The Syntactic Expression of Tense

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Abstract

In this article I defend the view that many central aspects of the semantics of tense are determined by independently-motivated principles of syntactic theory. I begin by decomposing tenses syntactically into a temporal ordering predicate (the true tense, on this approach) and two time-denoting arguments corresponding to covert a reference time (RT) argument and an eventuality time (ET) argument containing the verb phrase. Control theory accounts for the denotation of the RT argument, deriving the distinction between main clause and subordinate clause tenses. The theory of covert movement is used to account for the independent/indexical interpretation of relative clause tenses, and for the correlation between independent tense interpretation and a de re construal of the relative clause. A theory of "past polarity", based on traditional negative polarity theory, accounts both for the simultaneous "sequence of tense" construal of past tenses in subordinate clauses embedded within past tense contexts, and for the obligatory indexical/independent interpretation of present tense in a relative clause embedded within a past tense context. Combined with the copy theory of movement, the polarity theory also provides an account of the semantics of double access sentences, treating them as involving a special kind of reconstruction effect.

Key Words: Tense, Temporal control, Past polarity, *De dicto/de re*, Double Access

1. Tense and syntactic theory

In this article I defend the view that many central aspects of the semantics of tense are determined by independently motivated principles of syntactic theory. In this respect, the following components of syntactic theory play a key role:

(1) (a) The theory of argument structure, which provides a template for the basic semantics of tense. Individual tenses are analyzed as two-place predicates of temporal ordering, taking time-denoting expressions as their arguments. The internal argument of a tense is a time-denoting expression containing the verb phrase (VP); it denotes what is traditionally called the *event time* (ET) of the tense. The external argument of the tense is covert; it denotes a time that functions as the *reference point* of the tense (its *reference time*, RT); in a simple mono-clausal sentence, this generally corresponds to the actual utterance time (UT). The tense itself imposes a relative temporal ordering on the RT and the ET; for example, a past tense orders the RT after the ET.

(b) The theory of phrase structure, which provides a syntactic encoding of this argument structure in terms of the structure of TP, the phrase headed by Tense (T). The covert RT argument of T occurs syntactically in the Specifier (or Subject) position of TP; the ET argument occurs syntactically as the complement of T. The theory of phrase structure also provides an internal structure for the time-denoting expressions that function as the arguments of tenses. Elsewhere I

have proposed the existence of a category ZP (a temporal analogue of DP), headed by Z (the temporal analogue of D), and taking VP, or a functional category containing VP, as its complement.

(c) The theory of control, which determines the controller, or antecedent, of the covert reference-time (RT) argument of T, thereby determining the reference-point of the temporal ordering predicate. Its principal effects are observed in subordinate clauses, where the ET argument of the superordinate clause typically functions as the antecedent of the covert RT argument of the subordinate clause tense.

(d) The theory of polarity, a generalized version of the theory of negative polarity, which allows for the possibility that certain apparent tense morphemes may really be temporal polarity items bearing a specified scope relation to a covert tense located elsewhere in the syntactic structure.

(e) The theories of movement, scope, and logical form (LF), which allow for the possibility that certain subordinate clauses may undergo covert syntactic movement in the derivation of LF representations, prior to the application of the principles of control theory and polarity item licensing.

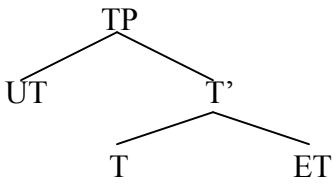
In this paper I begin by sketching out the argument structure of tense, its reflection in

syntactic phrase structure, and the application of control theory in accounting for dependent tense interpretations. I then turn to a more detailed elaboration of the theory of polarity, scope, and reconstruction, focusing on particular problems of interest that arise in this context.

2. Temporal argument structure and phrase structure

Zagona (1990) proposed that tenses have the syntax of dyadic (two-place) predicates, taking pairs of time-denoting expressions as their arguments. The external, or subject, argument of a tense T denotes the utterance time (UT); the internal argument of T denotes the time of the eventuality associated with the verb and its arguments, commonly referred to in the literature as the event time (ET), as in (2):

(2)



T is generally assumed to be hierarchically superior to VP. This assumption is implicit in Zagona's argument alignment in (2). T c-commands all sub-constituents of ET, and ET must contain the VP, since VP defines the descriptive content of the event located at the ET.

Zagona's (1990) theory assumed that a given tense has no inherent predicative content in terms of temporal ordering; the traditional semantic content of the present/past distinction was not reflected in the inherent lexical semantics that she attributed to

present and past tenses. Rather, she proposed that present and past tenses differ from each other in terms of the binding-theoretic types of the ET arguments that these tenses select as their complements. Abstracting away from many specific details of her theory, she suggested that present tense selects as its ET argument an anaphor (subject to Binding Principle A), whereas a past tense selects a referring expression (subject to Binding Principle C). The anaphoric ET argument of present tense must be bound by the tense's subject (UT) argument (thereby deriving the basic traditional semantics of present tense) whereas the R-expression ET argument of past tense must be A-free, hence not bound by the tense's UT argument, thereby ensuring that past tense must express non-coreference of ET and UT. Since future times are excluded in the absence of a modal, the result is that the ET of a past tense must denote a past time. Though I do not adopt Zagona's binding-theoretic account of the PRESENT/PAST distinction here, my account of tense interpretation in subordinate clauses developed in Section 3 below shares with Zagona's approach a reliance on binding relations holding between time-denoting arguments of tenses.

I will retain the basic phrase structure and argument alignment of Zagona's approach to tense, but I will provide a more direct encoding of the temporal ordering semantics traditionally attributed to tenses. Following previous work (Stowell 1995a, 1995b), I treat semantic tenses as predicates of temporal ordering, differing from each other in terms of the inherent content of the temporal ordering predicate that they express. On this view, past and future tenses differ from each other in a way directly analogous to the semantic contrast between the prepositions *after* and *before*, while present tense

expresses simultaneity (or perhaps temporal containment), similar to the preposition *at* or the complementizers *as* and *while*. In (3a), the past tense orders its UT argument **after** its ET argument; in (3b), *will* (conveying future tense) orders its UT argument **before** its ET argument; and in (3c), present tense orders its UT argument **at**, or **within**, its ET argument:

(3) a. Kim lived in Paris.

b. Kim will live in Paris.

c. Kim lives in Paris.

Thus, (3a) asserts that the UT is **after** the/a time at which Kim lived in Paris; (3b) asserts that the UT is **before** the/a time at which Kim lives in Paris; and (3c) asserts that the UT is simultaneous with, or contained by, the/a time at which Kim lives in Paris.

I should note at this point that the interpretation of tenses is sensitive to the aspectual class of the verb bearing the tense affix. Bare eventive verbs with an episodic (non-habitual) interpretation behave differently from stative verbs; whereas stative verbs freely occur with the present tense, episodic (non-habitual) eventive verbs generally may not. However, eventive verbs construed habitually, as well as progressive and perfect aspectual auxiliary verbs, behave like stative verbs with respect to this distinction. The verb *live* in (3) behaves like a stative verb in this respect; although *live* sometimes behaves like an eventive verb (unlike true stative verbs, it can combine with progressive aspect), it is interpreted as habitual in (3) and thus freely combines with present tense.

Up to this point, I have used the terms "past" and "present" ambiguously, to refer either to the English verbal suffixes *past* and *present* or to the semantic content of present and past tense. From now on, however, I will adopt an orthographic convention to distinguish between these two senses, using italicized lowercase *past* and *present* to refer to the English verbal suffixes, and uppercase PAST and PRESENT to refer to true (semantic) tenses. It is traditionally assumed that the English *present* suffix expresses PRESENT and that the *past* suffix expresses PAST, and I will begin by adopting this view as well; later on, however, I will call this assumption into question.

Characterizing the semantics of tenses in the way I have done, combining Zagona's argument alignment in (2) with the intrinsic temporal ordering predicates that I attribute to the tenses, may seem counter-intuitive, since it is traditional to provide paraphrases of tenses that align the arguments of the temporal ordering predicates in the opposite way. Whereas my paraphrase for (3a) is roughly equivalent to 'UT is after the/a time at which Kim live(d) in Paris', most traditional theories of tense semantics would paraphrase (3a) as 'Kim live(d) in Paris at a time that is before the UT'. Whereas these traditional accounts treat the tense as a subordinate modifier of the verb phrase, analogous to a time adverbial, my approach treats the tense as the highest predicate in the clause. These traditional accounts also reverse the argument alignment of the tense, implicitly treating the ET as the external argument of the tense, and the UT as the internal argument; hence PAST is paraphrased as 'before' rather than as 'after'. Since the two paraphrases are truth-functionally equivalent to each other, the choice between the theories underlying them should be based on an overall evaluation of these theories,

rather than on a naive intuition about which paraphrase seems more natural.

I believe that Zagona's alignment of UT and ET in (2) is basically correct, for two reasons. First, as I noted above, it is straightforwardly compatible with the prevalent syntactic theory of Tense as a higher functional head, selecting a functional category containing VP as its complement, and with the theory of verbal head movement from V to T based on this, developed by Pollock (1989) and others. In contrast, it is unclear that the traditional view of tense as a temporal adjunct of VP is compatible with the theory of verbal head movement. Second, as I will show below, Zagona's argument alignment naturally provides the basis for an account of subordinate clause tense interpretation based on the theory of control, whereas this is much more difficult to capture in terms of the traditional approach.

Still, one might object to treating the tense predicate as the highest predicate of the clause, given the intuition that the verbal predicate usually corresponds to the main assertion of a declarative sentence. But there is no reason to assume that the intuitive notion of "main assertion" corresponds to any particular syntactic construct, and in particular to the notion "structurally highest predicate". Rather, the identity of the main assertion is usually determined by focus assignment. Contrastive focal stress can fall virtually anywhere in a clause, and if contrastive stress falls on *will* in (3b), the temporal ordering of ET relative to the UT can be naturally understood as the main assertion (though this can also be understood to involve the (positive) polarity of the clause to be the main assertion.) In the absence of contrastive stress, neutral stress falls within the VP, often leading to an ambiguity as to the identity of the focused constituent. In any case, it

is clear that there is no necessary association between the notions "highest predicate" and "main assertion".

