Barenaked Tenses and Their Morphological Outfits

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1. Embedded tenses in English, Russian, and Japanese

In this paper I discuss embedded tenses in three languages: English, Russian, and Japanese. I will be concerned with temporal interpretation of clauses embedded under matrix Past. Such cases exhibit a well-known crosslinguistic variation with respect to what morphological marking is used to derive a particular interpretation. There is also a variation in what interpretations are available in a particular structure across languages.[1] Both types of variation are illustrated in (1) and (2). Japanese sentences are taken from Arregui & Kusumoto (1998: ex. (3),(4)).

(1) <u>Past-under-Past embeddings in complements</u>
      a. Mary said that Peter was sick.(2 readings: simultaneous, Past shifted)
      b. Masha skazala, chto Petya byl bolen.   (Past shifted)
            M-Nom say-Pst that P-Nom be-Pst sick
            "Masha said that Peter had been sick."
      c. Bernhard-wa Junko-ga byooki-datta to itta.   (Past shifted)
            B-Top   J- Nom   sick-be-Pst Comp say-Pst
            "Bernhard said that Junko had been sick."

(2) <u>Present-under-Past embeddings in complements</u>
      a. Peter said that Mary is pregnant.   (double-access reading)
      b. Petya skazal, chto Masha beremenna.   (simultaneous)
            P-Nom say-Pst that M-Nom ø-Prs pregnant
            "Peter said that Masha was pregnant."
      c. Bernhard-wa Junko-ga byooki-da to itta.   (simultaneous)
            B-Top   J- Nom   sick-be-Prs Comp say-Pst
            "Bernhard said that Junko was sick."

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[1] It should be noted that aspectual properties of predicates affect intepretation significantly. Generally, for predicates with stative-like properties a broader range of temporal interpretations is available. Therefore, in this paper I focus on cases with stative (English), imperfective (Russian), and progressive (Japanese) predicates.

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Examples in (1) show English, Russian, and Japanese Past complement clauses embedded under Past matrix tense. Sentence (1a) allows 2 readings one where Peter was sick at the time of Mary's saying it (simultaneous reading), and the other where Peter had been sick, but was well again at the time of Mary's report (Past shifted reading). On the other hand, both in Russian (1b) and in Japanese (1c) only Past shifted reading is available.

When a Present is embedded under Past in complements, Russian (2b), and Japanese (2c) have a simultaneous reading. English, however, has a different interpretation on which (2a) is true only if Mary's pregnancy exists both at the time of speech (often understood as 'now') and at the time of Peter's reporting the event. In other words, the time interval of the embedded event must encompass (have access to) two reference points. I follow Enç (1987) in calling this special interpretation a double-access reading.

In both (1) and (2) English is in contrast with Russian and Japanese. This contrast has been known for a long time. The attention of linguists has mainly been focused on the fact that the simultaneous reading is available with embedded Past morphology in English, while in Russian and Japanese it is available only with embedded Present. The simultaneous interpretation as in (1a) is traditionally called the sequence-of-tense (SOT) phenomenon, and languages that have SOT are usually called SOT languages. The crosslinguistic variation briefly illustrated in (1) and (2) is commonly described in terms of the SOT/non-SOT distinction.

There have been many recent attempts to find the underlying cause for the SOT phenomenon. Enç (1986, 1987), Abusch (1988, 1997), Ogihara (1989, 1996), Stowell (1995, 1996) propose very different theories, each of them assuming that SOT effects are the main distinguishing factor in the crosslinguistic variation. As a result, these theories predict that languages can be either SOT or non-SOT. The existence of split SOT (or 'mixed' type) languages is not predicted.

Another common feature of these theories is that they assume the SOT/non-SOT variation to be based either on a difference in interpetational rules (cf. Ogihara 1989, 1996), or on differences in inherent lexico-semantic properties of tenses (e.g. Present is indexical/Past is non-indexical (Enç 1986, 1987); or Past has polarity item properties/Present has anti-polarity properties (Stowell 1995, 1996)).

In this paper I make several theoretical and empirical claims that are radically different from the previous approaches.
1) I claim that SOT effects are observed only in a limited part of English grammar, which means that English is a partial SOT language.
2) SOT is a purely morphological phenomenon and is language-specific.
3) The full range of the crosslinguistic variation can be accounted for by syntactic variation that is independent of SOT.
4) The interpretational system is uniform across languages.

