

Constraints on noun phrase evaluation times

LURC – June 1, 2017

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1. Overview

- Working from Enç’s (1981, 1985, 1986, 1987) claim that noun phrases (NPs) are temporally independent from the tense of main predicate, I propose restrictions on the available interpretation times for both temporally independent and temporally dependent NPs:
 - Temporally independent NPs are subject to a variation of the Upper Limit Constraint (Abusch 1997) and can only be interpreted at times that are “familiar” to the utterance.
 - Nouns which denote stages rather than individuals can never be temporally independent.
 - All temporally dependent NPs can be evaluated either at the utterance time or at the time of the main predicate of their clause

2. Introduction

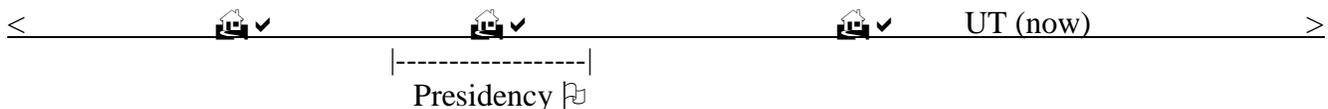
- Enç (1981, 1985, 1986, 1987) claims that NPs can be evaluated at times other than those designated by the sentential tense, expressed morphologically on the verb

(1) The president bought a house.

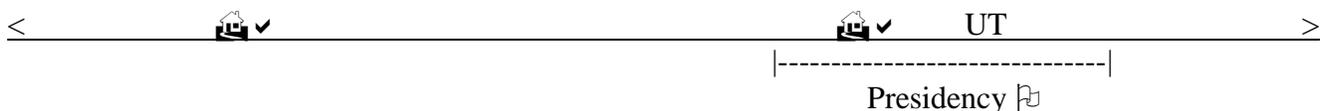
- subject can refer to either a past or a present president.

○ Acceptable contexts:

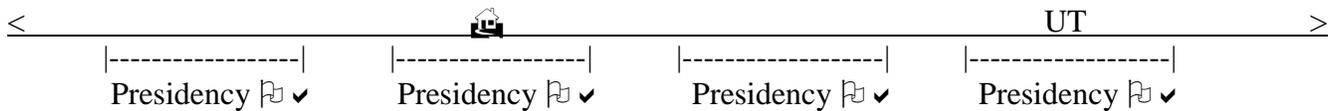
- *Bill Clinton (past president) bought a house yesterday.*
- *Bill Clinton (past president) bought a house while president.*
- *Bill Clinton (past president) bought a house in 1985.*



- *Donald Trump (present president) bought a house in 1985.*
- *Donald Trump (present president) bought a house yesterday.*



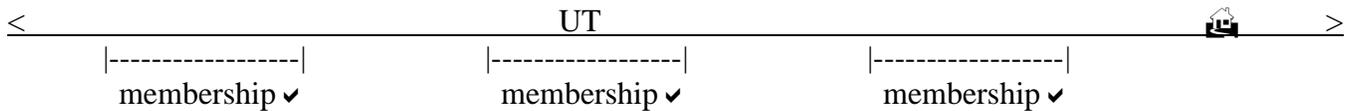
- We can depict the possible interpretations of (1) like this:



- Consider another sentence:

(2) Every member of our investment club will buy a house.

- subject can refer to past, present, or future members
- “Every member” includes:
 - *Those who used to be members*
 - *Those who are currently members*
 - *Those who will become members*
- It does not matter whether they are still members at the time of buying a house.



- However, it is not the case that any NP can be interpreted at any time.

(3) # There were many professors in kindergarten in the 80s.

(Keshet 2008: 42)

- The above sentence is only true if the people in question were professors and in kindergarten at the same time (Keshet 2008).
- The NP is evaluated at the same time as the main predicate of the sentence (*be in kindergarten*).
- This NP is “*temporally dependent*” on the main predicate of the sentence.

- **Definitions:**

(4) Temporally dependent NPs must be evaluated at the same time as the main predicate of the sentence.

(5) Temporally independent NPs do not need to be evaluated at the evaluation time of the main predicate.

- Previous work has focused on the distinctions between temporally dependent and temporally independent NPs. I will discuss some of these theories in §4 and §5, and add to them in §6.
- §7 and §8 will provide evidence for changes to the definitions in (4) and (5) and outline new restrictions for the evaluation times of both types of NP
- §9 and §10 will discuss a few more relevant sets of data.

