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Tense in Cleft Constructions

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ABSTRACT OF THE THESIS

Tense in Cleft Constructions

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This work seeks to add further depth to our knowledge of cleft constructions by examining the tense of the matrix copula. There are numerous accounts describing the semantics of clefts, but none of these have integrated the matrix tense, meaning that any current theory of cleft constructions would claim that '*It was John that died.*' and *'It is John that died.'* have the same formal meaning, despite the fact that there are situations in which one can be uttered but the other cannot.

This work proposes that the matrix tense overtly marks the topic time of the utterance (see Klein 1994), and that the cleft clause (e.g. *'that died.'*) is interpreted relative to that time. For instance, a past matrix tense communicates that the topic time precedes the utterance time. The property specified in the cleft clause *'that died'* is therefore true for all individuals who died at some t *prior to the topic time*, rather than prior to the utterance time. These truth conditions are added to the cleft operator proposed by Büring & Križ (2013).

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Tense in Cleft Constructions

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1. Introduction

This paper seeks to add further depth to our knowledge of cleft constructions by examining the tense of the matrix copula. There are numerous accounts describing the semantics of clefts, but to my knowledge, none of these have integrated the matrix tense and the meaning which it contributes. That is, any current theory of cleft constructions would claim that (1) and (2) have the same formal meaning.

(1) It was John that died.

(2) It is John that died.

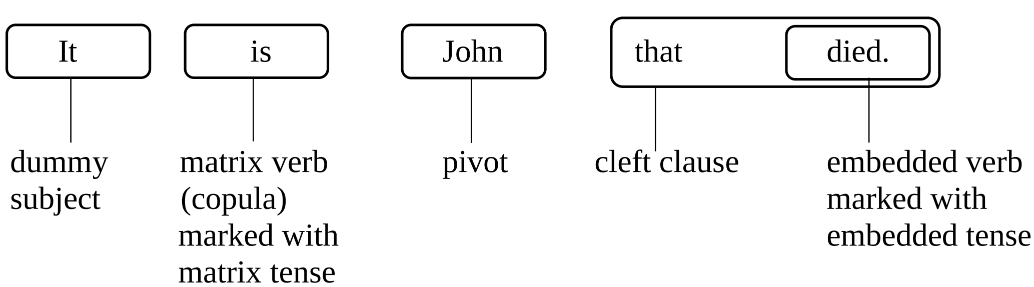
Current cleft operators exclude the dummy subject, the matrix copula, and therefore the matrix tense from the calculation of the sentence's meaning. As is frequent practice, features such as tense, which add an extra layer complexity, have been excluded for the sake of explaining the rest of a complicated construction. While this is a logically approach to complex utterance, we must eventually include all elements of an utterance in its truth conditions. In this paper, I aim to examine the matrix tense in cleft constructions, which has until now has not been considered, and integrate said tense into an established cleft operator. Büring & Križ's (2013) cleft operator uses the property given by the cleft clause to define an exhaustive set; I propose that the cleft operator actually uses the cleft clause *relative* to the matrix clause evaluation time. Integrating matrix tense into Büring & Križ's cleft operator additionally provides an argument in favor of pronominal tenses in place of quantificational tenses—quantificational tenses lead to an undesired variability in evaluation times between the assertion and the complex presupposition of the cleft operator.

The following section outlines the basic data showing what the matrix tense adds to the truth conditions of clefts, thereby arguing for its inclusion in the semantics of clefts. Section 3 comments on the similarities between the concept of topic time and the matrix tense in cleft constructions. Section 4 details the cleft operator proposed by Büring & Križ (2013), and shows that it does not currently account for the matrix tense. Section 5 integrates the matrix tense into Büring & Križ's cleft operator and shows how the updated operator can account for the data provided. Additionally, section 5 discusses the implications of using quantificational versus pronominal tenses in conjunction with the adapted cleft operator.

