain past tenses are interpreted as true past tenses, expressing anteriority to a reference, in the so-called shifted readings, discussed in the preceding paragraph.
Furthermore, not only past tenses produce SOT effects, but future tenses do too, as can be noticed in (29). Sentence (29a) means that John will claim that Mary is his wife at the future time of his claim, and cannot describe a case in which Mary is his wife now. Therefore the present expresses simultaneity with the main clause instead of simultaneity with utterance time. Sentence (29b) is ambiguous: for most speakers (29b) means that Mary is hitting Bill now, not (only) at the time of John's claim:

(29)   a. Next year, John will claim that Mary is his wife.

b. John will claim that Mary is hitting Bill.

Apparently, given the right context, any sentence of type (29b) can receive at least a simultaneous reading and perhaps a DAR as well. Let us now concentrate on the simultaneous reading of (29a). Since the present tense is supposed to be sensitive to UT-T, it is somewhat surprising to find that a Present Tense embedded under a Future can receive a purely simultaneous reading. The simplest way of accommodating this fact is to let the SOT rule delete a present tense under identity with a locally c-commanding present tense. This is possible since the future tense *will* is analysable as Present + will.

(30)   a. John will claim that Mary is hitting Bill.
        b. John Present + will claim that Mary Present be hitting Bill.
        c. John Present + will claim that Mary φ be hitting Bill.

As shown in (30c), the subordinate clause is tenseless, cannot define its own Ass-T/Ev-T; its Assertion Time is understood as the same as that of the main clause (future Ass-T). taking into account all the examples discussed, it is possible to restate the SOT:

(31)   ***Sequence of Tenses***
        If a tense A is locally commanded by another tense B at LF and A and B are occurrences of the same tense (i.e., either present or past), A is optionally deleted.

Since SOT effects arise only in c-command configurations, i.e., when one tense locally c-commands another tense of the same kind, Stowell proposes to regard the tenses of the embedded clauses as *polarity items*, licensed by the c-commanding tense in the main clause. Remember that polarity items are licensed by a local c-commanding operator. The tense of the subordinate clause is viewed as variable bound by the main clause tense, when the SOT applies. This analysis easily explains why the tense of the subordinate clause is understood as simultaneous with the main clause tense. In the shifted reading, in contrast, subordinate clauses functions as referential phrases.

The interest of Stowell's proposal is to assimilate the behaviour of tenses to the behaviour of other referential expressions. As is well-known, pronouns too, may be either independent referential expressions, or variables bound by a c-commanding operator. *He* in the examples below is a referential phrase in (32a), a bound variable in (32b) and allows either interpretation in (32c):

(32)   a. He is my brother.
        b. Everyone wants himself to be rich.
        c. Everyone believes he is smart.

Conclusion

The analysis of the sequence of tenses so far has revealed the existence of two types of problems:

a) Interpretative problems regarding the interpretation of tenses in subordinate clauses. These are likely to be found in every language, whether or not an "SOT rule" exists in that language. Shifted readings thus exist everywhere. Here is a Romanian example: *Mi-a spus ca Ion a plecat peste o oră* ("He told me that he left the room in an hour"). In both languages the only reading is a shifted one (anteriority to the main clause). In such cases Tenses continue to be interpreted as referential expressions, but the referential mechanism is different.

b) Syntactic aspects are also present, such as the concord between a past in the MC and a past in the SC, producing a configuration which is interpretable by means of the SOT. According to the SOT, the Tense of the SC is deleted by a MC c-commanding similar one, leaving behind a variable, ultimately bound by the MC Tense.

The existance of this type of syntactic-semantic mechanism is language-particular.

2.3. *The relevance of aspect for the simultaneous reading*

It has been noticed that the simultaneous reading is available only with stative predications: lexical state verbs and progressives (progressives are (sufficiently like) states). As extensively discussed above, sentence (33) has two readings, brought out in different contexts:

(33) a. I told Mary that Susan was having a headache.
      b. I told Mary that Susan was having a headache and couldn't go out to the dinner with her   (the simultaneous reading).
      c. I told Mary that Susan was having a headache when I visited her (the shifted reading).

An embedded stative predicate appearing in the simple, not the progressive, past form can also display the simultaneous reading, whereas the same is not true for the embedded simple past of an eventive verb (accomplishment or activity).This is visible in the examples below:

(34) a. John said Mary was happy.
      b. #John said Mary ate an apple. (no simultaneous reading)
      c. # John said Mary ran.
(35) a. John said that Mary was eating an apple.

The only available reading with eventive predicates is the shifted one. To obtain the simultaneous reading, the progressive form must be used.

