A Unified Account of Pronominal Tense Semantics and Sequence of Tense

It is generally assumed in tense semantics that tense morphology is pronominal in nature and imposes presuppositional restrictions on its referents (Partee 1973, Heim 1994, Kratzer 1998). Even though pronominal analyses of tense morphology are well-established, the phenomenon of sequence of tense (SoT) has always posed a notorious problem for such approaches. In this paper we resolve this problem and present a pronominal underspecification analysis of SoT.

Constructions in which a past tense is embedded under a matrix past can have two readings: a simultaneous reading, and a backward-shifted one. The availability of the former reading is referred to as SoT-effect.

(1) John said Susan was ill.
   a. John, at some $t' < t_u$: “Susan is ill.” (simultaneous)
   b. John, at some $t' < t_u$: “Susan was ill.” (backward-shifted)

Deriving the simultaneous reading under a pronominal account of tense is fairly straightforward and can be done by assuming some mechanism of feature-sharing (Heim 1994, Heim 2005, Abusch 1997, von Stechow 2009). Nevertheless, since tense heads are referential under a pronominal approach, the backward-shifted reading cannot be derived as easily. In order to derive both readings, pronominal approaches generally allude to res-movement (Heim 1994, Abusch 1997). However, shortcomings of this operation (e.g. res-movement is from an A-bar position to an A-position, it does not leave a trace, and it requires you to have a relational meaning for the attitude predicate in addition to the ‘regular’ one) have been long acknowledged in the literature (Heim 1994) and further discussed since (cf. e.g. Percus & Sauerland 2003, Cable 2017), casting doubt on the legitimacy of this operation.

This calls for an attempt to solve SoT without res-movement. One way to circumvent res-movement is via formulating tense semantics in operational rather than pronominal terms (e.g. Ogihara 1989, von Stechow 1995, Gronn & von Stechow 2010); another way is to keep tense pronominal but allude to additional technical machinery, such as concept generators (see Cable 2008, Sharvit & Charlow 2014, Heim 2015, Hohaus (under review)). We propose a pronominal approach of SoT without res-movement that does not rely on any other additional machinery.

It should be noted that the need to allude to res-movement or other technology comes from the fact that virtually all approaches to SoT (modulo Altshuler & Schwarzschild 2012) assume that SoT sentences are truly ambiguous and, hence, that the simultaneous and the backward-shifted readings are indeed distinct. Recently Kauf & Zeijlstra (2018) argued, though, that the ambiguity of past-under-past embeddings is not the result of ambiguity but rather of underspecification. In a nutshell, their analysis consists of two ingredients: first, every past tense morpheme denotes a relative non-future (RNF) with respect to its local evaluation time. Second, every past tense morpheme (-ed) is equipped with a past tense feature that needs to be checked by one joint past tense operator (Op-Past) higher up in the structure; given the fact that a past tense operator can check the features of all past tense morphemes in its syntactic domain via multiple agree, no second operator is allowed (cf. Zeijlstra 2012). The logical form of (1) is then as in (2):

(2) \[ Op\text{-Past}\[\text{[John [say\text{-ed}[\text{ill}]]]]] \]

(2) states that at some point in the past, no later than that point there was a saying event such that no later than that saying event, Susan’s illness took place. This is compatible with both a simultaneous and a backward-shifted reading of (1).

Such an underspecification analysis opens up the way to account for SoT in a pronominal way, since the backward-shifted reading does no longer have to be derived in a separate way. Even though Kauf & Zeijlstra (2018) provide a non-presuppositional/operational account, we demonstrate in this paper that a logical form as in (2) can be fully derived in pronominal terms. It is conceived wisdom that any theory of SoT should be able to account for at least three types of past embeddings: Single past sentences, the ambiguity of past-under-past embeddings under intensional predicates, and past-under-past embeddings where the embedded past may refer to a time
after the utterance time (so-called fish/dinner sentences, see Ogihara 1989, Abusch 1988). Here, we discuss each of the three cases in turn.

We take Kauf & Zeijlstra’s Op-Past to be the covert spell-out of a complex structure involving a past, a tense pronoun and a time-shifter (3-a). Similarly, we take -ed to be the spell-out of a complex Fin-head, which is mother to a relative non-future (RNF) and a tense pronoun (3-b). Jointly, the terminal nodes’ denotations (cf.(4)) make up the semantics in (5) and (6), respectively.

\[ \text{TP} \]

\[ \text{Op-Past}_{\text{[IPast]}} \]

\[ \text{FinP} \]

\[ \text{VP} \]

\[ \text{Susan be-ill} \]

\[ \text{[\}[\lambda \text{P}. g(1) < t. \text{[}\[ P \text{]}^{g,g(1)} \]

\[ \text{-ed}_{\text{[IPast]}} \]

\[ \text{[}\[ g(2): g(2) \leq t \]

\[ \text{John say} \]

\[ \text{CP} \]

\[ \text{Susan be-ill} \]

\[ \text{[\}[\lambda \text{P}. \text{at } t \in w] \]

\[ \text{[\}[\lambda \text{P}. \text{be-ill(Susan)} \]

\[ \text{at } t \in w] \]

\[ \text{(7)} \]

\[ \text{[\}[\lambda \text{w}. \text{be-ill(Susan)} \]

\[ \text{at } t \in w] \]

\[ \text{(9)} \]

\[ \text{[\}[\lambda \text{w}. \text{be-ill(Susan)} \]

\[ \text{at } t \in w] \]

\[ \text{(10)} \]

\[ \text{[\}[\lambda \text{w}. \text{be-ill(Susan)} \]

\[ \text{at } t \in w] \]

In addition, since context times can be shifted under this approach, past tense embeddings under futures as in (12) can also be explained. Under the assumption that would is the spell-out of woll under past tense, which presupposes that the relevant event takes place later than a local evaluation time (cf. (11)), (12) receives the logical form in (12-a) and denotation in (12-b).

\[ \text{[\}[\lambda w. \text{be-ill(fish, at } g \text{)} \]

\[ \text{at } g \text{(4)} \]

\[ \text{at } g \text{(2)} \]

\[ \text{in } w. \]