

The Split T Analysis

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This essay pursues *The Split T Analysis*, claiming that finite clauses have three syntactically active T heads, roughly corresponding to the Reichenbachian S, R, E: Speech Tense, **T_S**, in the C-domain, Reference Tense, **T_R** (or simply T) in the T-domain, and Event Tense, **T_E**, in the v-domain. This analysis, it is argued, enables a coherent account of the relationship between Tense morphology (including Tense Agreement) and Tense syntax (including Sequence of Tenses phenomena and Double Access Readings).

Keywords: Double Access Readings, Sequence of Tenses, Tense, Tense Agreement, Tense computation, the syntax-PF correlation

1. Introduction¹

Tense more than most other categories illustrates that grammar is a computational system. This was shown to be the case already in *Elements of Symbolic Logic* by Hans Reichenbach (1947) and has since been further corroborated in the work of Chomsky (1957 onward) and in numerous individual studies (including Dahl 1985, Hornstein 1990, Giorgi & Pianesi 1997, Cinque 1999, Julien 2001, Guéron & Lecarme 2004, Sigurðsson & Maling 2012). The fundamental problem raised by Tense and the various Tense systems found in languages of the world can be stated as the simple but big question in (1).

- (1) How is Tense computed and expressed in natural language(s)?

The classical Reichenbachian approach to Tense is a three-part model, based on the notions Speech Time, Event Time, and, crucially, Reference Time, abbreviated as **S**, **E**, **R**, respectively. Tense systems typically involve a non-finite and a finite part. The non-finite part expresses a computational relation between E and R (E “sooner than” R, etc.). I designate this relation as **E↔R**, where ↔ simply denotes “a computational

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relation". The finite part, in turn, expresses a computational relation between S and $E \leftrightarrow R$ (and not only R itself, as in Reichenbach 1947): $S \leftrightarrow (E \leftrightarrow R)$.² To illustrate this I will be using the following connectives (see also Sigurðsson and Maling 2012):

- | | | | | |
|-----|----|---|---------------------------|---------------------|
| (2) | a. | = | unshifted | 'simultaneously as' |
| | b. | ≥ | non-future (present/past) | 'no later than' |
| | c. | > | past | 'sooner than' |
| | d. | ≤ | non-past (present/future) | 'no sooner than' |
| | e. | < | future | 'later than' |

In the simple tenses this double computational relation, $S \leftrightarrow (E \leftrightarrow R)$, is not discernible, as R and E are simultaneous. This is illustrated in (3).

(3) *The simple tenses:*

	Non-finite	Finite	Reading	Example
a.	(E = R)	> S	past	Hans left
b.	(E = R)	≤ S	present/future	Hans leaves
c.	(E = R)	< S	future	Hans will leave

In addition to the unshifted $E = R$, the non-finite part of tense systems like the English one has two potentially shifted relations: towards past (\geq) and towards future (\leq), as illustrated in (4).

(4)	Non-finite	Reading		Example
a.	E = R	unshifted	as in (most) gerunds ³	working
b.	E ≥ R	present/past	as in past participles	(has/had) worked
c.	E ≤ R	present/future	as in infinitives	(to) work

The clear-cut past ($>$) and future ($<$) relations between E and R are not disambiguated by grammatical or systematic means in languages of this type, instead being subsumed under the more general, ambiguous relations present/past (\geq) and present/future (\leq). This ambiguity of the non-finite tenses is widespread across languages, perhaps universal.

² Some constructions involve more than one R. I set this aside here (but see, for instance, Julien 2001, Sigurðsson & Maling 2012). For a more general discussion of the R notion, see Rothstein 2008.

³ I agree with Stowell (1982: 563) that "the understood tense of the gerund is completely malleable to the semantics of the governing verb," at least in unmarked cases (in contrast, Hornstein (1990: 115ff), argues that gerunds have their own temporal structure). That is, the internal Event Time of gerunds (and of nominalizations, as in "They witnessed the destruction of their town") is dependent or parasitic on the Tense computation of the governing predicate.

The *past-in-the-past* reading of the regular past perfect renders the cooperation of the non-finite and the finite parts of the tense system more easily detectable. It is exemplified in (5).

(5) [Albert:] Hans had read the book (at 9 o'clock).

In (5) the time of the reading event, E, was prior to R, the reference time expressed by *had* (at 9 o'clock), $E \leftrightarrow R$ in turn being prior to the speaker's (here Albert's) saying so, S. The perfect tense system in English-type languages involves the non-finite present/past (non-future) relation, $E \geq R$, as sketched in (6).