Let us start with empirical evidence. Examples in (3) show the same three languages, but with relative clause embeddings.

(3) <u>Present-under-Past embeddings in relative clauses</u>

    a. John saw a man who is crying.   (Now-reading)
    b. Masha videla cheloveka, kotoryj plachet.   (Now-reading)
       M-Nom see-Pst man-Acc Comp cry-Prs
       "Masha saw a man who is crying."

c. Taroo-wa nai-te i-ru   otoko-o mi-ta.   (2 readings: simultaneous,
   T-Top   cry-Prog-Prs man-Acc see-Pst   Now-reading)
   "Taro saw a man who was/is crying."

In English, which is an SOT language, Present in a relative clause can only refer to the speech time. For example, (3a) can only mean that the man is crying 'now', and not when John saw him (further on I will refer to this interpretation as 'Now-reading'). Remarkably, in Russian, which is a non-SOT language, sentence (3b) also has a Now-reading only. On the other hand, Japanese, another non-SOT language, shows ambiguity in such cases. E.g. (3c) (from Ogihara 1996:153) can have both Now-reading and simultaneous reading. This fact is further illustrated by (4a) (simultaneous reading, impossible in both Russian and English) and (4b) (Now-reading).

(4)   a. Yuube Hanako-wa yot-te iru   otoko-to odot-te-ita. Kyoo kare-wa
           last night H-top drunk-Prog-Prs man-with dance-Prog-Pst today he-top
           futuka-yoi da.
           hangover be-Prs
           "Last night Hanako was dancing with a man who was drunk. Today he has
           a hangover."
        b. Kyonen watasi-wa soko-de nete-iru sanka-getsu-no akanboo-no
           last-year I-top there-at sleeping-Prs 3-month-Gen baby-Gen
           hahaoya-ni at-ta.
           mother-Dat meet-past
           "Last year I met the mother of the 3 month old baby who is sleeping over
           there."

The data in (3) and (4) show that non-SOT languages are not as uniform as was thought, and that there must be more to the temporal crosslinguistic variation than the SOT/non-SOT distinction can capture. In fact, alongside with the crosslinguistic variation in the presence/absence of the SOT effect, there is a neat interpretational contrast between different types of clauses inside the same language. This contrast is discussed in Enç's (1987) work on English, where she distinguishes between interpretation of complement vs. relative clauses. Interestingly, the same distinction is observed in all the three languages, and, as will be demonstrated further, it can be extended to include many other types of clauses. Table 1 below summarizes data on complement, relative, causative, concessive and temporal adjunct clauses in English, Russian, and Japanese. Most examples can be found in Kondrashova (1998) and Arregui & Kusumoto (1998).

Table 1. Morphology used for different interpretations in under-Past embeddings

	English	**Russian**	**Japanese**
Simultaneous reading *complements*	Past	Present	Present
Past shifted reading *complements*	Past Perfect/ Past	Past	Past
Double-access effect *complements*	Present	N/A	N/A

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Double-access effect *causatives, concessives*	Present	Present		N/A
Now-reading *causatives, concessives*	N/A	N/A		Present
Simultaneous reading *causatives, concessives*	Past	Past		Present/Past
Past shifted reading *causatives, concessives*	Past	Past		Past
Now-reading *relatives*	Present	Present		Present
Simultaneous reading *relatives*	Past	Past		Present/Past
Past shifted reading *relatives*	Past	Past		Past
Temporal adjuncrs (*after, when*)	Past	Past		Present/Past (depending on the connective)

Morphological Tense marking used in English, Russian and Japanese clauses to represent different readings is given in three columns. The solid horizontal line separates data on complement clauses from those on relative and several types of adjunct clauses. What catches the eye is that Russian looks like a "hybrid" between English and Japanese: in complement clauses it uses the same morphological marking as Japanese to derive a particular interpretation, and in relative and adjunct clauses it has the same morphology/interpretation correlation as English. As I already mentioned, this fact is not predicted by the previous theories. Moreover, those theories cannot be modified to incorporate the Russian data without increasing the number of ad hoc assumptions to a level where an analysis becomes theoretically invalid.

Any mechanism proposed for Tense interpretation should be able to capture both the crosslinguistic contrasts and the intra-linguistic distinction between complements vs. relatives and adjuncts. These two distinctions are unlikely to be related, since SOT effects are not found in two out of the three languages under discussion. Therefore, I will consider the complement/adjunct clause split in these languages as a separate problem.