3. A note on cross-linguistic data

- There have been a number of papers which discuss temporal morphology on NPs (e.g. Nordlinger and Sadler 2004, Tonhauser 2002, 2005, 2007, 2008).
- For instance, Tonhauser (2008) discusses past and future markers in Guaraní:

(6) Juan ha'e pa'i-**kue**.
 Juan 3.PRON priest-PAST.NOM
 'Juan is a former priest.'

(7) Juan ha'e pa'i-**rã**.
 Juan 3.PRON priest-FUT.NOM
 'Juan is a future priest.'

- Tonhauser concludes that these morphemes are not nominal tenses. (8) shows the future tense morpheme:

(8) Juan ha'e pa'i-**ta**.
 Juan 3.PRON priest-FUT.PRED
 'Juan will be a priest.'

- The bold morphemes in (6) and (7) are not unlike English adjectives like *future* and *former*.

(9) John is a future president.

- Note, however, that the entire NP *future president* is interpreted in the present.

4. Background: intersecting predicates

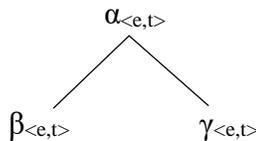
- The literature on the evaluation times of NPs can explain the unacceptability of (10):

(10) # Every married bachelor is happy.

Intersective Predicate Generalization (Keshet 2008:44):

Two predicates composed via Predicate Modification may not be evaluated at different times or worlds from one another.

- **Predicate Modification**¹ (Keshet 2008:44, from Heim & Kratzer 1998:65)
If α is a branching node, $\{\beta, \gamma\}$ is the set of α 's daughters, and $[[\beta]]$ and $[[\gamma]]$ are both functions of type $\langle e, t \rangle$, then $[[\alpha]] = [[\beta]] \sqcap [[\gamma]]$.



- When a sentence is broken down into compositional parts, nodes of the same type can be combined via predicate modification
 - For instance, an adjective and a noun are both of type $\langle e, t \rangle$ and thus combine by predicate modification. By the IPG, they cannot be evaluated at different times
 - (10') # Every [married]_{<e,t>} [bachelor]_{<e,t>} is happy.
 - Relative clauses are also of type $\langle e, t \rangle$:
 - (11) # The [bachelor]_{<e,t>} [who has a wife]_{<e,t>} was happy.

5. Background: determiner phrases and information status

- Musan (1995, 1997, 1999) outlines the situations in which NPs are obligatorily temporally dependent

5.1 Weak cardinal DPs

- NPs in certain types of determiner phrases will always be temporally dependent.

¹ This version of predicate modification only covers nodes of type $\langle e, t \rangle$, unlike true predicate modification, which combines any two nodes of the same type.

- To discuss these DPs, we must first establish some terminology:
- Determiners can be classified as *weak* or *strong* (Milsark 1977):
 - **Weak:** a, some, many, several, two, three², ...
 - **Strong:** the, this, these, that, those, both, each, every, most, all, ...
- The strong/weak divide is particularly useful in describing which DPs can occur in existential there constructions and which can't³:

- (12) *Weak determiner phrases:*
- There was a man on the balcony.
 - There were some/many/several/two men on the balcony.

- (13) *Strong determiner phrases:*
- *There was the/this/that man on the balcony.
 - *There were these/those/both/every/most men on the balcony.

- Weak determiner phrases have *cardinal* and *partitive* readings:
 - **Cardinal:** the determiner characterizes the *cardinality* of individuals that satisfy the noun
 - **Partitive⁴:** the determiner picks out a (sub)set of individuals that satisfy the noun (a *part* of a larger group)
 - (14) *Few ghosts swam in the ocean.*⁵
 - cardinal reading: A small number of ghosts swam in the ocean.
 - partitive reading: Few of the ghosts swam in the ocean.
- (Musan 1999:629)
- Musan (1999) asserts that *weak DPs with a cardinal reading* are obligatorily temporally dependent and are evaluated at the same time as the main predicate of their clause

| | | |
|---|--------------------------|------------------|
| (15) The <u>astronauts</u> are riding bicycles. | <i>strong DP</i> | independent |
| (16) Three (of the) <u>astronauts</u> are riding bicycles. | <i>weak partitive DP</i> | independent |
| (17) Three <u>astronauts_F</u> are riding bicycles. | <i>weak cardinal DP</i> | dependent |

² Some may not consider numbers to be determiners. However, as is pointed out in here, when numbers occur without any other determiner, they behave like weak determiners (Milsark 1974, Musan 1999). That is, they can occur in existential there constructions, and their cardinal readings are obligatorily temporally dependent.