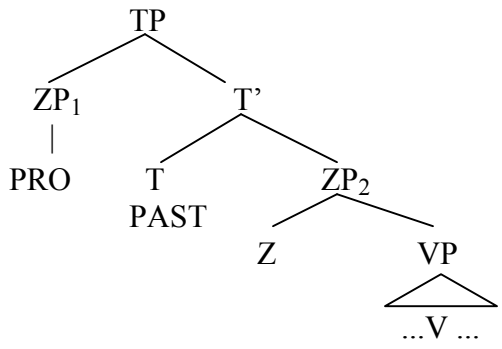
Zagona's approach to tense semantics assumes that the arguments of T are time-denoting expressions (UT and ET). One might ask whether these should be replaced by eventuality-denoting expressions instead, so that tenses impose a temporal orderings on eventualities directly, rather than on the times (or intervals) at which these eventualities are located. On the latter view, the correct paraphrase of (3a) would be closer to "the (actual) utterance event is after the eventuality of Kim living in Paris". While an approach along these lines has some appeal, I adopt Zagona's approach, because it is more straightforwardly compatible with the theory of temporal control that I develop below to account for the tense construal of subordinate clauses, according to which one temporal argument can be bound by another. Since these time-denoting arguments are associated with different eventualities, it is not clear how the control relation holding between two time-denoting arguments could be replaced by a control relation between two eventuality-denoting arguments that involve different eventualities.

The arguments of T in Zagona's structure in (2) are labeled as UT and ET. These labels are not syntactic category names analogous to TP, DP, etc. What is the actual syntactic category of these arguments? In Stowell (1995a) I suggested that these time-denoting expressions have a category distinct from both DP and VP; I chose the label 'ZP' for these, where the Z is intended to suggest the German word *Zeit* 'time'. Since ZP is a referential category, we should expect its internal structure to be analogous to that of other referential categories, such as DP. The category DP is headed by D; likewise ZP

should be headed by Z. Just as D selects as its complement an NP, or an extended projection of NP such as NumP, so Z should select as its complement a VP, or an extended projection of VP such as an aspectual category. English determiners are generally unambiguously definite or indefinite, but in languages lacking overt determiners, DPs (or NPs, if the category D is absent in these languages) are ambiguous or vague with respect to definiteness. English ZP may likewise be ambiguous with respect to definiteness; in most cases, the default interpretation seems to be indefinite, though this may involve indefinite event reference as opposed to time reference. Just as D and/or DP may be phonetically null in certain cases, we should expect Z and/or ZP to be null in some languages.

Incorporating these assumptions into (2), we arrive at the structure in (4), where the overt ET argument of T is ZP_2, while the covert UT (subject) argument of T is a null ZP analogous to pro or PRO:

(4)



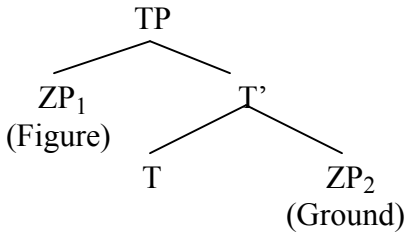
The position occupied by the PRO-ZP in (4) is the Specifier position of TP. This position is widely assumed to host the traditional DP subject of the sentence (or the trace of a

subject DP that moves to a higher Spec position). To allow for the tense's external PRO-ZP argument to occur in the Spec of TP, we must assume either that TP contains an additional Spec position to accommodate the traditional subject, or that the DP subject raises directly from VP (or vP) to a higher projection, bypassing the TP projection entirely. For the sake of simplicity I will adopt the latter view here.

A second difference between my approach and that of Zagona (1990) concerns the status of the notions "UT" and "ET". These notions have played an influential role in modern linguistic theories of tense dating back at least to the theory of Reichenbach (1947), though they play a relatively peripheral role in my approach. Zagona suggested that 'UT' and 'ET' should be thought of as temporal analogues of thematic roles, where UT is the θ-role assigned to the 'subject' of the tense, and ET is the θ-role assigned to the complement, or object, of the tense. I adopt a different approach; I believe that "UT" and "ET" should be thought of as no more than the denotations of the arguments of tenses. For example, in (3a) (*Kim lived in Paris*), the UT is the denotation of ZP_1, the covert subject argument of PAST in (4), while the ET is the denotation of ZP_2 in (4), the time of Kim's living in Paris. While it is incumbent on me to explain why the covert ZP_1 in (4) is understood to denote the UT, this need not involve the intrinsic lexical semantics of PAST *per se.*

What, then, are the thematic roles assigned by T to its arguments, if not UT and ET? Here I follow Demirdache and Uribe-Etxebarria (2000) in adopting the terminology of *Figure* and *Ground* for the internal and external arguments of T, based on the terminology often applied to the arguments of prepositions of spatial location.

(5)



I will continue to refer to the internal argument of a tense as the ET, but my usage of the term 'ET' corresponds more closely to Klein's (1994) notion of Topic Time (TT). Roughly speaking, Klein's TT corresponds to the time associated with the highest aspectual auxiliary or main verb in the complement of T. For example, if the complement of T is headed by progressive aspect (*be*+-*ing*, or *PROG*), as in (6)–

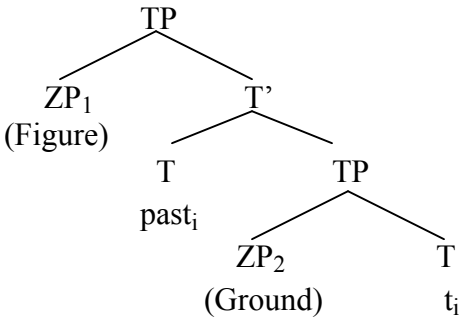
(6) Jenny was reading a book

then the TT (ET) argument of PAST (*PROG -Jenny read a book*) denotes a sub-interval of the entire reading event. The past tense locates this sub-interval, rather than the time interval of the entire event, in relation to the UT. The progressive aspect (PROG), in turn locates the time of the entire event in relation to the TT; see Demirdache and Uribe-Etxebarria (2000), who provide a syntactic phrase structure for progressive and perfect aspect modeled on (2). In what follows, I will continue to use the term 'ET' to refer to the internal argument of T, but this ET should be understood in the sense of Klein's Topic Time.

Suppose, in the spirit of Larson's (1988) theory of phrase structure, that every

argument of a verb must originate in a Spec of position of a distinct VP projection, so that a verb taking n-many arguments will require n-many VPs; the verb undergoes movement from the lowest head V-position to the highest, passing through any intermediate V-positions along the way. Transposing this model to TP, the tree structure (4/5) would be replaced by (7), where the tense originates in the lower T position and moves to the higher one:

(7)

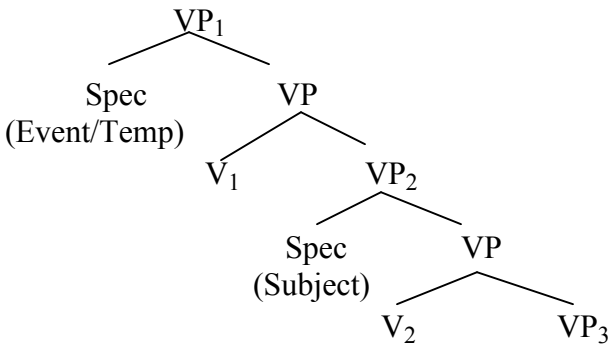


For simplicity of exposition, I will retain the simpler structure in (4/5), but nothing critical to my basic approach hinges on this.

Let us now turn to the internal structure of ZP and VP. According to the VP-internal subject hypothesis, the subject originates in the Spec position of a VP shell (Larson 1988) or in the Spec of vP (Chomsky 1995). Kratzer (1988) suggested that the syntactic phrase structure of a clause contains a structural position for the verb's temporal argument, a notion that she equated with the verb's "event" argument; she argued that this event argument is the (most) external argument of the verb, and she located it in the Spec of IP. Departing slightly from Kratzer's proposal, but retaining her leading idea, I suggest that the verb's temporal (or event) argument is located in the Specifier position of

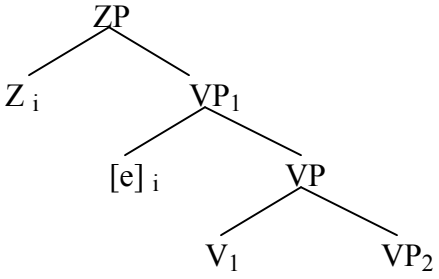
the highest VP-shell (= VP_1 in (8)). The traditional subject originates in (or passes through) the Specifier of the next-highest VP shell, VP_2, whereVP_2 is equivalent to what is commonly called vP.

(8)



VP_1 (or an aspectual category containing it) then merges with Z to form ZP:

(9)



VP_1 forms the restricting clause of Z. The VP-internal temporal argument position is occupied by a variable, which is bound by an operator residing at the ZP-level. For concreteness I will assume that this operator is Z itself, as in (9), though it might also be a silent operator in Spec of ZP. The binding relation here is parallel to that obtaining within DP, where NP is the restricting clause of D, and the null subject of NP is bound by an

operator at the DP level, perhaps by D itself. Thus, for (3a), ZP_2 in (4) translates as "a/the time t such that [*Kim leave*] (t)", just as the DP *the man* translates as "the individual x such that *man* (x)".

I will not take a position here on the question of the internal structure of the covert UT argument (ZP_1 in (4)). This question essentially reduces to how much of the fully articulated internal structure of ZP in (9) is present in its null variant. I will not attempt to answer this here; I will simply represent ZP_1 as PRO-ZP.