It has been previously noted (e.g. in Enç 1987, Abusch 1988) that what distinguishes the readings available in complements from those in relative clauses is that in the first case the time of the embedded event is tied to the matrix event time, while in the second case the embedded event time is 'free' from the matrix tense. This can be most clearly seen in Russian data. Consider the contrasts in (5) and (6).

(5) <u>Past-under-Past embeddings in complements vs. relatives</u>
      a. Masha skazala, chto Petya byl bolen.   (Past shifted only)
         M-Nom say-Pst that P-Nom be-Pst sick
         "Masha said that Peter had been sick."
      b. Masha videla cheloveka, kotoryj plakal.   (independent Tense)
         M-Nom see-Pst man-Acc Comp cry-Pst
         "Masha saw a man who was crying."

(6) <u>Present-under-Past embeddings in complements vs. relatives</u>
      a. Masha skazala, chto Petya bolen.   (simultaneous only)
         M-Nom say-Pst that P-Nom ø-Prs sick
         "Masha said that Peter was sick."
      b. Masha videla cheloveka, kotoryj plachet.   (Now-reading)
         M-Nom see-Pst man-Acc Comp cry-Prs
         "Masha saw a man who is crying."

In (5a), where Past is embedded in a complement clause, the Past shifted reading is the only one available, i.e. Peter's sickness must begin and be completed before Masha reported the event. In such cases the embedded Tense is said to be semantically dependent on the matrix Tense, and takes it as its reference time. I will use the term Linking to refer to this type of semantic dependency.

In case of (5b), where Past is embedded in a relative clause, the embedded Past is also interpreted as prior to the speech time, but it is not ordered with respect to the matrix Past event. It can have interpretations where it precedes, is simultaneous to, or follows the time denoted by the matrix Tense. This means that the embedded Tense is independent of the matrix and takes speech time as its reference. Examples in (5) demonstrate that Past embedded in complements is Linked to the matrix Tense, and Past embedded in relatives yields an independent reading.

When Present is embedded under Past, the contrast remains the same. In (6a) the Past in a complement takes the matrix Past as reference time, which yields simultaneous reading. On the other hand, the embedded relative in (6b) takes the speech time as reference, which for Present results in a Now-reading. Thus, we see that in Russian, both Present and Past are Linked in complements and independent in relative clauses.

In this paper I propose an analysis that takes the Linked/independent reading split to be central to the crosslinguistic variation in temporal interpretation of clauses. I believe that the crosslinguistic picture is best described by a generalization presented in Table 2, namely, that complement clauses either require Linking (Japanese, Russian) or at least allow it (English). On the other hand, in relatives and adjuncts Linking is either completely blocked (English, Russian) or is optional (Japanese).

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Table 2. Availability of embedded Tense's dependency on the matrix Tense

|	English		Russian	Japanese
	optional Linking		*obligatory*	*Linking*
Simultaneous reading *complements*	Past		Present	Present
Past shifted reading *complements*	Past Perfect/ Past		Past	Past
Double-access effect *complements*	Present		N/A	N/A
	Linking is blocked			*optional Linking*
Double-access effect *causatives, concessives*	Present	Present		N/A
Now-reading *causatives, concessives*	N/A	N/A		Present
Simultaneous reading *causatives, concessives*	Past	Past		Present/Past
Past shifted reading *causatives, concessives*	Past	Past		Past
Now-reading *relatives*	Present	Present		Present
Simultaneous reading *relatives*	Past	Past		Present/Past
Past shifted reading *relatives*	Past	Past		Past
Temporal adjuncts (*after, when*)	Past	Past		Present/Past (depending on the connective)

2.   Proposal

Now, the main questions that need clarifying are: What is the nature of the semantic dependency exhibited in Russian and Japanese complement clauses? and Why is this dependency blocked in adjunct and relative clauses? There is also a side-question about SOT: What is the source of SOT effects in English complements?

I follow Enç in assuming that the ability of Tenses to Link results from their anaphoric properties. I also follow her in relating the presence/absence of Linking to the differences in syntactic structure between complement and adjunct clauses. I propose that the core system of Tense interpretation uses two semantic ingredients that are present in every clause: first, time interval V_{temp} which is the time argument of the verb and is introduced by the lexical predicate; second, a temporal element τ which is head of TP in syntax and has anaphoric properties. Semantically τ functions as a specifier for V_{temp} (as in Enç 1987). The value for Tense in each clause is obtained by combining the denotation

of V_{temp} with the denotation of τ. The syntactic representation of a TP with a raised main verb is given in (7).