³ Note that strong determiner phrases can occur in existential there constructions, but only as part of a list reading:

(i) A: Who was at the party?
B: Well, there was the mayor, the town doctor, those teachers we met, ...

⁴ Sometimes called the *proportional* reading.

⁵ Musan notes that in ambiguous cases partitive readings generally have stress on the determiner while cardinal cases tend to put stress on the noun (1999: 629).

- The astronauts in (15) and (16) can astronauts at a different time from the bicycle-riding time. (For instance, they could be retired.)
- With a cardinal reading, the astronauts in (17) must be astronauts at the time of bike riding.

5.2 Existential *there* constructions

- Additionally, Musan points out that post-copular DPs in existential *there* constructions are obligatorily temporally dependent⁶

- (18) a. # There were many professors in kindergarten in the 80s. *dependent*
 b. Many professors were in kindergarten in the 80s. *independent*
 (Keshet 2008: 42)

- Musan reports that most post-copular DPs in existential *there* constructions are weak with a cardinal reading
- However, even when a partitive DP is in the post-copular position, the DP is still temporally dependent:

- (19) a. #There are some of *the prisoners* free. *dependent*
 b. Some of *the prisoners* are free. *independent*

- (20) a. #There are many of *the sleepers* awake. *dependent*
 b. Many of *the sleepers* are awake. *independent*
 (Musan 1999: 639)

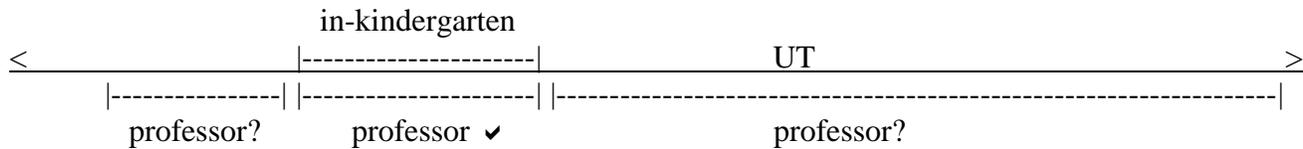
5.3 Information Status

- Existential *there* constructions require that the post-copular DP is novel to the hearer of the sentence (Prince 1992, Ward and Birner 1995)
- Musan (1999) suggests that, additionally, all weak DPs with cardinal readings are *hearer-new* as well.
- Therefore, Musan posits that all hearer-new DPs are temporally dependent on the main predicate of their clause
 - Logical, when considering meaning of cardinal and partitive readings: a DP that introduces *three cats* for the first time would have to be discussing the cardinality of the total group of relevant cats, while *three of the cats* would necessarily be discussing three cats out of a larger, previously salient group

⁶ Musan (1999) also discusses a similar phenomenon in German scrambling.

- Musan claims that being hearer-new or hearer-established leads to nominal predicates being interpreted as either stages or individuals, respectively, and that it is this distinction which triggers temporal dependence or independence
 - *Individuals* describe long-term properties
 - *Stages* describe temporal chunks of an individual’s total existence (Carlson 1977a,b)
- If an NP is hearer-new, all the knowledge the hearer has about the referent is its stage during the event at hand.

(18a) # There were many professors in kindergarten in the 80s.



6. Stage Nouns

- Let us examine the following (previously undiscussed) data:

(21) The fugitive is doing time.

(22) #The bachelor is kissing his wife.