3. Temporal control

When a past tense occurs in the complement clause of an intensional verb of speech or belief, the complement clause ET (ET2) is understood to be prior to the main clause ET (ET1). This interpretation of the complement clause tense is often described as a "past-shifted" reading. In (10), the main clause modal *will* or past tense orders the main clause ET (ET1) after (10a) or before (10b) the UT. In both cases, the complement clause PAST orders its ET (ET2) prior to ET1:

(10) a. Max will say that Sam left.

b. Max said that Sam left.

This is the only type of interpretation available to a complement clause PAST when it occurs with an episodic (non-habitual) eventive verb, as in (10). Stative verbs, and eventive verbs with habitual, progressive, or periphrastic perfect aspect, also allow a so-

called simultaneous (sequence-of-tense) interpretation, discussed in Section 4 below.

The question arises whether the semantics of a complement clause PAST tense involves any direct reference to the UT. In (10b), ET2 must be understood to be prior to the actual UT, but this follows from the fact that the main clause PAST orders ET1 prior to the UT, given that the subordinate clause PAST locates ET2 prior to ET1. Consequently, we cannot tell whether the complement clause PAST redundantly locates ET2 prior to the UT in (10b) as well. But in (10a), it is clear that the complement clause PAST imposes no ordering on ET2 relative to the UT, since the interpretation of the sentence allows for ET2 to either precede or follow the UT. It is natural to conclude, then, that in both (10a) and (10b), the complement clause PAST tense only locates ET2 in relation to ET1. This past-shifted reading is often described as a *relative*, or *dependent*, tense interpretation, as opposed to the *absolute*, *indexical*, or *independent* interpretation that main clause tenses receive, as in (3a-b).

From a theoretical point of view, the most economical way of accounting for the difference between the dependent interpretation of a subordinate clause PAST and the independent interpretation of a main clause PAST is to assume that the intrinsic lexical semantics of PAST remains constant in all contexts, and that the independent/dependent distinction (whether the null RT argument of the tense denotes the UT or is bound by ET1) follows from general rules of syntax and semantics applying to the null RT argument.

There is a natural analogy here with pronouns; they are typically syntactically free when they occur in a main clause, but in a subordinate clause they may be

syntactically bound. The standard view is that the difference in meaning between free (or deictic) and bound pronouns is a function of rules of syntax and semantics rather than a matter of lexical differentiation. Free and bound pronouns share a single inherent semantics (largely determined by their feature values for animacy, gender, number, etc.). Likewise simple definite DPs, such as *the old man*, can either refer directly (analogous to free pronouns) or be anaphorically bound, either intrasententially or across discourse, functioning as so-called epithets. (Epithet DPs, unlike pronouns, cannot be syntactically c-commanded by their antecedents, however.) Regardless of whether the DP is independent (referential) or dependent (*qua* epithet), its intrinsic lexical semantics remains constant.

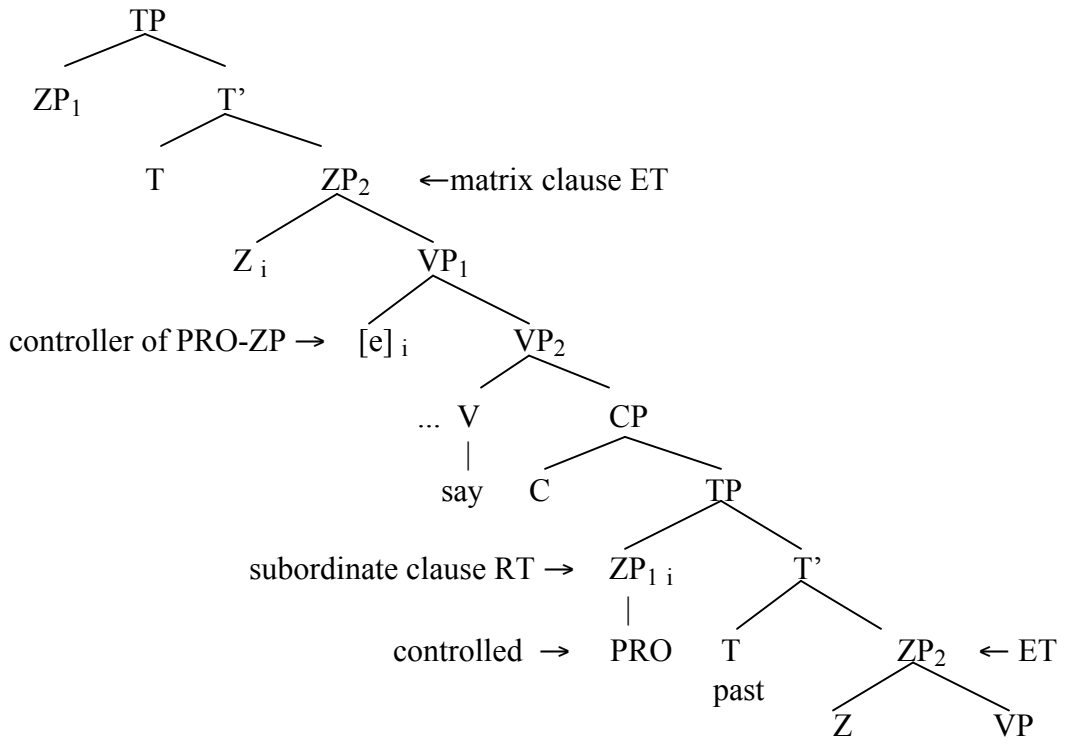
In the framework outlined in the previous section, the intrinsic lexical semantics of PAST establishes a temporal ordering relation between its (covert) RT argument and its (overt) ET argument. The difference in meaning between main clause PAST and complement clause PAST resides entirely in the understood denotation of the covert RT argument: in a main clause the covert RT argument denotes the actual UT, whereas in a complement clause it is bound by the ET argument of the main clause tense.

This, of course, immediately raises two questions: first, why must the covert RT argument denote the UT when it occurs in a main clause, and second, why must it be bound when it occurs in a complement clause? A natural answer to the second question is provided by the theory of control. The central empirical generalization associated with so-called obligatory control is that the PRO-DP subject of a complement clause is controlled, or bound, by the closest *c-commanding* DP argument of the main clause

predicate selecting that complement clause. Although there are a couple of well known exceptions to this, including *ask* (in some usages) and *promise* (for some speakers), the basic empirical generalization seems sound (albeit still controversial). This was first captured by Rosenbaum's (1970) Minimal Distance Principle (MDP); in what follows, I will refer to the MDP in establishing a parallel between syntax/semantics of the covert RT argument of PAST (and other tenses) and the syntax/semantics of PRO-DP (the empirical domain of conventional control theory). My use of the MDP is purely for expository purposes; subsequent syntactic and semantic theories of control have sought to derive the effects of Rosenbaum's MDP in a variety of ways, but it would take us too far afield to review or evaluate these theories of control here.

If we take the covert RT argument of T to be a ZP analogue of PRO, and if we further assume that PRO-ZPs are subject to control theory, then the antecedent of a PRO-ZP occurring in a subordinate clause should be the closest c-commanding ZP (or temporal argument) in the main clause. This turns out to be the temporal variable in the Specifier of VP_1 in the main clause (which, recall, is bound by an operator in Z in the main clause ZP2).

(11)



Note that the Spec of VP_1 in the main clause c-commands the complement clause, whereas the main clause ZP_2 (whose head Z binds the variable in the Spec of VP_1) does not; rather, it dominates the complement clause. Since the PRO-ZP inside the complement clause in (11) is c-commanded by the variable in the main clause Spec of VP_1, but not by the main clause ZP_2, the PRO-ZP can be syntactically bound by the variable in the Spec of VP_1, but not by the matrix ZP_2. For simplicity of exposition, I will often use the term "main clause ET" to refer ambiguously either to the denotation of the main clause ZP_2 or to the variable in the Spec of the main clause VP_1. Thus I will (informally) describe the complement clause PRO-ZP in (11) as being controlled by the main clause ET.

Control theory accounts for the interpretation of present tense in complement clauses in an analogous fashion. Consider (12), containing the stative or habitual-eventive verb *live*; recall that non-habitual, non-progressive eventive verbs are generally incompatible with present tense in English:

(12) a. Kim lives in Paris. (= 3c)

b. Max will think that Kim lives in Paris.

Let us assume that the morphological present affix expresses semantic PRESENT tense as defined in Section 2 above. In (12a), the covert RT argument of PRESENT denotes the UT, just like the covert RT argument of the main clause PAST in (3a). But PRESENT differs from PAST in the semantics of the temporal ordering relation that it expresses: PRESENT conveys temporal containment or simultaneity. Thus, PRESENT in (12a) locates the UT at or within the ET (the time at which Kim lives in Paris).

In (12b), *will* in the main clause functions like a FUTURE tense, locating the UT before the main clause ET1, the (future) time of thinking. The main clause ET1 controls the subordinate clause RT, which the subordinate clause PRESENT locates at or within the subordinate clause ET2. This accounts for the intuition that Max's thought involves Kim living in Paris at the time of his thinking. We know that the covert RT argument of the complement clause PRESENT does not denote the actual UT, because the complement clause ET2 need not contain the actual UT. (PRESENT tense in a complement clause behaves somewhat differently when the matrix clause tense is PAST,

giving rise to the so-called Double Access (DA) reading; for expository purposes, I will postpone discussion of this to Section 7.)

Let us now consider the question why the RT argument of a main clause tense must be understood to denote the UT. At this point, the analogy with conventional control theory seems to break down, since PRO-DP occurs only as the subject of an infinitive or gerund, which generally cannot occur as a main clause, at least in (adult) English. It is unlikely that the UT denotation of a main clause PRO-ZP follows from the fact that the actual utterance is salient in the discourse, since even in sentences where another time is clearly a topic under discussion (e.g. with topicalized time adverbials), the RT argument of the main clause tense must always denote the actual UT.