2. Data

In order to discuss clefts, we must first establish terminology for each of the subparts of a cleft:

(3) *Parts of the cleft:*



This section discusses the reason for adapting a matrix tense into the semantics of cleft constructions. Often, the initial impression of clefts with past and present tensed copulas is that they are interchangeable—that sentences like (1) and (2) can be used interchangeably. If these sentences were truly interchangeable, then it would be justifiable to exclude the matrix tense from their meanings. However, in §2.1 I show that there is a difference in meaning between (1) and (2), given that there are situations where (1) can be uttered truthfully, while (2) cannot.

A potential theory to explain multiple tenses in cleft constructions would be to assume that the tenses are in some way anaphoric. In order to dispel this idea, I additionally provide evidence in this section that the two tenses in cleft constructions (the matrix copula tense and the embedded tense) interact like other cases of tense embedding in English (under attitude verbs for instance). Just like in other cases of tense embedding, an embedded past tense under a matrix past tense has both a null reading and a back-shifted reading (§2.2) and an embedded present tense under a matrix past tense has a double-access reading (§2.3). In order to account for all of these facts, the two tenses must be independent, and ought to be integrated into the formal meaning of cleft constructions.

2.1 Interchangeability

When the embedded tense of a cleft construction is past, matrix past and present tense can occur more or less interchangeably in many discourses. For instance, in (4), speaker B may answer with either a matrix past and matrix present tense. [1,2]

[1] The contracted *it's* has been reported to me by numerous speakers to be far more natural that the uncontracted *it is*. I do not believe that the difference between these two options makes any difference to the theory presented in this paper. On the other hand, *it is* is used whenever the copula bears any type of focus stress.

[2] These sentences may all substitute a *wh-* word for *that*, with no changes to the theory presented here.

(4) a. A: Who died?

B: It's John that died.

b. A: Who died?

B: It was John that died.

I assume that this interchangeability has played a part in why the matrix tense of cleft constructions has been left out of the discussion of clefts. It's not common in English that two sentences which differ in tense will be interchangeable. For instance, we would never consider '*John loves Mary'* and '*John loved Mary'* to be interchangeable. Each definitively communicates the time at which the loving event occurred with respect to the utterance time; *'John loves Mary'* means that the loving occurs at the time of the utterance and *'John loved Mary'* asserts that loving occurred before the utterance time. The meanings of these two sentences are distinct; that is, we can think of situations where one of these sentences can be uttered and the other cannot. It follows that, if we can imagine a situation where (1) can be uttered truthfully but (2) cannot or a situation where (2) can be uttered but not (1), then those two sentences must not have the same meaning. If that is the case, then the matrix tense of cleft constructions should be part of the formal truth conditions of cleft sentences.

As it turns out, there are situations where it is possible to truthfully claim (1), but not (2). Our two sentences are repeated below, followed by a context. At the end of the described situation, (1), but not (2) may be truthfully uttered.

(1) It was John that died.

(2) It is John that died.

(5) Context:

A group of friends are playing a video game. John is the first to die and the game makes a specific sound. Sally asks "Who died?" Another player, Tom, answers, "It was John that died," but just then, Mary's character also dies. Bill chimes in, "It was John that died. Now, it's John and Mary that died."

At the end of this scenario, uttering (2) would be infelicitous. However, Bill truthfully reports (1), even after Mary has died. At the end of this scene, (1) is truth, but (2) is not; therefore, (1) and (2) cannot have the same meaning. The truth conditions of the two sentences should show this difference in meaning. The rest of this paper aims to formulate the exact truth conditions for these two sentences.

2.2 What exactly is tensed?

The realization that (1) and (2) do not have the same truth conditions leads us to question what the difference is between the two sentences. Given that they are built out of the same parts, with the exception of matrix tense, it is reasonable to assume that the matrix tense is to blame for the difference in truth conditions.

So, what exactly is being tensed by the matrix tense? The answer to this question is not apparent at first glance. There is no clear predicate that is occurring either in the present or past, so we are left wondering what feature of the sentence is varying over time between (1) and (2).