- Both sentences have strong determiners and neither involves an existential there construction, so they should behave identically.
 - In (21), “the fugitive” could *in theory* be interpreted in either the past or the present, but, for the sentence to be non-contradictory, it must be interpreted in the past.
 - In (22), “the bachelor” should be able to receive a similar interpretation, where it could be evaluated at some time prior to the time of having/kissing his wife.
 - However, (22) does not have this interpretation, and is therefore impossible to utter without creating a contradiction. Somehow, “bachelor” can only be interpreted in the present
- I argue that *bachelor*-type nouns describe a *stage* of an individual, rather than an individual over its entire temporal existence

- I argue that nouns are separated into two classes: those that define a stage and those that describe an individual
 - Stage nouns include: *child, bachelor, sophomore, teenager, ...* (generally these predicates have a very clear endpoint)
 - Individual nouns include: *fugitive, president, astronaut, ...* (all professions are individual nouns in English)
- All stage nouns are temporally dependent, as in (22).
- Fitting in with Musan’s theory, all NPs which are in some way associated with stage-hood, whether intrinsically, or via a determiner or syntactic construction, are temporally dependent

Stage-hood rule:

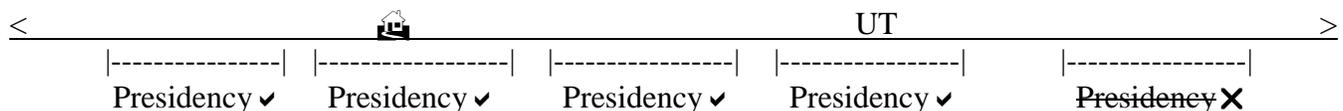
- If a noun is interpreted as a stage, it is temporally dependent.
- If a noun is interpreted as an individual, it is temporally independent.

7. Temporally independent NPs: in need of an upper limit constraint

- At this point, we have discussed how we can determine whether NPs/DPs are temporally independent or temporally dependent
- In this section, I will discuss what times are available to temporally independent NPs. (In the following section, I discuss the times available to temporally dependent NPs.)
- A temporally independent NP in an out of the blue sentence cannot be evaluated at *any* time

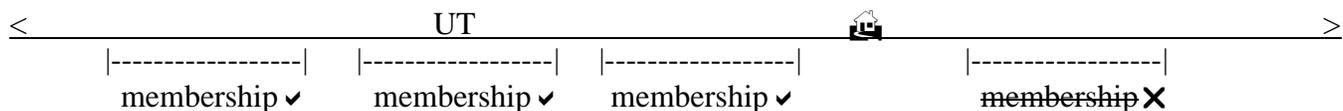
(1) The president bought a house.

- subject can refer to past or present president, but not future



(2) Every member of our investment club will buy a house.

- subject can refer to past, present, or future members
- not true of those who buy a house in the future *then* become members



- Other areas of tense-study have suggested the need for an *upper limit constraint* (Abusch 1997), which allows only times *familiar* to an individual or situation to be accessible. Generally, this means times up to the present, as only the present and the past are truly known.
- In a similar manner, temporally independent NPs may only be interpreted at times *familiar to the utterance*.
 - This familiarity can be gained *either* from the utterance time or from the evaluation time of the main predicate.

Familiarity Constraint:

Temporally independent NPs must be evaluated at a time which is *familiar* to the utterance. Times are familiar to the utterance if they are equivalent to or prior to either the utterance time or the time at which the main predicate is evaluated.

- Since the utterance is always uttered in the present, NPs can always be interpreted in the present or the past (as compared to the utterance time).
 - If the main predicate is evaluated in the future, the times familiar to the NP include future times *up to the time at which the predicate is evaluated*. NPs cannot be evaluated any further into the future than the predicate is.
- The NP may be interpreted at any time along the dotted line or at a circled time:

If predication time = past



If predication time = present



If predication time = future



8. Temporally dependent NPs

- Musan (1999) and others claim that temporally dependent NPs are evaluated at the time of the main predicate
- I propose that they may be evaluated either at the utterance time or the predicate time. Consider the following data:
 - If the main predicate time is in the present, the temporally dependent NP may only be evaluated in the present:

| | UT (PRES) | Predication Time |
|--|--------------|---------------------|
| (23) #The <u>bachelor</u> is kissing his wife. | # | # |

- If the main predicate time is in the past, the temporally dependent NP may be evaluated at the utterance time or at the time of the event:

| | UT (PRES) | Predication Time |
|--|--------------|---------------------|
| (24) The <u>bachelor</u> got married. | # | ✓ |
| (25) The <u>teenager</u> received a toy at his 1 st birthday party. | ✓ | # |

- If the main predicate time is in the future, the temporally dependent NP may be evaluated at the utterance time or at the time of the event:

| | UT (PRES) | Predication Time |
|---|--------------|---------------------|
| (26) This fortune will be given to the <u>child</u> on his 30 th birthday. | ✓ | # |
| (27) Due to a very odd birth rate, in 15 years, every <u>teenager</u> will be 17 years old. | # | ✓ |