The issue can be resolved by appealing to Ross's (1970) proposal that every declarative sentence has a covert superordinate main clause, containing an abstract 'performative' speech predicate that conveys the actual utterance event: *"I say to you (that...)"*. On this view, every apparent main clause is really the complement clause of a covert verb of speech (or belief), structurally analogous to the complement of a normal intensional verb. The Spec of VP_1 in the covert higher clause controls the PRO-ZP RT argument of the tense in the complement clause (the apparent main clause), which is therefore interpreted as denoting the UT.

This control relation is reminiscent of the anaphoric binding relation that licenses logophoric usages of first- and second-person reflexive pronouns in examples of the sort that Ross cited in defense of his original proposal:

(13) a. As for myself, I will leave.

b. People such as yourself should be careful.

c. *People such as himself should be careful.

Just as Ross took the covert Agent and Goal arguments of the covert higher performative verb to be the antecedents of the reflexive pronouns in (13), I take the covert temporal argument of the abstract performative verb to be the antecedent of the PRO-ZP in the (apparent) main clause TPs in (3).

Heidi Harley (personal communication) asks whether this approach to the UT denotation of (apparent) main clause RT arguments simply pushes the problem up one level. Thus, one might legitimately ask whether one will be forced to stipulate that the covert RT argument of the tense in the covert superordinate performative clause must denote the UT. The answer to this question is that there *is* no tense in the covert superordinate clause; there is just the covert performative verb and its (equally covert) arguments (including the temporal/event argument). These covert arguments are all interpreted deictically, referring to the participants (speaker, addressee), and time (now) of the actual speech act. Thus the covert superordinate clause is more like a small clause than a CP; more precisely, the covert clause corresponds to VP1 in (8).

Recent semantic theories of tense interpretation, such as that of Schlenker (1999), have posited the existence of an ordered set of context variables in the upper region of the LF representation of the clause that allow for a parallel treatment of main clause and complement clause tenses in a way that partially resembles the approach taken here. I

have adopted Ross's original approach in part because it directly mimics the overt syntactic expression of reported speech. Insofar as Ross's approach leads us to expect the constituents of the covert superordinate clause to behave just like the constituents of an overt clause conveying a reported speech act, it implicitly leads to a number of predictions of parallel syntactic behavior with respect to a variety of other phenomena (e.g. involving the interpretation of adverbs). Still, in a number of respects, the two approaches are similar.

4. The simultaneous interpretation of *past*

The account of past tense interpretation in complement clauses presented thus far has been confined to sentences containing (non-habitual, non-progressive) eventive verbs, which only allow the so-called past-shifted interpretation. With stative predicates, and with habitual, progressive, and perfect predicates, which behave like statives in this respect, a complement clause *past* can sometimes optionally give rise to a different type of dependent tense interpretation, namely the so-called "simultaneous" interpretation. This is possible only when the matrix clause also contains *past*, as in (14).

(14) a. Sam believed that Terri was in Boston.

b. Max said that he was reading a book.

The simultaneous interpretation of the complement clause *past* in (14a-b), so named by Enç (1987), locates the main clause ET *at* or *within* the interval associated with the

stative (or habitual, progressive, or perfect) ET of the subordinate clause. The simultaneous interpretation of *past* in these subordinate clauses thus resembles the interpretation of *present* in (12b), both with respect to the intrinsic temporal-ordering semantics of the tense, and with respect to the restriction that this interpretation is possible only with stative/habitual/progressive/perfect predicates, as opposed to episodic eventive predicates.

Although the complement clause tense in (14) is often described as being ambiguous between the past-shifted and simultaneous readings, Boogaart (1999) notes that the simultaneous reading, when it is possible, is strongly preferred over the past-shifted reading, unless the subordinate clause ET is understood to coincide with a time already under discussion in the preceding discourse. I will not seek to account for this fact here; I will follow the tradition of the past twenty years and assume that both the simultaneous and past-shifted readings are possible with stative/habitual/progressive verbs.

The crucial question for us to address here is how this simultaneous interpretation of *past* is derived, both syntactically and semantically, and why it is possible only when the main clause also contains *past*. While many theories of the simultaneous interpretation of *past* have been proposed in the literature, they can naturally be classified into three broad types.

The first type of theory, which I will defend a variant of here, assumes that the semantic tense in the complement clause in (13) is not PAST, but rather PRESENT. On this view, PAST always has a past-shifting reading, while a simultaneous reading is

always conveyed by PRESENT. According to this approach, both the past-shifted and simultaneous interpretations are relative, or dependent (as opposed to independent) tense interpretations; in terms of the control theory presented in Section 3, this implies that the matrix ET controls the complement clause PRO-ZP RT on both readings. The difference between the past-shifted and simultaneous-past interpretations lies exclusively in the intrinsic lexical semantics of the complement clause tense, which can be either PAST (past-shifting) or PRESENT (simultaneous). I will refer to this type of approach as the "concealed PRESENT" theory of the simultaneous interpretation of *past*.

The main challenge for this type of theory is to explain why the morpheme *past* allows for this kind of ambiguity in the lexical semantics of the tense it expresses, and why this is possible only when it occurs in a complement clause embedded within a main clause containing *past*. I will address these issues below; before doing so, I will briefly discuss the two leading alternative accounts of the simultaneous reading of *past*.

The second type of approach, defended by Enç (1987), assumes that *past* in a complement clause always has the lexical past-shifting semantics of a true semantic PAST tense. Translating her proposal into the framework of the theory of temporal argument structure and control developed above, Enç's idea is that the simultaneous reading arises when the subordinate clause ET is (optionally) bound by the matrix clause ET. If no binding relation obtains between the two ETs, the past-shifted reading results. I will refer to this type of approach as the "ZP-binding" theory of the simultaneous interpretation of *past*, since the most obvious way of implementing it is to allow the ZP complement of the subordinate clause PAST to be bound by the temporal argument of the

matrix verb. (Recall that the matrix ZP dominates, but does not c-command, the subordinate clause ZP.)

There are two crucial differences between this ZP-binding theory and the concealed-PRESENT theory outlined above. First, while both theories assume that the main clause ET binds a ZP in the complement clause, the concealed-PRESENT theory assumes that the relevant binding relation is identical to the control relation obtaining in the derivation of the past-shifted reading (the main clause ET binds the complement clause PRO-ZP RT argument). In contrast, the ZP-binding approach maintains that the main clause ET directly binds the complement clause ET argument. Second, the concealed-PRESENT and ZP-binding theories differ on the intrinsic lexical semantics of the complement clause tense on the simultaneous reading. The obvious advantage of the ZP-binding approach is that it avoids positing a lexical ambiguity in the lexical semantics of *past*, which is assumed always to convey the past-shifting semantics of PAST.

The main challenge for the ZP-binding approach is to explain how the past-shifting semantics of the complement clause PAST tense is compatible with the simultaneous interpretation. Enç proposed to resolve this by means of an ingenious stipulation; translated into the framework developed here, it amounted to saying that whenever the ZP complement of a subordinate clause tense is bound by the main clause ET, there must be a parallel binding relation holding between the covert PRO-ZP RT arguments of the two tenses. The principle imposing this parallel binding relation must be assumed to override control theory and the Principle of Minimal Distance, so as to ensure that the RT in the complement clause (the PRO-ZP) is bound by the RT argument in the

main clause, rather than by the (closer) ET argument in the main clause. Thus, if ET2 is bound by ET1, the two PAST tenses must share the same RT; for example, in (14a), the covert PRO-ZP RT argument of the main clause PAST must bind the PRO-ZP RT argument of the complement clause PAST, so that the latter tense orders the actual UT (rather than the main clause ET) after the subordinate clause ET. On this view, the simultaneous reading arises from the binding relation between the two ETs rather than from the lexical semantics of a covert PRESENT in the complement clause. While this allows for a uniform lexical semantics for *past* in the complement clause in (14), it does so by stipulating an *ad hoc* control relation between the two RTs; moreover, as we shall see shortly, it suffers from an empirical defect that it shares with the third type of theory of the simultaneous reading of *past*.

The third type of theory of the simultaneous reading of *past* maintains that there is no real ambiguity in the interpretation of the complement clause tenses in (14). This theory claims that these tenses have only one interpretation, involving past-shifting with respect to the actual UT. I will refer to this approach as the "independent tense" theory of the simultaneous reading. This theory is entertained, but ultimately rejected, by Abusch (1997). Contrary to what I suggested above in my discussion of (14), this approach claims that neither the past-shifted interpretation nor the simultaneous interpretation of a complement clause *past* is a true relative (dependent) tense interpretation; rather, both are sub-cases of a single independent interpretation of PAST. In terms of the theory of tense developed in Sections 2 and 3, this amounts to claiming that the complement clause tenses in (14) take the UT as their reference-point, just like

main clause tenses, and thus impose no ordering relation on the subordinate clause ET relative to the matrix ET. On this view, (14a-b) are not *ambiguous* with respect to the ordering relation between the two ETs; they are simply *vague* (silent) about it. Like Enç's ZP-binding theory, this independent-tense theory of the simultaneous reading of *past* has the advantage of not having to posit any ambiguity in the intrinsic lexical semantics of *past*.

The main challenge for this independent-tense theory is to explain why the complement clause ET cannot be understood to be subsequent to the main clause ET. A natural way of excluding this is to appeal to the theory of modality, for example by treating (relative) future as a type of modality that can only be expressed by an overt modal (*will* or *would*). If a statement or belief about an event that has not yet occurred necessarily involves overtly expressed modality, then the complement clause ETs in (14a-b), which lack modals, cannot involve reference to events that had not yet occurred at the time of the reported speech or belief. This type of reasoning is implicit in Abusch's (1997) Upper Limit Constraint.