Giorgi & Pianesi (1997) correctly explain this constraint on the simultaneous reading as an aspectual matter. *The insight is that it is impossible to relate a perfective event to an anchoring event* (utterance time or some other reference time in the mains clause), because the latter is punctual (the Punctuality Constraint). They differentiate *processes* from *punctual events* and from *closed events*. *Processes* are events evolving in time and can be detected by means of the progressive tenses. Accordingly both activities and accomplishments are processes, unlike achievements and states. An event is *closed* if it can be decomposed into a process part and a boundary. Furthermore, an event may be closed because of the presence of the feature [+perfective], which entails closure. An event is *punctual* iff it is not temporally partitioned by other events. That is, an event is punctual iff there are no events that temporally overlap it and that do not overlap each other. Punctuality amounts to neglecting temporal structure. We can now also state the following universal interpretative principle, necessary to understand The Punctuality Constraint:

(36) The anchoring event (whether it is UT-T, or a matrix time) is punctual.
(37) *Punctuality Constraint*
      A closed event cannot be simultaneous with a punctual event.

Giorgi &Pianesi (1997) propose that all eventive predications in English (processes, i.e., activities and accomplishments) are associated with the feature [+perf]. The English bare form of the verb is interpreted as [+perf]. Some evidence for this proposal comes from the perfective interpretation of the bare infinitive, which is in fact only a verbal stem, devoid of any inflectional marking. The Accusative + bare infinitive is perfective, unlike the Accusative + participle.

(38) a. John saw Mary eat an apple.
      b. John saw Mary eating an apple.

Performatives further support the claim that the simple present is [+perf]:

(39)   I pronounce you man and wife. (pronouncing is the same event as the speech event)
I am pronouncing you man and wife. (2 events, the pronouncing event and the speech event)

The same property, namely, that English bare verb forms are interpreted as [+perf], may explain why the simple present form cannot be used for events occurring at UT-T. The punctuality constraint accounts for the long known crosslinguistic difference observed in the interpretation of the present tense. The central remark is that in English the present tense cannot have the imperfective interpretation. In English to obtain the continuous reading the Present Progressive must be used.

(40)   *John eats an apple.
Ion mănâncă un măr.
*John eats an apple.
John is eating an apple.
Events simultaneous with Ut-T are necessarily perceived in progress, being imperfective [-perf]. The bare stems of the present are [+perf], and as specified by the Punctuality Constraint, a perfective, closed event cannot be simultaneous with a punctual event. Like any anchoring interval, Ut-T is punctual. Consequently, the [+perf] simple Present form cannot be simultaneous with UT-T, so the progressive must be used. The fact that verb stems are [+perf] in English is a morphological property, not present in other familiar languages. In these languages, the event expressed by the Present is not closed and hence can be mapped onto punctual anchoring events, with an imperfective interpretation, naturally.

Let us go back to the simultaneous reading of the stative past. Consider the examples in (34). The simple Past Tense forms are interpreted as [+perf], so they cannot be simultaneous with the anchoring tense of the main clause, which is punctual. The only exception is that of (34a), which is inherently stative and can be simultaneous with the main clause Tense. In interpreting the case in (34), the temporal anchor is provided by the superordinate predicate.

As to the shifted reading of stative verbs, Giorgi & Pianesi (1997) notice that it is felicitous if the subordinate clause contains an adverbial of time, anterior to the main clause Tense and which licenses the subordinate durative predication (see examples (5a'), (14) above). In contrast, for closed predications in the subordinate clause, the main clause serves as RT, and the only possible reading is the shifted reading.

3. Tenses in relative clauses

The analysis proposed for complement clauses can be extended to relative clauses. There are, however, differences, arising from the different syntactic configuration characteristic of the relative clause. Relative clauses are members of DPs. Consider an example like (41):

(41)   Last night, John gave the book to the Professor he met.
a. Last night, John gave the book to the Professor he met at the party.
b. Last night, John gave the book to the Professor you met.

The Past Tense has a shifted reading in (41a), because the meeting event precedes the giving event. In contrast, in (41b), the meeting is oriented towards the UT-T of the main clause. Your meeting the Professor and his giving the book are not ordered. This difference may be

derived from the different interpretation of the RT in the subordinate clause. Remember that RT is a time-denoting PRO.

The interpretation of the RT-PRO argument is determined by the LF position of the DP containing the relative. If the DP remains in situ at LF, the PRO-RT of the relative clause is controlled by the matrix event time, giving rise to the shifted construal as in *John said that Bill hit the ball*. Alternatively, if the DP containing the relative undergoes LF movement and adjoins to the main clause, the reference time argument of the relative clause Past Tense lacks a c-commanding controller and it therefore behaves like the PRO reference time in a main clause, denoting the utterance time. This gives rise to the independent tense construal, where the event time of the RC is not related to the ET of the clause containing the RC. This possibility of independent temporal construal of the relative clause accounts for the often expressed, but not fully correct claim that the SOT does not apply in relative clauses.

(42)   a. John saw the man who is now crying.
        b. John saw the man who was crying.

In (42a) the RC tense depends on UT-T. The Past tense of the RC in (42b) exhibits a simultaneous reading. This means that it is possible to have SOT effects in relative clauses as well. In (42b), we get a simultaneous reading, and the Past Tense is really equivalent to a present. Since the tense of the main clause locally c-commands the tense of he RC, we expect and we get SOT effects.

The freedom of tense interpretation in relative clauses is the effect of the freedom DPs have in taking scope.