- Recall that weak cardinal DPs and post-copular DPs in existential there constructions are also temporally dependent. They are also capable of taking either the predication time or the utterance time as their evaluation time:

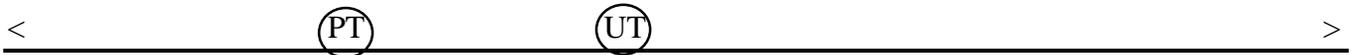
| | UT (PRES) | Predication Time |
|---|--------------|---------------------|
| (28) Three <u>fugitives</u> are in jail. | # | # |
| (29) Three <u>students</u> had class in that room before they became senators. | # | ✓ |
| (30) Three <u>fugitives</u> were kept in these cells. | ✓ | # |
| (30) # There are several <u>fugitives</u> in the county jail. | # | # |
| (31) By this time next year, there will be several <u>fugitives</u> in the county jail. | ✓ | # |

Accessibility Constraint:

Temporally dependent NPs must be evaluated at a time which is already accessible to the clause, namely, the utterance time or the time at which the main predicate is evaluated.

- The NP may be interpreted at any time along the dotted line or at a circled time:

If predication time = past



If predication time = present



If predication time = future



9. Context

- For both temporally “dependent” NPs and temporally “independent” NPs, evaluation times are in some way dependent on times supplied by the rest of the sentence.
- It would make sense that contexts could also supply times, given that previous sentences could establish the NP and its evaluation time.
- Kusumoto (1999) claims that a context is only appropriate for a sentence if it defines any variable that is unbound within the sentence.
- And indeed, it turns out that contexts can supply evaluation times for NPs. This method can even salvage sentences that are otherwise temporally impossible:
 - (32) #Every married bachelor is happy.
 - Out of the blue: impossible
 - (33) In a group of five college friends, four were bachelors and one was a bachelorette. After a while, three of them got married. *Every married bachelor is happy.*
 - *Bachelor* is interpreted at the time of college attendance, while *married* is interpreted at the utterance time.

10. Bonus: noun modifying participle phrases

- Kusumoto (1999) examines how the evaluation times of participle phrases (-ing phrases which modify a noun) interact with the evaluation times of NPs.

- *Participle phrases* and the noun phrases they modify can be evaluated at the same time:

(34) Eva talked to a boy *crying like a baby*. (both PAST)

(35) Jane is the mother of the child *screaming in the corner*. (both PRES)

(Kusumoto 1999)

- The participle phrase can also be evaluated at a time that is later than the noun phrase:

(36) Most of the fugitives *doing time in the county jail* were caught by Officer Jones.

(Kusumoto 1999:173)

- Context 1 (participle is evaluated at UT, NP is evaluated in the past):

I am visiting the county jail. An officer is giving me a tour of the cells there and explaining why each criminal was there and who they had been caught by. Most of the fugitives doing time in the county jail were caught by Officer Jones.

- Context 2 (participle and NP evaluated at different PASTs):

When the county jail was demolished, our county was acknowledged by the state for catching criminals who had escaped from jail. There was one officer who was particularly famous for catching them. His name was Tom Jones. In fact, most of the fugitives doing time in the county jail were caught by Officer Jones.

- However, the participle phrase cannot be evaluated at a time that is earlier than the evaluation time of the NP:

(37) # The professor attending kindergarten graded my homework.

- Another way to phrase Kusumoto's observation is that the NP cannot be evaluated at a time that is later than the evaluation time of the participle phrase.

- I propose that this is just another layer of the familiarity constraint:

Familiarity Constraint, part II:

NPs may only be evaluated at a time that is familiar to the evaluation time of a participle phrase which modifies them. That is to say, the NP may be evaluated only at a time that is before or during the evaluation time of the participle.

11. Conclusion

- Some NPs are temporally independent and some are temporally dependent
 - NPs are temporally dependent if they are interpreted as a stage, rather than an individual
 - Some nouns always denote stages
 - Some determiners and syntactic constructions can require that an NP is new information to the hearer, which triggers interpretation as a stage
- Temporally dependent nouns are subject to an accessibility constraint and must be evaluated at either the utterance time or the predication time
- Temporally independent nouns are subject to a familiarity constraint and can only be evaluated at or before the utterance time or the predication time, whichever is later

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