There are two main empirical advantages of the concealed-PRESENT theory of the simultaneous past. The first concerns data of the sort discussed by Kamp and Rohrer (1983) and Abusch (1988) among others:

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

The issue concerns the interpretation of the tense in the most deeply embedded clause. This allows for an interpretation of simultaneity (or containment) between the ET of the intermediate clause (the future time of saying) and the ET of the most deeply embedded clause (the time of having the meal). As these authors note, this simultaneous reading of *were* does not locate the ET of the most deeply embedded clause prior to any other time (such as the actual UT). This interpretation is predicted by the concealed-present theory of the simultaneous reading of *past*, since the ET of the intermediate clause should control the PRO-ZP RT argument of the tense in the most deeply embedded clause, which can have the lexical semantics of PRESENT.

Neither of the alternative approaches allows for this interpretation. Enc's ZP-binding theory would allow the intermediate ET to bind the ET of the most deeply embedded clause, but it would then force the RT argument of the putative PAST tense in the most deeply embedded clause to be bound by the RT of the intermediate clause. This intermediate RT would in turn have to be bound by the RT of the tense in the highest clause, which denotes the actual UT (assuming that *would* in (15) is a simultaneous-*past* variant of *will*). The putative PAST in the lowest clause would therefore have to locate its ET prior to the actual UT, contrary to fact. Exactly the same problem arises for the independent-tense theory of the simultaneous past, albeit in a more direct way. Thus, (15) supports the concealed-present theory.

A second empirical problem is posed by languages such as Japanese and Russian. In these languages, the semantic equivalents of the English simultaneous and past-shifted interpretations are morphologically expressed in distinct ways; Japanese morphological

past (*-ta*) can only have a past-shifted interpretation, while the simultaneous interpretation can only be expressed by means of the morphological *present*. This is illustrated for Japanese in (16), from Nakamura (1995) (cf. Ogihara (1989, 1996), and Kusumoto (1999), among others.)

(16) a. Taroo-wa [Hanako-ga Tookyoo-ni i-ta to] it-ta.
Taro-TOP Hanako-NOM Tokyo-LOC be-PST COMP say-PST
'Taro said that Hanako was (=had been) in Tokyo.' (Past shifted only)

b. Taroo-wa [Hanako-ga Tookyoo-ni i-ru to] it-ta.
Taro-TOP Hanako-NOM Tokyo-LOC be-PRES COMP say-PST
'Taro said that Hanako was (lit. = is) in Tokyo.' (Simultaneous)

In such languages, the morphemes *present* and *past* seem to express PRESENT and PAST, respectively, in the sense defined in Section 2 above. Moreover, the way these morphemes are interpreted in complement clauses is exactly what the theory of temporal control outlined in Section 3 would lead us to expect. The fact that the simultaneous reading can be expressed only by means of morphological *present* in these languages provides indirect support for the view that this reading is expressed in both languages by means of semantic PRESENT tense, and cannot be expressed by PAST. Of course, it is possible that English semantic PAST tense differs from its counterparts in Russian and Japanese, but the burden of proof surely lies on proponents of this view. (On the view to

be defended here, the semantic tenses PAST and PRESENT are identical in both types of languages; the difference between English and Japanese/Russian resides exclusively in the status of the morphemes *past* and *present*.)

The intuition that the simultaneous interpretation of *past* involves a concealed PRESENT is, of course, familiar from traditional grammars (including pedagogical grammars), often described in terms of the notion of "sequence of tenses". According to this approach, a past tense with a simultaneous interpretation occurring in indirect discourse is a morphological translation of a semantic PRESENT tense. The same insight formed the basis of Ross's (1967) transformational rule of *Sequence-of-Tense,* which copied the morphological past-tense feature of a main clause PAST onto the tense node of a subordinate clause. Thus, for Ross, there were two types of surface past tenses in subordinate clauses: those that originated as true underlying (semantic) PAST, and those that originated as underlying (semantic) PRESENT. Ross's approach thus treated sequence-of-tense as a kind of morphological assimilation rule. One advantage of this approach is that it naturally captures the fact that the simultaneous reading of a complement clause *past* is possible only when the main clause contains PAST.

Abusch (1988) proposed a mirror-image variant of Ross's theory, whereby there are two distinct past tenses in English, Past-1 and Past-2; Past-1 has a past-shifting semantics and is unrestricted in its syntactic distribution, whereas Past-2 has the semantics of a kind of present tense (a so-called zero tense), but is restricted in its syntactic distribution to subordinate clauses embedded within past-tense main clauses.

An important weakness of all such concealed-PRESENT theories of the

simultaneous reading, as Enç (1987) argued convincingly, is that in relying on a lexical distinction between "real" past tense (e.g. Abusch's Past-1) and "fake" past tense (Past-2), they fail to explain why only *past* tense exhibits this kind of ambiguity; that is, they fail to explain why there is no language in which the tense used to convey PRESENT in a main clause is ambiguous between PRESENT and PAST when it occurs in a complement clause. Furthermore, they fail to explain why this particular case of alleged homophony arises with such suspicious regularity in the world's languages. Thus, while the concealed-PRESENT approach has the empirical advantages noted above, it would be desirable to formulate the theory in a way that does not suffer from this defect.

5. Temporal polarity

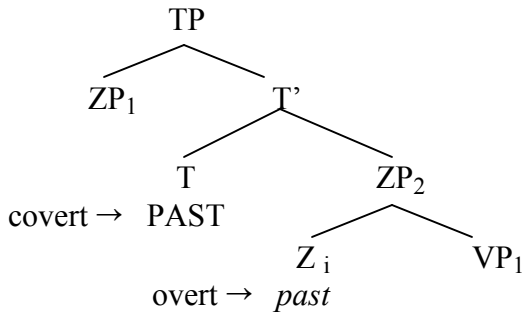
The theory of temporal polarity developed in Stowell (1995b) is designed to address this problem. It does so by assuming that the English morpheme *past* is not, in fact, a true tense of the sort described in Section 2. In particular, the theory claims that true (semantic) PAST tense in English is phonetically null, whereas that the morpheme *past* in English is actually an instantiation of the syntactic category Z (the head of the time-denoting phrase ZP, the complement of T). A similar story holds for the morpheme *present*: it is an instantiation of Z, rather than T; true PRESENT tense, like PAST tense, is phonetically null. The phonetically null tenses have the intrinsic lexical semantics attributed to them in Sections 2 and 3 above: PAST means "after" (ordering RT after ET), while PRESENT means "at" or "in" (expressing simultaneity between RT and ET). Both null PRESENT and null PAST occur in T and select ZP arguments.

The morphemes formerly known as *past* and *present* are treated as temporal analogues of negative and positive polarity items (roughly speaking) expressing a scope relation with respect to true PAST tense. Morphological *past* is a PAST Polarity Item (PPI); the ZP that it heads must fall under the scope of a (covert) true PAST tense. Morphological *present* is a PAST "anti-polarity" item (PAI); the ZP that it heads must *not* fall under the scope of any (covert) true PAST tense.

Apart from encoding this scope relation to PAST tense, there is no semantic content to the morphological *present/past* distinction; both elements serve as the heads of time-denoting ZPs, and neither incorporates any intrinsic temporal ordering predicate expressing past-shifting or simultaneity; these notions are expressed by the covert true tenses PAST and PRESENT. The occurrence of *past* in Z indicates that the sentence must contain a covert (past-shifting) PAST tense in T to license it, but *past* does not itself express PAST tense.

When *past* occurs in a simple sentence such as (3a) or in the main clause of a multi-clausal sentence, such as (14a-b), it seems to express the meaning of PAST, but this is a result of its polarity licensing condition; the covert Tense in these clauses must be PAST in order for the PPI *past* to be licensed.

(17)



Conversely, when *present* occurs in a simple sentence such as (3c), the covert tense cannot be PAST (and must therefore be PRESENT instead); if the tense were PAST, the PAI *present* would violate its polarity licensing requirement: it may not occur in the scope of PAST.

This account must assume that a ZP headed by *present* cannot be permitted to scope out of the domain of the tense that selects it, so as to ensure that a present-tense sentence such as (3c) does not allow for a PAST tense interpretation. If the ZP were permitted to scope out, it would be able to occur as the complement of a covert PAST and evade its PAI licensing requirement by being scoped above this PAST tense. This kind of derivation must be excluded, at this point by stipulating that ZP cannot move.

The morphological *present/past* distinction is thus analogous to the traditional negative-polarity account of the distinction between *some* and *any*, both of which function as the heads of indefinite DPs, differing from each other semantically only in terms of the scope relation that they express with respect to Negation. Morphological *past* is the temporal analogue of NPI *any*, which must scope under negation, while morphological *present* is the temporal analogue of *some*, which must scope above negation. The analogy between present/past with respect to PAST and some/any with respect to negation would be more precise if true negation were phonetically null in English, as it arguably is in modern colloquial French, where the negative element *ne* of standard written French is usually not pronounced. (On this view, French n-words such as *personne*, *pas*, etc., are NPIs rather than true negative quantifiers.)