At this point, I would like to take a slight detour in order to introduce a tool which can be used to highlight the difference between (1) and (2). English has a specific intonational pattern which is used to emphasize scalar implicatures (although, as we will see, it has other effects as well). This scalar pitch accent is denoted by L*+H in ToBI, meaning that the stressed syllable is given a low pitch and the following syllable a high one. Consider the pitch accent's use in (6)[3]:

(6) A: How did the students do on the test?

B: Well, **some**$_{L*+H}$ of the students passed.

(implies: *Not all of the students passed.*)

Simply uttering *some of the students passed* implies that not all of the students passed (assuming only the context specified in (6)). The speaker in (6B) uses the scalar pitch accent to draw attention to this implicature. It is likely that the main point that the speaker in (6B) is trying to get across is that not all of the students passed.

Note that simply using the word "some" does not guarantee a scalar implicature. For instance, consider the situation in (7a) and the dialogue in (7b). In (7b), we would not expect a hearer of this conversation to assume that not all of teacher 1's students passed. However, the implicature is not optional when the L*+H pattern is used. In (7c), despite the context, we get a strong implicature that not all of teacher 2's students passed.

(7) a. Situation:

If a teacher had any students that passed the state exams, they will get a raise. The principle is asking each teacher about their students' results to determine who will get a raise.

[3] In order to produce this pitch accent, English speakers should utter (6B) with the intention of excessively stressing the implicature that not all of the students passed. If getting this implicature across is the main intention of the utterance, then the somewhat dramatic pitch accent should occur naturally.

b. Principle: Did some of your students pass the test?

Teacher 1: Yes, some of my students passed the test. ✗*implicature*

c. Principle: Did some of your students pass the test?

Teacher 2: Yes, **some**$_{L*+H}$ of the students passed the test. ✓*implicature*

It is also possible to use the L*+H intonational pattern on copulas. It is important to note that it is possible to put several different pitch accents on copulas, but most put focus on the truth of the utterance, rather than the tense. For instance, H* and L+H* pitch accents are both forms of verum focus, the former denoting agreement (*Why yes, I* ***am***$_{H*}$ *an Aries!*), and the latter denoting contradiction (*You're wrong; Laurie* ***is***$_{L+H*}$ *my favorite student!*). Only the scalar L*+H will focus the tense of a copula, as in (8):

(8) A: Josephine is a teacher, right?

B: She **was**$_{L*+H}$ a teacher.

(implying: *She isn't a teacher anymore.*)

Of course, using a scalar accent to focus tense necessitates that tense features exist on a scale. I adopt the view advocated in Altshuler & Schwarzchild (2012) that a two rung <PAST, PRES> scale exists in stative predicates.[4] The L*+H intonation pattern turns out to have interesting effects when applied to the two rung scale of <PAST, PRES>. In general, when a past tense is used

[4] Altshuler & Schwarzchild claim that any stative predicate which is true in the present is also true in the past (because if Josephine *is* a teacher, surely there is a moment prior to present where Josephine *was* a teacher, even if this past time is an infinitesimally small amount of time into the past). However, claiming that a stative predicate is true in the past does not entail that it is also true in the present. In fact, claiming that a stative predicate is true in the past implies that it is not true in the present (otherwise, the speaker would have used the more informative present tense). This can lead to additional implicatures, such as lifetime effects (see Musan 1997).

on a stative predicate, it is implied that the predicate does not hold in the present tense, which would be a more informative claim (Altshuler & Schwarzchild 2012–see footnote 4). However, when the L*+H pattern is applied to the less informative PAST, the speaker implies more than the normal scalar implicature (which would negate the more informative PRES). With L*+H intonation focusing PAST, the utterance entails that the predicate is true in the past, and implies that *some other* predicate is true in its place in the present. For instance, (8) implies that some other predicate can now truthfully describe Josephine's professional status (i.e. *be a lawyer, be a doctor, be unemployed*).