(7) TP   (8) TP^1_i
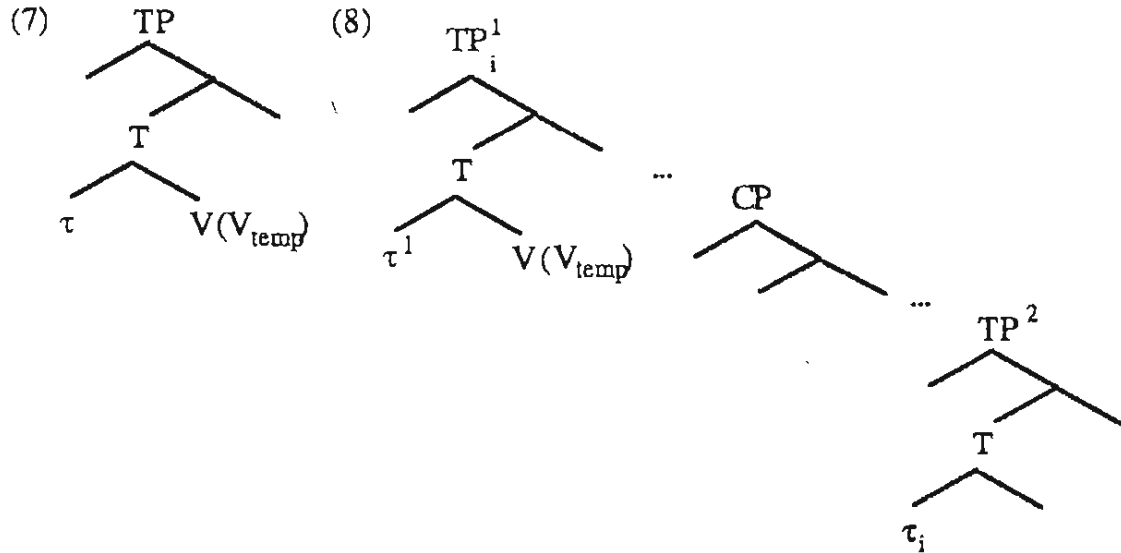
Since τ is a variable, it looks for a binder from which it gets a referential (or quantificational) force. If we exclude habitual readings, binders for τ can be either a higher Tense, or speech time. The former type of binding relation will be called Linking and the latter Total binding. Whichever antecedent binds τ, it becomes its reference time R. For example, in matrix clauses speech time is the only available antecedent. In embedded clauses the picture can be different. If a higher Tense is not an accessible binder for τ, it gets bound by speech time the same way as in matrix clauses. This is the case in relative and adjunct clauses in English and Russian. On the other hand, in complement clauses there is an accessible higher Tense that can bind τ. This is a case of Linking represented in the tree structure (8). As we already know, Linking is obligatory in Russian and Japanese complements. Binding conditions for τ are formulated in (9), (10), and (11).

(9) <u>Tense Binding Conditions</u>:
In a sequence of sentences/clauses

$[...\tau^1\ V_{temp}^1\ ...];\ [...\tau^2\ V_{temp}^2\ ...];\ ...\ [...\tau^n\ V_{temp}^n\ ...]$,
where τ is tense anaphor, V_{temp} is time interval assigned to the verb,
and superscript indices are ordinal numbers,

I. τ^n is locally bound (Linked) if it is c-commanded by a TP^{n-1}, and there are no intervening barriers between TP^{n-1} and TP^n;

II. τ^n is totally bound if it is not Linked.

(10) <u>Local binding (Linking)</u>:
In a sequence of sentences/clauses

$[...\tau^1\ V_{temp}^1\ ...];\ [...\tau^2\ V_{temp}^2\ ...];\ ...\ [...\tau^n\ V_{temp}^n\ ...]$,
$[\tau^{n-1}\ V_{temp}^{n-1}]$ is the local binder for τ^n if TP^{n-1} c-commands TP^n

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(11)   Total Binding:
In a sequence of sentences/clauses
        $[...\tau^1\ V_{temp}^1\ ...];\ \ [...\tau^2\ V_{temp}^2\ ...];\ \ ...\ \ [...\tau^n\ V_{temp}^n\ ...]$,
t^* is the total binder for τ^n, where $t^* = $ NOW (speech time)

It should be noted that in English, Linking (10) applies optionally. The reason for this is not clear. In Japanese, the reason for optionality of Linking in adjuncts and relatives could lie in syntactic ambiguity of adjunct and relative clauses where the structure may alternate between a relative clause-like configuration and a TP-embedding (as argued in Arregui & Kusumoto 1998).