(6) *The English perfect tense system:*

	<u>Non-finite</u>	Finite	Construction	Example
a.	$(E \geq R)$	$> S$	<u>perfect past</u>	Hans had <u>read</u> the book
b.	$(E \geq R)$	$= S$	<u>perfect present</u>	Hans has <u>read</u> the book
c.	$(E \geq R)$	$< S$	<u>perfect future</u>	Hans will <u>have read</u> the book

Conversely, a truly progressive tense system, such as the Icelandic one,⁴ involves the main verb present/future (non-past) relation, $E \leq R$, plus past ($>S$), present ($=S$), or future ($<S$) of the finite auxiliary *vera* 'be'. This is illustrated in (7)–(8) (modeled on (13)–(14) in Sigurðsson & Maling 2012).

- (7) a. *Hans var að lesa.*
Hans was to read
 \approx 'Hans was reading.'
- b. *Hans er að lesa.*
Hans is to read
 \approx 'Hans is reading.'
- c. *Hans verður að lesa.*
Hans will-be to read
 \approx 'Hans will be reading.'⁵

(8)	<u>Non-finite</u>	Finite	Construction	English glosses
a.	$(E \leq R)$	$> S$	<u>progressive, past</u>	Hans was <u>to read</u>
b.	$(E \leq R)$	$= S$	<u>progressive, present</u>	Hans is <u>to read</u>
c.	$(E \leq R)$	$< S$	<u>progressive, future</u>	Hans will be <u>to read</u>

⁴ "[T]here is no real *temporal* distinction between the progressive tenses and the simple tenses in English, English using the progressive to express the simple tense relations even more commonly than Icelandic does (where this is also possible, and is currently spreading, due to the ambiguity of $(E \leq R)$, which means both 'future' ($E < R$) and 'present' ($E = R$))" (Sigurðsson & Maling 2012: 375).

⁵ The sentence in (7c) may also have the modal reading 'Hans must read', but that reading is irrelevant here.

The matrix and the subordinate verbs form a sequence of past tense, hence the term Sequence of Tenses, SOT for short. The phenomenon is sometimes referred to as *Tense Agreement*, a slightly more pertinent term (see, e.g., Anderson 1990). Both notions are formal or morphological. Semantically, the subordinate clauses in (15) and (16) have a perceived secondary Speech Tense (T_{S2}) that has been shifted into the past (under control) such that it becomes simultaneous with the past matrix events of realizing in (15) and demanding in (16). This shift is accompanied by past morphology on the subordinate finite verbs *was* and *läste* ‘read’, but their reading, in turn, is *non-past* in relation to T_{S2} and the matrix events. That is, semantically and syntactically, (15)–(16) illustrate T_S Shift, with a *non-past-in-the-past* reading.¹³ This reading is a regular property of subordinate past subjunctives in many languages. Example (17) is Icelandic.

- (17) *María sagði [að Ólafur væri veikur (*í gær)].* Icelandic
 Mary said that Olaf were.PST.SBJ sick (*in yesterday)
 ‘Mary said that Olaf **was** sick (*yesterday).’¹⁴
 (= sick at the moment of Mary’s saying so).’

The Tense structure of (17) is shown in (18) (basically the same analysis applies to (15) and (16); semantically, $T_R = T_E$ in both CPs, but *sagði* ‘said’ and *væri* ‘were’ have been raised to T_R).

- (18) NOW [CP ... T_{S1} said- T_{E1} ... [CP ... T_{S2} sick- T_{E2} ...
 ↑ ----- ↑↑ ----- ↑↑ ----- ↑↑ ----- ↑↑ ----- ↑
 simultaneous past simultaneous non-past (‘present’)

That is, what is “past” in the past subjunctive is not the sickness eventuality (T_{E2}), but T_{S2} (the perspective time in Kiparsky 2002). While T_{S1} is deictic, T_{S2} is *anaphoric*. The embedded verb (*væri* in (17)), in turn, gets its past tense form by uninterpretable morphological agreement, being semantically non-past with respect to the shifted T_{S2} (and the matrix T_{E1}).

This kind of uninterpretable Tense Agreement is even found in some infinitival complements. This is illustrated for Icelandic in (19) (English also shows Tense Agreement in the translations, but it does so in regular finite clauses).

¹³ While the copula and other stative predicates typically get a *present-in-the-past* reading in SOT, dynamic predicates like *read*, as in (16), typically get a *future-in-the-past* reading. Both readings are subsumed under a general *non-past-in-the-past* reading (parallel to the simple present).

¹⁴ I.e., the narrow scope reading of *yesterday* is out (the wide scope reading is irrelevant).

- (19) a. *María segist munu fara.* *Icelandic*
 Mary says-herself will.INF go
 PRES.IND – PRES.INF
 ≈ ‘Mary says that she will go.’
- b. *María sagðist mundu fara.* *Icelandic*
 Mary said-herself will.INF go
 PST.IND – PST.INF
 ≈ ‘Mary said that she would go.’