The effects of L*+H are especially noteworthy in predicates which exhibit lifetime effects. Lifetime effects are seen in past tense individual-level predicates, which imply that the subject is dead in the present, as in (9a-b). This is in contrast with past tense stage-level predicates like those in (10a-b), which carry no implicature regarding the current life status of the subject. This implicature is derived from the basic scalar implicature between PAST and PRES in stative predicates in conjunction with the concept that individual-level predicates entail that the subject is alive (see Kratzer 1989, Musan 1997 for more detail).

(9) a. Gregory was from America.

b. Gregory had blue eyes.

(10) a. Gregory was happy.

b. Gregory had a cold. (Musan 1997: 271-2)

With the L*+H intonational pattern, the implicatures change entirely. Rather than implying that these predicates no longer hold of Gregory because he has passed away, (11a-b) imply that the expressed predicates no longer hold and that some other predicates are true *in their place* in the present. (11a) implies that Gregory is now from somewhere else and (11b) implies that Gregory now has some other color of eyes. Native speakers confronted with these sentences will give all sorts of explanations (for example, for (11a): *he found his real birth certificate/he was secretly a Russian spy and we just found out/the author who created the character of Gregory changed his back story/*etc.), but will never assume Gregory to be dead.

(11) a. Gregory **was**$_{L*+H}$ from America

b. Gregory **had**$_{L*+H}$ blue eyes.

Now let us apply the same intonational pattern to the matrix copula in a cleft construction. (12) repeats the sentence from (1) and the context from (5) with the addition of the L*+H pitch accent on the matrix past tense copula:[5]

(12) a. It **was**$_{L*+H}$ John that died.

b. Context:

A group of friends are playing a video game. John is the first to die and the game makes a specific sound. Sally asks "Who died?" Another player, Tom, answers, "It was John that died," but just then, Mary's character also dies. Bill chimes in, "It ***was***$_{L*+H}$ *John that died. Now, it's John and Mary that died."*

[5] Some speakers report that (1)/(12a) is *only* acceptable at the end of the given scenario if the matrix copula is marked with the scalar pitch accent. I attribute this to the fact that (1) with the pitch accent is forced into having a meaning that is inarguably distinct from (2), which is clearly infelicitous at the end of the scenario.

In (8) and (11), the scalar pitch accent on the past tense copula meant that the predicate was true in the past and that some other predicate which could plausibly be a replacement for it was true in the present. With that in mind, what can we say about the implicatures of *'It **was**$_{L*+H}$ John that died*?*'* As will be discussed in section 4, previous theories have shown that the cleft construction tells us that John constitutes the exhaustive group of those who had died. I posit that (12a) entails that John constituted the entirety of this group *from the perspective of some past point*, and, with the scalar pitch accent, it implies that John is not the exhaustive group of those who have died *from the perspective of the present*, and in fact that some other group makes up the exhaustive collection of those who have died *from the perspective of the present*. This new group may or may not include John, although in this example, given the permanence of dying, it seems likely that he would be included.

It is not precisely the exhaustivity of the cleft that is tensed, because even in (12a), it is implied that there is some other exhaustive group in the present which could replace *John* to create a truthful cleft sentence. Instead, it seems that for each group, there is a limited time that it is the exhaustive group of those who died. It is the lifespans of these exhaustive groups that is described by the matrix tense in the cleft construction. (12a) tells us that at some point in the past, the group comprised entirely of *John* was the exhaustive answer to the question "Who died?" By contrast, the last line of (12b), which has a matrix present tense, tells us that the set comprised of *John and Mary* is the exhaustive answer to the question "Who died?" *at the time of the utterance.* See the following timeline:

(13) *Timeline for (12b):*

```
                    John dies.                      Mary dies.
                         ↓                               ↓
<-------------------------------------------------------------------------------->
                         |______________________________||______________________________>
Exhaustive group:                  John                          John+Mary
```

2.3 Multiple past-under-past readings

The evidence from the past section aside, it is tempting to claim that tenses in cleft constructions are anaphoric. That is, that there is only one tense and that it is somehow referred to from multiple locations in the sentence. This would imply that in past under past cleft sentences, where both the matrix and the embedded tense are past, both past tenses are referring to the same time.