So far, we have covered cases where τ is equalized to its reference time. These are mainly instances of embedded Present. To capture other tenses, I propose that τ carries semantic features PAST, PRES, and FUT. Semantics for these features is given in (12).

(12) $\tau(CL)^{PAST}\ \rightarrow\ t^1 \in T_{CL} < t^2 \in R_{CL}$ for $\forall\ t^1, t^2$
        $\tau(CL)^{FUT}\ \rightarrow\ t^1 \in T_{CL} > t^2 \in R_{CL}$ for $\forall\ t^1, t^2$
        $\tau(CL)^{PRES}\ \rightarrow\ T_{CL} \cap R_{CL} \neq \emptyset$

        where T_{CL} is clausal event time interval, R_{CL} is reference time interval,
        and t^1, t^2 are moments of time.

Therefore, besides anaphoric properties τ also has relational properties. It establishes temporal ordering relations between the event time of its own clause (T_{CL}) and the reference time (R_{CL}), i.e. its antecedent. On this system, information about the reference time is built into the semantics of each clause by the assumption that one part of Tense is a pronominal-like variable which needs an antecedent to be interpreted (cf. Partee 1973). Thus, the property of Tense to 'relativize' follows naturally from the anaphoric properties of the head of TP. Since τ carries an operator-like feature, the event time may be interpreted as shifted with respect to its reference-time, depending on the value of τ's feature. In summary, this approach treats every Tense head as a variable that must be bound. The difference in interpretation of matrix tenses as opposed to some embedded tenses results from the fact that the antecedents available in one and the other case are different.

Now let us come back to the question of SOT effects. I assume that verbs carry a morphological tense feature μ which can take values PAST, PRES, or FUT. Verbs enter derivations with a fixed value of μ which must match the feature of τ for the derivation to converge. The abstract morphological feature of tense is commonly realized by an overt tense morpheme attached to the verb. I assume that in all languages there is a morphological process that selects tense morphemes from a set specific for a given language. This process must be governed by morphological rules which, in particular, assign concrete tense morphemes to the PAST, PRES and FUT morphological features carried by various verbs. It is important to note that these rules determine only the shape of the tense markers as they appear on the surface, but not the values of tense features, and, consequently, they have no bearing on the way tenses are interpreted.

A general Tense marking rule is given in (13). It applies in all cases where SOT effects are absent, i.e. in non-SOT languages, and also in those structures in SOT languages where SOT Rule does not apply.

(13) *Morphological Tense Marking Rule*:

In a sentence/clause [...τ... V_μ], where τ is tense variable, and μ is morphological tense feature of the verb, spell out μ according to its tense value.

I assume that SOT languages employ a more complex mechanism for selecting tense markers. In English, which is a split-SOT language, (13) applies after application of another morphological Tense marking rule, SOT Rule, given in (14).

(14) *Sequence of Tense Rule for English*:

In a sentence/clause [...τ... V_μ],

where τ is tense variable, μ is morphological tense feature of the verb,
R is reference time, t* is speech time, and t is variable over moments,
if $\| t \| = R$ such that $\forall t \in R < t^*$, then spell out morphological markers that
correspond to the three features of μ as follows:　　PRES　as *-ed*,
　　　　　　　　　　　　　　　　　　　　　　　　　　　PAST　as *had -en*,
　　　　　　　　　　　　　　　　　　　　　　　　　　　FUT　 as *would.*

(14) is different from SOT rules proposed before in several important ways. Notice that application of (14) can only affect morphology of those clauses that undergo Linking. This is because τ can denote an interval that precedes speech time only in Linked contexts (see (10), (11)). Therefore, by definition of Linking, application of (14) can affect tense morphology in complement clauses only. This result makes the current ST Rule crucially different from many other proposed versions.

Now let us go back to Table 2 and see how the proposed analysis is doing empirically. It correctly captures the facts for Russian and Japanese complements (obligatory Linking). It also captures the facts about English and Russian relatives and adjuncts (blocked Linking), although it does not predict the double-access reading for causatives and concessives. As for the optional Linking cases, they are less straightforward. In English complements, the morphology is derived correctly due to the application of the SOT Rule (14). However, for the Past-under-Past case an unattested (Future shifted) reading is predicted, and again, the double-access reading remains unexplained. Finally, for Japanese temporal adjunct clauses it predicts more morphological possibilities than are actually allowed.