That is, meaningless Tense Agreement can be passed down into certain complement structures, seemingly in a top > bottom externalization process. As will be briefly discussed in section 4, case agreement sometimes behaves in a parallel manner.

3.2 Double Access Reading (DAR)

Double Access Reading (see, e.g., Schlenker 2004, Anand & Hacquard 2007, Giorgi 2010) is another relevant issue in the present context. It is demonstrated in (20) for English, in (21) for Italian, and in (22) for Icelandic.¹⁵

- (20) [Anna:] (When I met him) John knew that Mary **is** sick. *English*

- (21) [Anna:] *Gianni ha saputo che Maria è malata.* *Italian*
 John has known that Mary is.IND sick
 [Anna:] ‘John knew that Mary is sick.’

- (22) [Anna:] *Jón vissi að María er veik.* *Icelandic*
 John knew that Mary is.IND sick
 [Anna:] ‘John knew that Mary is sick.’

The term “double access” refers to the fact that the subordinate Event Time or T_{E2} (Mary’s sickness eventuality) is temporally accessible to both the matrix T_{E1} of John’s knowing and the matrix T_{S1} (which is simultaneous with the speaker NOW). That is, Mary’s sickness holds at both the time of John’s knowing about it and Anna’s time of telling somebody about this knowledge of his. Mary could for instance have been sick for the last six months when Anna tells somebody that John knew about her extended illness two months ago.

Compare (20)–(22) and the examples in (23) and (24).

- (23) [Anna:] *Jón vissi að María var veik.* *Icelandic*
 John knew that Mary was.PST.IND sick
 [Anna:] ‘John knew that Mary was/had been sick.’

¹⁵ DAR is more restricted in Icelandic than in English and Italian as it is excluded from the complements of verbs of saying and thinking (which take an obligatory subjunctive in Modern Icelandic, as opposed to Old Norse and, e.g., Italian; see Sigurðsson 2010).

As in the plain non-past-in-the-non-past reading in (25) both T_{S1} and T_{S2} are set simultaneous with the speaker NOW under control (contextual and syntactic). As the sickness eventuality (T_{E2}) is valued under Agree as non-past (“present”) in relation to T_{S2} it is transitively identical with the utterance time $T_{S1} = \text{NOW}$. In addition, there is a temporal control relation between the matrix and the subordinate eventualities, T_{E2} thus having access to T_{E1} as well as to the utterance time (= double access). On the other hand, as shown, there is no computational relation between T_{E1} and T_{S2} ; hence the absence of T_S Shift and also of Tense Agreement (in contrast to SOT, as in (17)/(18) and (24); see further section 3.4).

3.3 Non-SOT (absent Tense Agreement) vs. SOT

Non-SOT languages and split SOT languages do not apply Tense Agreement in complement clauses like the ones in (15)–(17), instead using the simple present tense, as illustrated for Russian and Japanese in (27) and (28).

- (27) *Tanja skazala [čto ona tancuet].* *Russian*
 Tanja said that she dances (Comrie 1986: 275)
 ‘Tanja said that she was dancing
 (at the moment of Tanja’s saying so).’

- (28) *Taroowa [Hanakoga Siatoruni iru] to itta.* *Japanese*
 Taro Hanako Seattle-in is that said (Ogihara 1996: 5)
 ‘Taro said that Hanako was in Seattle
 (at the moment of Taro’s saying so).’

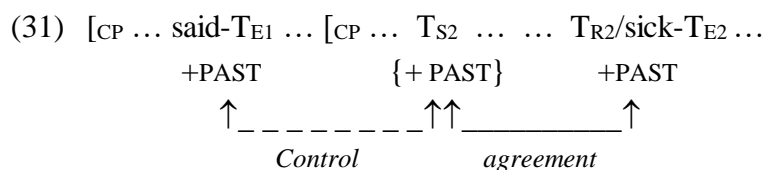
Crucially, however, the present tense subordinate clauses in (27)–(28) have the same tense interpretation as the past tense subordinate clauses in (15)–(17): ‘Non-past relative to the past saying in the matrix clause’ (Kondrashova 2005). Reconsider the Icelandic example in (17) and its Tense structure in (18), repeated as (29) and (30).

- (29) *María sagði [að Ólafur væri veikur (*í gær)].* *Icelandic*
 Mary said that Olaf were.PST.SBJ sick (*in yesterday)
 ‘Mary said that Olaf **was** sick (*yesterday).’
 (= sick at the moment of Mary’s saying so).’