However, it turns out that past under past cleft sentences have a reading where the two past tenses clearly refer to different times. Like other English sentences with a matrix past tense and an embedded past tense, they actually have two interpretations. Let us first consider a non-cleft example. In the speech event that (14a) is reporting, Tom could have said either "*Jane loved me*" or "*Jane loves me*," as shown in (14b-c).

(14) a. Tom claimed that Jane loved him.

b. Tom claimed "Jane loved me." *back-shifted reading*

c. Tom claimed "Jane loves me." *simultaneous reading*

The reading of (14a) which is analogous to (14b), where the embedded event (loving) took place before the matrix event (claiming), is called the back-shifted reading. The reading analogous with (14c), where the embedded event is occurring at the time of the matrix event, is called the simultaneous reading.

With some creative contexts, we can show that clefts work in same way. When both the copular tense and the embedded tense of the cleft are past, we can get either a simultaneous reading, or a back-shifted reading. Consider the following sentence and contexts:

(15) a. It was John that loved Mary.

b. Back-shifted context:

Several coworkers were gossiping about who loves who. Jane comments that John ***used to love*** *Mary. Later, Teresa had forgotten some of the information, so she asked "Who was it that loved Mary?" Her coworker replied "*<u>*It was John that loved Mary.*</u>*"*

c. Simultaneous context:

Several coworkers were gossiping about who loves who. Jane comments that John ***loves*** *Mary. Later, Teresa had forgotten some of the information, so she asked "Who was it that loved Mary?" Her coworker replied "*<u>*It was John that loved Mary.*</u>*"*

In (15b-c), the matrix past refers to the time when Jane commented on Mary's admirer. At that time, in both (15b), and (15c), the exhaustive set that was involved in the act of loving Mary was *John.* However, from the embedded past we can infer that either the loving was at the same time as Jane's comment (simultaneous reading) or sometime before it (back-shifted reading).

This data shows the need for clefts to be evaluated in the same way as any other clause-embedding sentence: with two distinct tenses which interact with each other in predictable ways.

2.4 Double access

For further evidence that cleft matrix and embedded tenses behave like other, widely studied cases of embedded tenses, we can examine present under past cleft constructions. Like other sentences in English, cleft sentences with an embedded present tense under a matrix past tense receive a double access reading.

In languages like English, when a sentence has an embedded present tense under a matrix past tense, the embedded event must occur continuously over an interval that includes both the utterance time and the time of the matrix event[6]. For instance, in (16), Mary must have been continuously pregnant over a period that includes the time at which (16) is uttered as well as Bill's speech time.

(16) Bill said that Mary is pregnant.

Clefts behave the same way. Consider the following sentence and context:

(17) a. It was John that loves Mary.

b. Context:

On Tuesday, several coworkers were gossiping about who loves who. By Wednesday, Teresa had forgotten some of the information, so she asked "Who was it that loves Mary?" Her coworker replied "<u>*It was John that loves Mary.*</u>*"*

[6] If the embedded predicate is neither stative nor stative-like, then it will be interpreted as happening habitually over a time which includes both the matrix event time and the utterance time.

For the underlined sentence in (17b) to be true, John must love Mary on both Tuesday and Wednesday (and continuously between them), mirroring the double access effect seen in (16).

Furthermore, cleft sentences with present tense embedded under past tense like (17a) are ungrammatical, or at least too odd to be accepted, when the matrix copula is pronounced with the previously discussed scalar pitch accent:

(18) *It **was**$_{L*+H}$ John that loves Mary.