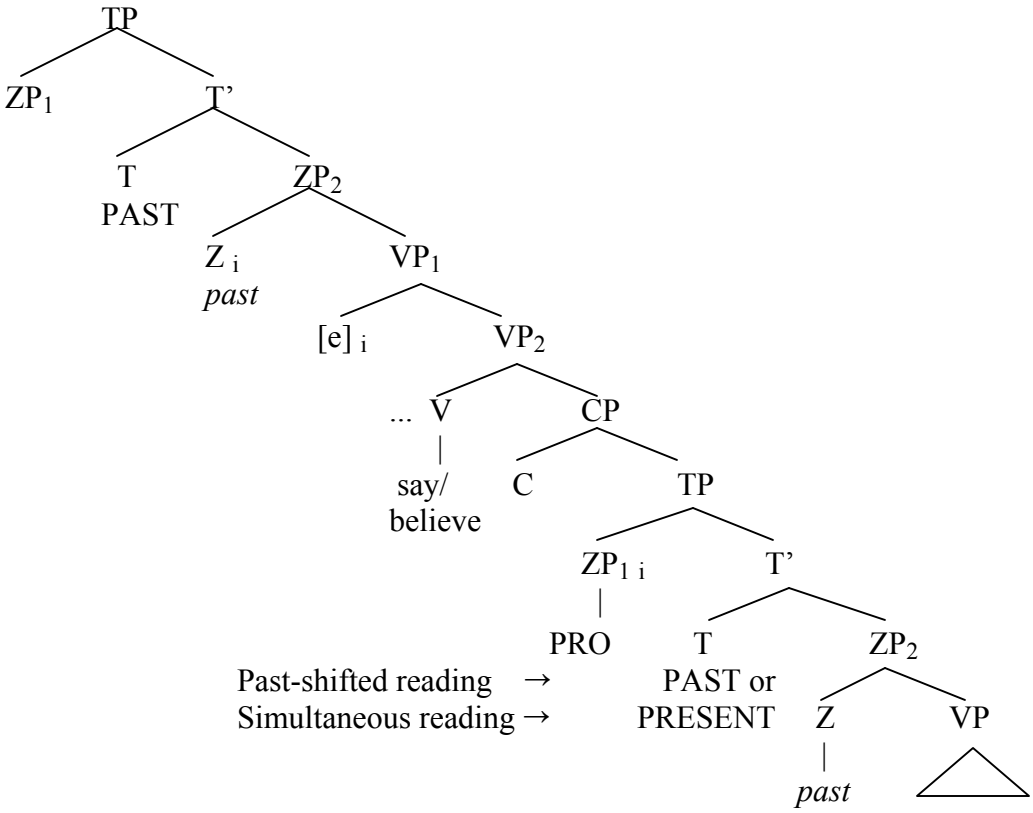
While this account of the *present/past* distinction may seem needlessly complex,

the payoff comes in the account that it provides of the interpretation of tenses in complement clauses. Consider first (14a-b), repeated below, with the schematic structure for TP and ZP shown in (18):

(14) a. Sam believed that Terri was in Boston.

b. Max said that he was reading a book.

(18)



In these sentences, *past* occurs as the (overt) head of the ZP complement of the (null) Tense in both clauses. The covert tense in the main clause in these sentences must be PAST, so as to license the occurrence of the PPI *past* in the main clause ZP. The covert

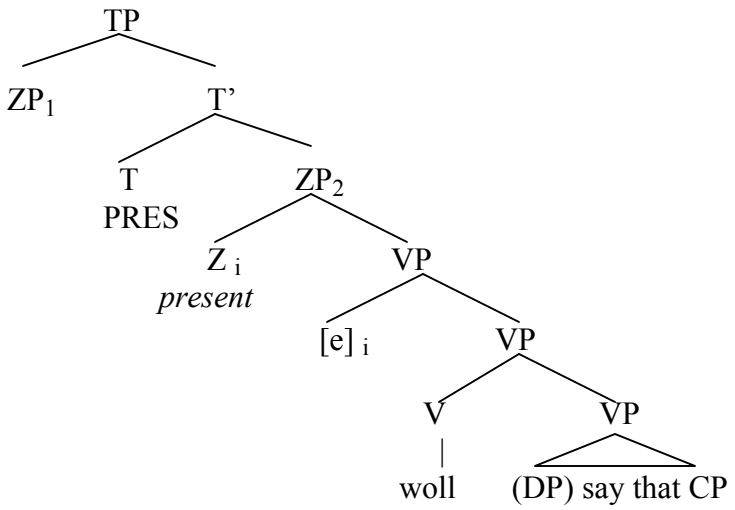
tense in the complement clause, however, is free to be either PAST or PRESENT, since the PPI *past* in the complement clause is already licensed by virtue of falling within the scope domain of the main clause PAST. If the complement clause tense is PAST, the past-shifted interpretation results; if it is PRESENT, the simultaneous interpretation results. No lexical ambiguity in either *present* or *past* need be assumed; the ambiguity resides in the value assigned to the null Tense.

Things work differently if the main clause contains *present* rather than *past*. Consider (19):

(19) Sam will say that Terri was in Boston.

Although I have described *will* above as a future tense, based on its future-shifting semantics, it is really a conflation of the PAI *present* plus the future-shifting modal root *woll*, as argued by Abusch (1988) and Ogihara (1996); it contrasts with *would*, which is a conflation of the PPI *past* plus *woll*. This future-shifting modal works like a future tense in terms of its inherent lexical semantics (it selects two ZP arguments, and orders its RT argument before its ET argument), but it is always embedded under a PRESENT or PAST tense. Thus, the tense/modal structure of the main clause in (19) is as in (20):

(20)



Since the main clause ZP_2 is headed by the PAI *present*, the main clause T must be PRES. The main clause therefore does not contain a PAST to license the PPI *past* in the complement clause; consequently, the complement clause tense must be PAST, in order to license that PPI. Thus, the complement clause tense must have a past-shifted interpretation relative to the main clause ET, which controls the PRO-ZP RT argument of the complement clause PAST. (Attentive readers will have noticed that I have so far continued to avoid discussing the interpretation of PAI *present* in a complement clause when the main clause contains *past*; I will deal with this in Section 7.)

Temporal polarity theory thus accounts for the "sequence of tense" effect (the simultaneous reading of *past*) by virtue two factors: first, the dissociation of the past-shifting semantics of PAST from the morpheme *past* (reinterpreted here as a PPI); and second, the assumption that a complement clause PPI can be licensed by a main clause PAST. In other words, like the English NPI *any*, the PPI *past* is a non-local polarity item. In this respect, it differs from strictly local NPIs such as *lift a finger*, etc., which must

have a clause-mate licensor.

This leads us back to the question of what distinguishes English-type languages from Russian/Japanese-type languages with respect to their tense interpretation. As I noted above, the interpretation of the Japanese subordinate clause tenses in (16) follows directly from the theory of tense developed in Sections 2 and 3, without recourse to the temporal polarity theory. In Stowell (1993), I suggested that in such languages, the morphemes *present* and *past* are what they are traditionally assumed to be: PRESENT and PAST tenses, respectively. This would imply that, in Japanese, T is overt and Z is covert (null), whereas in English, T is covert and Z is overt.

But Nakamura (1995) and Kusumoto (1999) have independently proposed a more interesting possibility for Japanese-type languages, namely that *past* and *present* in these languages are PPIs and PAIs respectively, just like their English counterparts, but their polarity licensors must be local (clause-mates), whereas English PPIs and PAIs are non-local. If the Japanese PPI must fall under the scope of a clause-mate PAST, the lack of a simultaneous reading in (16a) follows immediately. Kusumoto presents an ingenious argument for this proposal, based on the interpretation of examples such as (21):

(21) Junko-wa [Satoshi-ga sonotoki byookida-ta to] it-ta
Junko-TOP Satoshi-NOM that-time sick-past COMP say-past
'Junko said that Satoshi was sick then'.

She notes that the complement clause in (21), unlike its counterpart in (16a), is actually

ambiguous between a past-shifted and simultaneous-past interpretation. The critical factor distinguishing (21) from (16a) is the presence of the anaphoric temporal adverb *sonotoki* 'that time/then' in the subordinate clause in (21). She notes that, on the past-shifted reading, *sonotoki* refers to a salient time mentioned previously in the discourse, whereas on the simultaneous reading, *sonotoki* refers to the main clause ET.

The possibility of a simultaneous interpretation for the complement clause tense in (21) runs counter to the received wisdom of what is allowed in so-called non-SOT languages like Japanese, as Kusumoto notes. She plausibly attributes the possibility of this reading to two factors: first, her assumption that Japanese *-ta* 'past' is really a local PPI rather than a true PAST tense; and second, her assumption that *sonotoki* can function as an alternative to PAST as a (clause-mate) licensor for the PPI in the complement clause. Presumably this is possible only because *sonotoki* refers to a past time. In terms of my approach, this allows for the complement clause tense to be PRESENT, rather than PAST, so that control of its PRO-ZP RT argument by the matrix ET correctly results in a simultaneous reading.

To sum up thus far, I have argued that complement clause tense interpretation is determined by three principal factors: the basic phrase structure of TP and ZP, which complement clause tenses share with main clause tenses; control theory, which dictates that the matrix clause ET of the intensional predicate serves as the antecedent of the PRO-ZP RT argument of the complement clause tense, resulting in a so-called relative (dependent) tense interpretation; and temporal polarity theory, which attributes the temporal-ordering semantics to a covert tense, and thus has the effect of making

complement clause tenses relative, or dependent (as opposed to independent, or absolute).

6. Relative clause tenses and scope

So far I have only discussed the interpretation of tenses in main clauses and complement clauses, but of course tenses also occur in other types of subordinate clauses, including sentential subjects (which are actually topicalized CPs, on some accounts), adverbial adjunct clauses of various kinds, and relative clauses. Space considerations preclude a full discussion of all of these here; I will focus on relative clause tenses because they have played the most prominent role in the literature.

Enç (1987) observed that relative clause tenses differ from complement clause tenses in allowing an independent, or absolute interpretation; in terms of my approach, this indicates that the RT argument of the tense is controlled by the temporal argument of Ross's (1970) covert performative verb, rather than by the temporal argument of the (apparent) main clause verb. This is illustrated in (22):

(22) a. Max gave a book (last week) to a woman [who visited Sam (today)].

b. Marty met the man [who was sick (the previous day/that day/the next day)].

c. Sandra will lend her car to the man [who is sitting in your office].

In each case, the relative clause tense clearly allows an independent interpretation. In (22a-b), the relative clause ET must precede the UT but is free to follow the main clause ET, a reading that is disallowed with *past* in a complement clause. In (22c), the relative

clause ET can contain the actual UT without containing the future main clause ET, a reading that is excluded with a *present* in a complement clause in examples like (12b). These facts suggest, at first glance, that control theory does not apply to the PRO-ZP RT argument of a relative clause tense. As we shall see, though, the picture is more complex.