In summary, the proposed analysis captures the main facts about complement and relative/adjunct clauses in Japanese, Russian and English. However it fails to derive double-access readings, and overgenerates readings for English complements and morphology for Japanese temporal adjuncts (optional Linking cases).

In the rest of the paper I will demonstrate that all three problems: a reading that is not attested (Future shifted), a reading that is attested, but not predicted (double-access), and morphology that is not attested, but is predicted (in Japanese temporal adjuncts) have sources that are external to the Tense system as described above.

I argue for a refined treatment of Tense interpretation, where the syntactic basis of temporal dependency and relevant semantic factors that contribute to the outcome are teased apart. Tenses, as we understand them in a sentence, are multi-layer constructs. At the bottom level, there is a core structure in (7). It is a bare skeleton that is universally used by languages. I assume that anaphoric properties of Tense head τ are also universal. Then there is a level where syntactic binding takes place and referential relations are established. Here some variation in temporal reference is observed across languages, presumably, as a

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result of crosslinguistic variation in syntactic structure. Independently, morphological rules determine how tense markers are spelled out in each language. Next, as lexical items that are thrown into the structure undergo semantic processing, additional requirements appear that may restrict temporal interpretation. I claim that these independent semantic restrictions are responsible for canceling the Future shifted reading in Past-under-Past English complements, for the absence of Present tense marking in Japanese *after*-clauses, and for appearance of double-access readings in some English and Russian structures.

I will briefly sketch explanations to the first two cases, and then describe double-access interpretations in more depth. Crosslinguistically, semantics of propositional verbs requires that information about the reported event should be accessible to the reporting individual. Let us call it the Accessibility requirement. As a result of this requirement, the time of the reported event must be relativized to the time of the report. Under Linking, embedded Tense is relativized to matrix Tense in all three languages, resulting in a simultaneous or Past shifted reading. English is a language that also allows independent interpretation of complements, under which one more reading, Future shifted, is available for the embedded Past. However, since the Future shifted reading conflicts with the Accessibility Requirement, it is filtered out. Consequently, only those readings that mimic Linking survive.

In Japanese *after*-clauses only Past tense morphology is used. This is unexpected if both types of binding can occur in Japanese temporal adjuncts. A simple explanation is found in the semantics of the connective *after*, which requires that the event time of the predicate embedded under *after* must always precede the matrix event time. Notice that this is only possible when the *after*-clause contains Past. If it contains Present that is Linked, the result will be simultaneous reading, if Present is Totally bound it will be interpreted as speech time, i.e. as following the matrix time. Both readings are incompatible with semantics of the temporal connective and are ruled out accordingly.

3.   Double-access (DA) readings

The system developed here was not specifically targeted at capturing DA readings. However, DA effects receive a natural and simple explanation on the proposed analysis.

It is worth mentioning that DA readings are a puzzling phenomenon for most existing theories. DA interpretation is a special case for at least two reasons. First, it occurs only with embedded Present. Second, in DA sentences the embedded Tense, for unknown reasons, requires 2 reference times. These times are: speech time (or 'now') and matrix event time. If, due to its semantic properties or pragmatic information, the embedded predicate cannot be interpreted as encompassing both reference points, the sentence is semantically ill-formed, or we can say that a DA failure occurred. (15a) presents an instance of a DA reading, and (15b) of a DA failure in English.

(15)   a. A week ago John told me that Mary is doing an independent project.
        b. # A week ago John told me that Mary is doing the dishes.

Cases of DA failure in English complement clauses demonstrate obligatory nature of DA readings in these structures (this point was first brought up by Enç (1987)). Let us say that such structures exhibit DA effects. In this section I will be concerned with those structures where DA effects are observed.

Let us turn to data on DA effects presented in Table 2. Notice that availability of DA effects shows a considerable crosslinguistic variation. First, although English shows DA effects in complements, neither Russian nor Japanese do so. (The contrast between English

on the one hand, and Russian and Japanese complements on the other hand is illustrated in (16).)