- (30) NOW [CP ... T_{S1} said- T_{E1} ... [CP ... T_{S2} sick- T_{E2} ...
 ↑ ----- ↑↑ ----- ↑↑ ----- ↑↑ ----- ↑
 simultaneous past simultaneous non-past (‘present’)

Evidently, in SOT examples of this sort in Icelandic morphology, uninterpretable morphological +PAST is silently copied onto T_{S2} under control and spelled out on the verb

in T_{R2} under morphological (deep PF) agreement with T_{S2} , as sketched in (31) (the curly brackets under T_{S2} indicate that the + PAST element there is PF-silent).



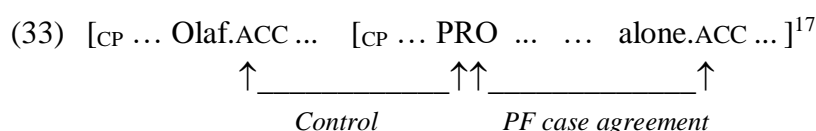
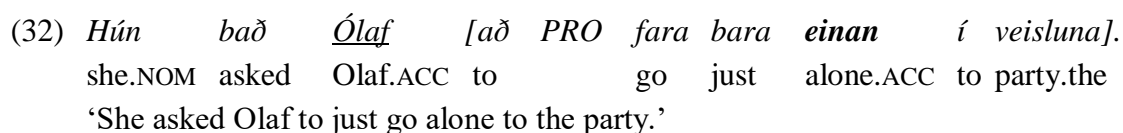
This morphological agreement process is not operative in the Russian and Japanese examples in (27) and (28). That is, Russian and Japanese are morphologically different from but syntactically similar to Icelandic, English, etc.

4. Concluding remarks on the syntax-PF correlation

Tense Agreement (overt SOT) behaves like a reflex of sorts, utilizing a syntactic control relation between T_{E1} and T_{S2} as a kind of a path or a gateway to pass down the morphological tense value from the matrix verb. Strikingly, the value in examples like (15)–(17) is *shifted* (+PAST), while the syntactic control relation between T_{E1} and T_{S2} establishes an *unshifted* identity relation (as control relations generally do; here, the identity is temporal simultaneity). Tense Agreement is thus quite distinct from the syntactic matching processes (Control/Agree) that yield tense interpretation.

- Tense Agreement operates with non-syntactic features (morphological +PAST, etc.)
- Tense Agreement evidently utilizes a Control/Agree path (already laid in the syntactic *bottom > top* derivation) in a directional *top > bottom* externalization PF process

Much the same behavior is seen in other meaningless (uninterpretable) agreement phenomena, including, for example, NP-internal concord and optional case agreement of Icelandic PRO. The latter is illustrated in (32)–(33) (see Sigurðsson 2008 and the references cited there).



¹⁷ Regardless of how one analyzes control, the syntactic and the morphological derivations are quite distinct (the latter bearing only indirectly on the former).

Like overt Tense Agreement, case agreement is semantically vacuous. That is, there are no semantic differences between the Acc *einan* ‘alone’ in (32) and the Nom *einn* ‘alone’ in (34).¹⁸

- (34) *Hún bað Ólaf [að PRO fara bara einn í veisluna].*
 she.NOM asked Olaf.ACC to go just alone.NOM to party.the
 ‘She asked Olaf to just go alone to the party.’

Overt agreement processes in general are PF processes (Sigurðsson 2004a, 2006, etc., Bobaljik 2008), taking place in the post-syntactic externalization component of language, out of sight for syntax and semantics. Accordingly, overt agreement reflects syntax but has no syntactic or semantic import. Simple data from well-documented languages further substantiate this conclusion (see the documentation of the extensive meaningless agreement variation across the Germanic languages in previous work, e.g. Sigurðsson 2004a). Thus, inasmuch as speakers of English accept clauses like *The girls is here* (see Henry 1995), they arguably have abstract Agree, only lacking overt PF agreement.

The mapping from abstract internal language to perceptible external language is fundamentally non-isomorphic. While syntax builds relations, for example, relations between distinct Tense heads (i.e., between phases), PF reinterprets and expresses these relations as morphological and perceptible units or items (audible, visible, tactile, or combinatory, depending on the externalization mode). Lexical approaches (including Chomskyan lexicalism or “itemism” and Distributed Morphology), make sense as partial models of externalization, but they do not make sense as theories of internal syntax—the system of linguistic thought. Internal language operates with abstract minimal roots and atomic features, such as T_S, T_R, and T_E, constructing relations between such elements, whereas external language expresses discrete items such as English *sang* and *-ed*.

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¹⁸ In general, locally licensed NOM is the unmarked option in Icelandic PRO infinitives, but object controlled ACC (as opposed to the more marked quirky subject controlled ACC, object controlled DAT, etc.) is also unmarked and widely acceptable (see Sigurðsson 2008: 414).

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