4.The double access reading. (DAR).Violations of the SOT

4.1 *Traditional lore on the DAR*. Traditional grammarians often noticed that the SOT rule is sometimes disregarded, so that present tense appear in subordinate clauses governed by a main clause Past.

Curme (1931: 355) states that "Past controlling present sentences are used to represent something as customary, habitual characteristic, or as universally true." This is usually the way this type of "violation of the SOT rule" is described in school grammar textbooks. Many modern linguists assume that more subtle conditions dictate the behaviour of this construction, but they do not always offer precise licensing conditions for it. According to Comrie (1985: 515), the sentence *John said that he is ill* is used "when the speaker is reporting a real or imaginary illness which he believes still has relevance." Smith (1978: 66) proposes that when present tenses replace the expected past ones, "the speaker is responsible as it were, for the complement's being true or relevant at speech time. Moreover, such sentences indicate that the same event or state referred to [in the complement clause] holds both at the time referred to in the matrix and at speech time." Smith thus identifies the main property of these constructions. The situation described by the embedded clause seems to hold with respect to both the past time evoked in the main clause and the utterance time of the report.

(43)   John heard that Mary is pregnant.

This sentence requires the time of Mary's pregnancy both to extend to UT-T and to include the past time of Jon's hearing about it. There are two significant issues here: how to ensure that the present tense in the complement has access to speech time, and how to ensure the inclusion relation with the denotation of the matrix Past Tense. The several proposals dealing with this construction (Abusch (1997), Giorgi &Pianesi (1997), Ogiharra (1989), Higginbotham (1998), Stowell (1993) have in common the intuition that in such sentences the complement

clause is both in the scope of the main verb and out of it. Consider Stowell's analysis of an example like:

(44)   John said that Bill is sick.

The crux of the analysis is to explain why the clause should raise out of the scope of the main clause at LF, adjoining to the main clause CP. Stowell proceeds from the polarity status of Tense in the subordinate clause in such examples. Since the matrix clause contains Past, the subordinate clause should contain a morphologic Past as well. But the complement clause contains a present tense instead, a present which should not be in the c-command domain of main clause Past. Consequently, since the complement clause is c-commanded by the matrix Past at S-Structure, it must be moved out of the c-command domain of the matrix Past at LF in order to satisfy the polarity requirement of the present Tense that it contains. The complement clause is thus copied in a position of adjunction to the main clause. The double access reading results from interpreting both copies of the complement clause at LF.

The raised copy is interpreted as present with respect to UT-T, i.e., it will be simultaneous with UT-T. This results in an "independent simultaneous reading" of the sort that arises when the Present occurs in a relative clause embedded in a past tense main clause.

(45)   John gave a book to the boy who is sick.

But the Ev-T of the complement in (46), unlike the event time of the relative in (45), must also include the matrix clause event time. This is the effect of interpreting the complement clause in situ. The only interpretation is the simultaneous reading, a reading available for a sentence like (5).

(46)   John said that Bill was sick.

The double access reading can be derived from an LF configuration where the complement clause is simultaneously represented in two positions, each corresponding to one of its two contributing readings. The copy left in situ contributes the normal simultaneous reading of (5) and (46), and the copy adjoined to the matrix clause contributes the independent simultaneous reading of (43).

Double access readings may obtain with the present and with the future in subordinate clauses, as illustrated below:

(47)   John said that Mary will visit Seattle on Friday.
         He also said that she will have finished her paper by then.
(48)   John heard that Mary is pregnant.
         It is important to retain that double access sentences do not represent cases of 'careless speech', situations where a rule is neglected. Rather, as we have seen, the informational content of the DAR sentences is distinct.

Since general truths, generic sentences etc. are always true it is natural to often find them in DAR sentences. This has given the impression that one can disregard the SOT only for "general truths". In fact the scope of DAR sentences is far wider, as we have already seen.

4.2. *Main verbs that allow SOT violations*
A last remark is that only some classes of verbs allow DAR., i.e., can take speaker-oriented complements. We include factive verbs (see next chapter for a definition and examples) and frequent verbs of communication (*say, tell, communicate*)

With factive verbs the complement clause is presupposed to be true, hence it is easy to re-analyse it as true at UT-T, that is, true for the current speaker.

(49)   Bill regretted/ was amazed/ forgot that coconuts grow/ grew high up on trees.

Verbs that do not allow DARs include non-factive verbs of propositional attitude (*think, believe*) and of linguistic communication (*allege, insist*), as well as manner of speech verbs (e.g., *grunt, blurt out*) ,"which are always associated with a point of time in a narrative non-conversational discourse, thereby establishing a distance between speaker and sentence, so that the speaker cannot identify with the complement."(Costa (1972)).

(50)   Bill thought/ wished/ quipped/ alleged/ hoped that the new leader of the group was/*is an undercover agent.

General Conclusions

1. The fact that different types of clauses correlate with different interpretative principles strengthens the conclusion that the SOT is a configurational syntactic phenomenon.
2. The interpretative dependence of the Tense in a subordinate clause on the Tense of the main clause is a general semantic phenomenon. The main clause is instrumental in determining the reference time of the subordinate clause.