Complement clauses
(16)   a. # John heard two years ago that Mary is pregnant.
       b. Dva goda nazad Kolja uznal,   chto Masha zhdet   rebenka.
          two years ago   K-Nom learn-Pst that M-Nom expect-Prs baby-Acc
          "Two years ago, Kolja learned that Masha was expecting a baby."
       c. Ni-nen mae, Taro-wa Hanako-ga ninsin-site-iru   to   sit-ta.
          two years ago T-Top H-Nom pregnant-be-Prog -Prs Comp learn-Pst
          "Two years ago, Taro learned that Hanako is pregnant."

Second, both English and Russian demonstrate DA effects in causatives and concessives (as shown in (17 and 18), but Japanese does not.

Causative adjuncts
(17)   a. # A year ago John divorced Mary because she has the flu.
       b. # God nazad Kolja razvëlsja s Mashej, potomu chto ona bol'na grippom.
            year ago K-Nom divorce-Pst with M-Ins because she ø-Prs sick flu-Ins
          "A year ago Kolja divorced Masha because she has the flu."
       c. Ni-nen-mae   Miyuki-wa ninsinsiteiru node sigoto-o usinatta
          two-year-ago M-Top   pregnant-Prs because job-Acc lose-Pst
          "Two years ago Mary lost her job because she was pregnant."

Concessives
(18)   a. # A year ago Mary married John, although he is drunk as a skunk.
       b. # God nazad Masha vyshla zamuzh za Kolju, xotja on p'jan kak
            year ago   Masha marry-Pst Kolja although he ø-Prs drunk as
            zjuzja.
            goo-goo
          "A year ago Masha married Kolja, although he is drunk as a skunk."
       c. Ni-nen-mae Takashi-wa (kare-no) tuma-ga ninsinsiteiru noni sigoto-o
          two-year-ago T-Top   he-gen wife-Nom pregnant-Prs though job-Acc
          yameta
          quit-Pst
          "Two years ago John quit his job, although his wife was pregnant."

Finally, note that Japanese completely lacks DA effects (although it may have DA-like readings).

I propose a treatment of DA readings that automatically accounts for the observed variation. I claim that DA interpretation is essentially a Now-reading coupled with an additional semantic requirement imposed by the matrix predicate (in complements) or connective (in causatives/concessives). This translates into saying that one of the reference time points, i.e. speech time, is always accessed via syntactic binding (which makes it obligatory). Inclusion of the other reference time, matrix event time, is forced by the Accessibility requirement imposed by the semantics of propositional verbs or causative/concessive connectives, and is by no means a hard-and-fast syntactic binding, since a variable cannot be bound by two operators. Thus, I claim that speech time is the real reference time in DA sentences (syntactic dependency), while the second access point, i.e. time of the matrix event, is a pseudo-reference time which, although semantically required to be included in the event time of the embedded predicate (semantic dependency), is not always accessible, often due to pragmatic reasons. The difference

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between these two types of dependencies can be illustrated by the fact that ill-formed DA sentences present a failure of the embedded event time to overlap with the matrix event time, but never its failure to refer to 'now'.

If DA reading always involves binding of τ by speech time, it follows that DA effects can only appear in situations where Linking is completely blocked. On the other hand, no DA effects are predicted in sentences with obligatory or optional Linking. Therefore, this story automatically explains why Japanese has no DA effects, and why Russian lacks them in complement clauses. It is also clear that these effects should be possible in at least some adjunct clauses in English and Russian.

The only unexplained case is English complements. If Linking is optional there, DA effects should be absent in English complements for the same reason they are absent in Japanese. However, notice that English is an SOT language, while Japanese is not. Since the SOT Rule (14) operates on complement clauses in English, the only way Present tense can appear under Past in these structures is under Total binding. Therefore, overt Present-under-Past complement cases in English are not different from other instances of blocked Linking.

Thus, on the proposed analysis DA reading is a result of an independent semantic contribution of the matrix verb and/or the construction, which can become a conflicting factor in Total binding environments. When this conflict is resolved (which becomes possible only if the embedded predicate pragmatically meets the relevant criteria), we have a case of a DA reading. In case it cannot be resolved, we are faced with an instance of a DA failure (DA effects are observed).

4.   Conclusion

The proposed analysis treats SOT effects as a consequence of a language-specific morphological rule that applies only in a limited part of grammar. The semantic dependency of embedded Tenses observed in certain contexts in some languages is only tangentially related to SOT effects. The possibility of such semantic dependency follows from inherent anaphoric properties of Tense head in combination with conditions that determine the types of available antecedents.

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