Relative clauses clearly *allow* an independent interpretation, with their RT argument denoting the actual UT; it remains to be determined whether this is the only reading that they allow. In particular, we might ask whether tenses in relative clauses can also have the same types of dependent interpretations that they exhibit in complement clauses. Enç (1987) assumed that they cannot; translating her proposal into my framework, she suggested that the RT of a relative clause tense must denote the UT, a result that she sought to attribute, in part, to the theory of government.

Abusch (1988) pointed out that Enç's discussion was confined to cases of relative clauses occurring in extensional contexts, and then showed that relative clause tenses in intensional contexts behave differently. More specifically, she showed that, when a relative clause is embedded within the complement of an intensional verb, it also allows relative interpretations analogous to those found with complement clause tenses. Crucially, she also observed that the type of interpretation assigned to the relative clause tense correlates with the *de dicto* vs. *de re* interpretation of the predicative content of the relative clause; similar observations were made by Ogihara (1989, 1996). Consider (23a-b):

(23) a. Terri thought [that a woman [who lent me her car] was in your office].

b. Sam claimed last week [that Max gave some money to a panhandler [who was sitting on the sidewalk (this afternoon)]].

In each case, an unambiguously independent PAST tense interpretation is possible (allowing the relative clause ET to be subsequent to the main clause ET) but only if the content of the relative clause is understood *de re*, as a description endorsed by the speaker. If the relative clause is understood *de dicto*, as a description attributed to the subject of the intensional verb and not necessarily endorsed by the speaker, then the relative clause tense behaves like a complement-clause tense, with its RT controlled by the ET of the main clause intensional verb, resulting in a dependent interpretation (past-shifted if the relative clause tense is PAST, and simultaneous if the relative clause tense is PRESENT).

Consider first (23a), with an eventive verb in the relative clause. As we have seen, eventive predicates are incompatible with a clause-mate PRESENT tense, so these relative clauses must contain PAST. On the *de re* interpretation of the relative clause, the relative clause ET must precede the actual UT, but it can be subsequent to both the main clause and complement clause ETs. On the *de dicto* interpretation, the relative clause ET is freely ordered with respect to the complement clause ET, but it must have a past-shifted interpretation relative to the ET of the main clause intensional verb.

Next consider (23b), with a progressive eventive verb in the relative clause; as we have noted, progressive aspectual auxiliary verbs behave like stative predicates in being compatible with either PAST or PRESENT. The *de re* reading of (23b) works like that of

(23a): the relative clause ET must be prior to the UT, as though its tense must be PAST, with its RT argument bound by the UT. This is consistent with the inclusion of the indexical time adverbial in the relative clause. A *de dicto* reading of the relative clause is also possible, but this forces a dependent tense interpretation, which can be either past-shifted or simultaneous, suggesting that the relative clause tense can be either PAST or PRESENT.

Abusch's (1988) observation about (23) provides the key to understanding the logic underlying relative clause tense interpretations. I suggest that the *de dicto/de re* distinction is relevant because relative clause tenses are construed on the basis of where the relative clause occurs in the LF representation. To derive this result, we must assume that the *de dicto/de re* distinction is encoded structurally in terms of the LF position of the relative clause–outside or inside the CP complement of the intensional verb. If the relative clause occurs outside the CP at LF, it is construed *de re*, and its tense has an independent interpretation; if it occurs within the CP at LF, it is construed *de dicto*, and its tense has only a dependent interpretation, either past-shifted or simultaneous relative to the ET of the intensional verb (depending on the identity of the null tense).

While there is general agreement about the facts in (23), there is disagreement over what it shows us about how tense interpretation works. According to one view, the default interpretation of a given tense is independent (i.e. involving a direct relation with the actual UT), but this is affected by the intrinsic semantics of intensionality in a crucial way. In particular, Abusch (1997) has suggested that a tense takes as its reference-point the "now" of an intensional context. Any tense occurring within an intensional domain,

regardless of whether it is the tense of the clausal complement of the intensional predicate or the tense of a relative clause embedded within that complement, takes the "now" of the local intensional context as its reference-point. On this view, any tense in a relative clause occurring in an extensional context at LF, including the tense of any relative clause construed *de re*, has the actual UT as its reference-point, since the speaker's belief-world serves as the analogue of the local intensional context.

By way of contrast, the temporal control theory posited in Stowell (1993, 1995a) is sensitive only to structural c-command relations; insofar as intensionality has an effect on tense interpretation, it is only by virtue of the syntactic structure assigned to intensional complements. In most cases, my structural approach provides a syntactic implementation of the same kinds of relations that are expressed in the semantics posited by Abusch (1997), Schlenker (1999), et al. This is most strikingly illustrated by my adoption of Ross's (1970) theory of covert declarative performative clauses, which enables me to establish a parallel between main clauses and complement clauses of intensional verbs in terms of the procedure for determining the denotation of the RT argument of a tense.

Still, there are empirical differences between the two approaches. One of these concerns the interpretation of tenses in relative clauses occurring in extensional contexts at LF. Abusch's approach dictates that such tenses should always have an independent interpretation, simply by virtue of the fact that they do not occur within an intensional domain: there is no way to reset the value of "now". My approach, in contrast, predicts that temporal control should apply in such cases, provided that the relative clause is c-

commanded by a possible antecedent for the RT argument of its tense. This potential controller will generally be the temporal argument of the main clause (extensional) predicate, residing in the Spec of VP_1, resulting in a past-shifted or simultaneous interpretation relative to the matrix ET. Clearly this does not happen with the relative clause tenses discussed thus far; the question is why not.

The answer, I believe, can be found by giving a specific structural implementation to the basic insight underlying Abusch's account of (23). As we have seen, the key observation is that the RT of a given tense is determined by the LF position of the clause containing it. Expressed in terms of the theory of temporal control, the data in (23) show that the LF position of a clause determines the controller of the PRO-ZP RT argument of that clause's tense. Assuming that the PRO-ZP RT argument of a tense is *always* subject to control theory, Rosenbaum's Principle of Minimal Distance will reliably pick out the closest c-commanding temporal argument as the controller. This enables us to use the interpretation of a given tense as a diagnostic tool to locate the LF position of the clause containing that tense. If a tense has an independent interpretation, we can conclude that the clause containing it is not c-commanded at LF by any temporal argument other than that of Ross's (1970) covert declarative performative verb (or perhaps by the RT argument of the main clause tense, which is controlled by it). The natural conclusion to draw, then, is that the LF position of a relative clause whose tense has an independent interpretation must lie above the matrix VP.

In the case of relative clauses occurring in simplex sentences such as those in (22), it is tempting to appeal to standard assumptions about surface phrase structure. This

is fairly obvious in the case of relative clauses in subject DPs, since subjects occur in the Spec of a functional projection such as Agr-$_S$P. The same result can be obtained for relative clauses in object DPs, if we assume that objects also move the Spec of an agreement projection above VP (Agr-$_O$P). But this solution is probably on the wrong track, since we must still assume that CP complements of intensional verbs fall within the c-command domain of the temporal argument of the matrix verb, and there is evidence that CP complements actually reside in a higher surface position that DP complements, as has often been noted (e.g. in Stowell (1981).) This suggests that the surface position of both CP and DP arguments is not relevant to the determination of temporal control relations.

The correct solution, I believe, is to assume, in the spirit of Beghelli and Stowell (1997), that (extensional) DP arguments, but not CP arguments, are assigned to a higher structural position above TP in the LF representation, such as Beghelli and Stowell's Spec of RefP. In this position, they fall outside the c-command domain of the verb's temporal argument in the Spec of VP_1.

Turning next to relative clauses occurring within complement clauses, such as those in (23), we can assume that here too the DPs containing these relative clauses move to a RefP projection at LF. Unlike main clause DPs, however, these DPs have a choice between a RefP in the main clause and a RefP within the intensional complement CP. If the DP moves to a RefP projection in the main clause, a *de re* interpretation will result, and the relative clause tense will get an independent interpretation, just like the relative clause tenses in (22). Furthermore, if the PPI *past* occurs in the ET ZP of the relative

clause, and the relative clause occurs in the main clause RefP domain at LF, then the tense of the relative clause will have to be PAST, since otherwise the PPI *past* in the relative clause would not be licensed. Consequently the relative clause does not allow an independent PRESENT tense interpretation.

If, on the other hand, the DP moves to a RefP projection within the complement clause CP, a *de dicto* interpretation will result, and the relative clause tense will be interpreted like a complement clause tense, since its RTargument will be controlled by the ET of the matrix intensional verb. Notice, incidentally, that even on the *de dicto* interpretation of the relative clauses in (23), the relative clause tense should still be interpreted as independent with respect to the ET of the complement clause, by virtue of moving to the RefP of the complement clause. This is the correct result, as noted by Abusch (1988).

So far I have implicitly accepted Abusch's (1988, 1997) view that relative clauses in extensional contexts always have independent tense interpretations. To derive this in my framework, it is necessary to assume that DP movement to RefP (or some alternative projection above TP) is obligatory. But Diesing (1992) has argued that non-specific indefinite DPs may occur at LF in a lower, VP-internal position, a view adopted by Hornstein (1995), Beghelli and Stowell (1997), and many others. This should lead us to expect, given our c-command-based temporal control theory, that, at least in these cases, dependent tense interpretations should be possible for relative clauses. Whenever the relative clause and matrix clause both contain past tense, as in (24a-b), it is impossible to test this, since any situation satisfying the truth conditions of either the simultaneous or

past-shifted reading of the relative clause tense will also satisfy the truth conditions of the independent reading, when the main clause tense is PAST:

(24) a. Max gave a book (last week) to a woman [who was in his office].

b. Max gave a book (last week) to a woman [who visited Sam]. (=(21a))

It is tempting to try to get around this problem by replacing the *past* in the relative clause in (24a) with *present*, as in (25):

(25) Max gave a book (last week) to a woman [who is in your office]

Here the tense in the relative clause can only have an independent PRESENT interpretation; the relative clause ET must contain the actual UT and need not contain the main clause ET. This seems to support Abusch's contention that dependent tense construals arise only in intensional contexts.

But the lack of a simultaneous reading in (25) may be due to another factor, namely the anti-polarity status of the English morphological *present*. We have already seen in Section 5 that a PPI *past* occurring in a complement clause can be licensed by a main clause PAST tense, allowing the complement clause tense to be PRESENT, with a simultaneous reading. I accounted for this by classifying *past* as a non-local polarity item (like its NPI counterpart *any*). If *present*, the opposite twin of *past*, is also a non-local polarity item (or rather, a non-local anti-polarity item), it should be prohibited from

occurring within the scope of any higher PAST tense at LF. This is sufficient in itself to force the relative clause in (25), or the DP containing it, to move to a Ref-P above the matrix TP, to lift the PAI in the relative clause out of the c-command domain of the main clause PAST. But then the RT argument of the PRESENT tense in the relative clause cannot be controlled by the main clause ET; instead, it will be controlled by the temporal argument of Ross's (1970) covert performative verb, forcing an independent tense interpretation.

To abstract away from the interfering effects of non-local anti-polarity, we must look at present tense in a language such as Japanese, where morphological present tense is either a true PRESENT tense or a strictly local PAI (Kusumoto (1999) and Section 5 above). Here, temporal (anti-)polarity should not prevent a clause containing present tense from remaining in situ. As Ogihara (1989, 1996) and Kusumoto (1999) have observed, dependent simultaneous interpretations are possible in Japanese in such cases, as in (26), from Kusumoto (1999):

(26) [Mariko-wa naiteiru] otokonoko-ni hanasikaketa
Mariko-TOP cry-PRES boy-DAT talk-PAST
'Mariko talked to a boy who was crying (at that time)'
'Mariko talked to a boy who is crying (now)'

The relative clause's PRESENT tense in (26) is ambiguous between an independent interpretation and a dependent (simultaneous) interpretation. This suggests that, at least in

Japanese, the RT argument of a relative clause tense is subject to control, just like a tense in the complement of an intensional verb. This is exactly what we expect, given our c-command based theory of temporal control, if DPs containing relative clauses are *not* always required to move to RefP at LF. Apparently, at least in the case of the Japanese *present*, a dependent (simultaneous) tense interpretation is possible outside of intensional contexts (Ogihara (1996) and Kusumoto (1999) make this point.) As Kusumoto (1999) notes, the dependent tense construal seems to correlate with a narrow- scope (non-specific) interpretation of an indefinite containing it.

A different kind of test case can be constructed for English, involving main clauses containing *will*, as in (27):

(27) a. Sandra will lend her car to a man [who is sitting in her office].

b. Sam will offer a job to a/any candidate [who filled out an application].

In (27a), the PRESENT tense in the relative clause (required by the PAI *present*) is ambiguous between an independent interpretation (locating the actual UT within the ET of the relative clause) and a simultaneous-future interpretation (locating the ET of the main clause within the relative clause ET). These two interpretations are distinct; on the independent-present reading, the relative clause ET is unordered with respect to the (future) main clause ET, whereas on the dependent-present (simultaneous) reading, it is unordered with respect to the UT. The dependent-present reading is identical to that of the present tense in a complement clause as in (12b), and it presumably arises in the same

way, namely via temporal control by the temporal argument of the matrix verb. This suggests that the relative clause has the option of remaining within the matrix VP at LF, at least when it occurs in a non-specific indefinite DP.

The non-specific construal of the indefinite in (27a) seems to play a critical role in licensing this dependent tense interpretation; the indefinite can be used to refer obliquely to a particular individual that the speaker has in mind only if that individual is being described as sitting in the office at the actual UT. Thus, the specific construal of the indefinite forces an independent tense interpretation, while the non-specific construal allows a dependent reading. This is just what we should expect, given Diesing's theory that non-specific indefinites are VP-internal at LF, while specific indefinites are VP-external, provided we also assume that temporal control is determined strictly on the basis of LF c-command relations, as I have argued here. If temporal control were tied intrinsically and exclusively to the semantics of intensionality, we would be unable to accommodate (27a). By taking LF c-command to be the critical factor, while providing a structural encoding of scope relative to intensional domains, we allow for temporal control to be affected by the syntax of intensionality, without being wholly dependent on it, providing a simple account of (27a).

Interestingly, however, a dependent past-shifted reading is much harder to get with *past* in the relative clause, as in (27b). The relative clause tense here is most naturally understood to locate the relative clause ET prior to the UT. A dependent past-shifted reading, if it were available, would allow for the relative clause ET to be freely ordered with respect to the UT. The judgement is delicate, however, and perhaps the

past-shifted reading is not entirely excluded. The sense of a dependent reading seems to be significantly enhanced if a relative time-adverbial is provided, as in (28):

(28) Sam will offer a job to a/any candidate [who filled out an application the day before].

It is unclear what is responsible for the marginal or status of the relative past-shifted construal in (27b). It cannot be that relative clauses are uniformly forced to scope out of VP in extensional contexts, or else we could not account for the simultaneous tense interpretation of (27a). Perhaps the interpretation of PAST (or *past*) is incompatible with some aspect of the semantics of the non-specific construal of the indefinite.

7. Double Access Interpretations

As we have seen, when the PAI *present* occurs in a relative clause contained within a PAST tense main clause, the relative clause tense has an independent PRESENT tense interpretation, as in (25), repeated below. Here the anti-polarity licensing condition on the PAI ensures that the relative clause is scoped out of the main clause past. As a result of this scoping-out, the PRO-ZP RT argument of the relative clause tense no longer falls under the c-command domain of the temporal argument of the matrix intensional verb and therefore cannot be controlled by it. Consequently the tense's covert RT argument behaves like it is in a main clause; it is controlled by the temporal argument of the performative verb of the covert superordinate clause, leading to an independent

present-tense interpretation.

(25) Max gave a book (last week) to a woman [who is in your office]

When a present tense occurs in a complement clause embedded within a past tense main clause, however, a more complex tense interpretation arises, namely the so-called double access interpretation:

(29) Sam said [that Terry is in Boston].

Here the interval at which Terry is in Boston must contain not only the UT, as in an independent present tense interpretation, but also ET of the main clause past tense, as in a dependent simultaneous interpretation. This double access interpretation can thus be thought of as a kind of combination of an independent PRESENT and dependent PRESENT tense interpretation. This naturally leads to the question of how such an interpretation arises.

The recent literature on tense has provided many accounts of this type of reading. The approach that I will defend here is one that I have suggested elsewhere (Stowell 1995b); the essence of the idea is to treat this reading as a special kind of reconstruction effect, relying crucially on the copy theory of movement developed within the Minimalist Program (Chomsky 1995). The essential idea is as follows. Suppose that complement clauses, like relative clauses, can be scoped out of their surface positions by covert

movement, and that that this movement is actually a copy-operation, as in the copy theory of movement. (It is immaterial whether this covert movement is conceived of in the traditional way (movement at LF) or whether it is conceived of as applying in the overt syntax, but with the original copy pronounced.) Because the complement clause contains the PAI *present*, it must be scoped out, so as to provide a structural position for the clause in the LF representation in which the PAI's licensing condition is met. In this respect it behaves just like the relative clause in (25). The critical proposal is that, unlike the situation with the relative clause, the original ("in situ") copy of a complement clause must also be submitted to the LF interface for the purposes of tense interpretation. The tense in the higher ("moved") copy behaves like the present tense in a relative clause, as in (25); its covert RT argument denotes the actual UT. The tense in the lower ("in situ") copy of the complement clause behaves like the tense in an unmoved complement clause such as (12b): its covert RT argument is controlled by the temporal argument of the matrix verb, resulting in a dependent simultaneous tense interpretation. Since both copies of the clause get interpreted, the PRESENT tense in the complement clause orders its ET argument in relation to both values of its covert RT argument assigned by control theory, resulting in the double access interpretation.

The difference between relative clauses containing *present* like (25) and complement clauses containing *present* like (29) thus reduces to whether, in cases of scoping-out, the original "trace" copy of the clause must be interpreted in addition to the higher "moved" copy. The obligatory interpretation of the "trace" copy thus behaves like a special kind of "reconstruction" effect. Seen in this light, it is not surprising that

complement clauses differ from relative clauses in this respect, since it has been independently established by Lebeaux (1988) that arguments, including complement clauses, differ from adjuncts, including relative clauses, in being subject to obligatory reconstruction with respect to Principle "C" effects. Though our application of obligatory reconstruction with respect to temporal control of PRO-ZP is novel to the extent that it gives rise to a hybrid interpretation of both copies, this may represent a possibility that is in general allowed except in cases where it gives rise to a contradiction. Though this raises many potential problems, I will not address them here.

Our account of the double access reading leads us to a final question. If scoping-out of a clause is in general optional, except in cases where the polarity requirements of a PAI within the clause effectively force the movement, we might expect that complement clauses containing *past* should be able to optionally undergo a similar type of movement, giving rise to a variant type of double-access past-shifted interpretation, in sentences like (30):

(30) Sam said [that Terry left]

Assuming the same machinery enlisted in our account of (29), we should expect the possibility of a reading for (30) in which the clause is scoped out and both copies are interpreted, allowing the subordinate clause PAST to order its ET prior to both the UT and the matrix ET. This interpretation is truth functionally equivalent to a simple in-situ past-shifted interpretation, for reasons discussed in Section 3, but it ought to be possible

unless excluded by considerations such as Economy.

8. Conclusion

To sum up, in this article I have shown that many aspects of the syntax and semantics of tense can be captured by general, independently motivated principles of syntactic theory, provided that the semantic features traditionally attributed to tense are decomposed syntactically in the manner outlined in Section 2 above. Moreover, a relatively superficial examination of the interpretation of tense in Japanese suggests that the approach developed here may be naturally extended to account for tenses in other languages. Assuming that this approach can be applied successfully to more complex data, the account is of general interest insofar as it suggests that the resources of syntactic theory that have been developed to account for phenomena such as control and negative polarity items may have a wider application than has previously been recognized.

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