This is to be expected, given of the observations discussed so far. The double access reading requires that John love Mary both at some past time, specified by the matrix copula, and at the utterance time. Meanwhile, the L*+H intonation requires that John be the unique Mary-lover at some past time (specified by the matrix copula), but that some other person or set of persons fill that void in the present. Both of these requirements cannot be satisfied in a single reading; thus, the sentence is unacceptable.

2.5 Recap

The above sections have provided evidence that the matrix tense of a cleft construction affects the truth conditions of a cleft sentence. The two tenses in a cleft construction cannot be anaphoric, as they interact in the same way that other embedded tenses of English do, with double access readings and multiple past under past readings. Furthermore, as shown in section 2.2, the matrix tense tells us something about the time at which the pivot is the exhaustive set which answers the question posed by the cleft clause.

3. Topic time

The cleft clause more or less asks a question. For instance, in (1) and (2), the question is "Who died?" The pivot is meant to be an exhaustive answer to that question. (This is, of course, massively over simplifying clefts, and disregards negated clefts and cleft questions. Those points will be discussed in the following section.)

(1) It was John that died.

(2) It is John that died.

If the question is "Who died?" the supplied answer is "John. Exhaustively." But as we discussed with the video game scenario in section 2.2, that exhaustive set can change over time. Loosely, what was proposed above is that the matrix tense points to a time *at which* the pivot is the exhaustive answer to the question.

Recall that the question itself is in the past tense. Thus, in (2), John is, *at the present time*, the exhaustive set of those who died *prior to the present.* In (1), John is, *at some time in the past*, the exhaustive set of those who died *prior to that past time*.[7]

But how is that past time defined? There is no event specified in the sentence that occurred at that exact time which can help us to locate the past point along a time line. Instead, the past point must come from context. Recall the video game scenario:

[7] This assumes a back-shifted reading.

(19) a. It was John that died.

b. Context:

A group of friends are playing a video game. John is the first to die and the game makes a specific sound. Sally asks "Who died?" Another player, Tom, answers, "It was John that died," but just then, Mary's character also dies. Bill chimes in, "It ***was*** *John that died. Now, it's John and Mary that died."*

Imagine the events of this scenario on a timeline.

(20) *Timeline for (19b):*

John dies. Sally asks who died. Mary dies. Bill responds.

↓ ↓ ↓ ↓

<-->

|_________________________________||__________________________>

Exhaustive answer: *John* *John+Mary*

When Bill responds that *it* ***was*** *John that died*, he is claiming that there is some salient time *t* in the past at which John constituted the exhaustive set of people who had died prior to *t*. In this scenario, *t* is the point at which Sally asked "Who died?" The question requests an exhaustive list of the people who had died prior to that point, which is precisely what the cleft delivers.

This contextual provision of a salient time is reminiscent of discussions of topic time (Klein 1994). Consider the following sentences:

(21) a. Timothy was standing by the table.

b. I looked through the window. Timothy was standing by the table.

In (21a), there is no context to frame the sentence, so the past tense can refer to any time prior to the utterance time. In (21b), however, the evaluation time of *was standing* is clearly some interval which overlaps with the time at the speaker looked through the window. The context that the first sentence provides gives the second sentence a *topic time.* The first sentence defined a contextually relevant interval which the following propositions are likely to continue to describe.

Topic times can supply a reference point. In (22a), the first sentence provides a topic time, and the second sentence uses the past perfect to refer to a time which precedes the topic time. The events described in (22a) must occur in the order shown in the timeline in (22b), where the leaving event happens before the topic time set by looking in the window.

(22) a. I looked through the window. Margaret had already left.

b. *Timeline:*

```
<------------------------------------------------------------------------------------------->
         ↑                                  ↑                                  ↑
Margaret leaves.                    Speaker looks                     Utterance time
(event time)                        in window.
                                    (topic time)
```

We can describe the relative times in cleft constructions in a similar way. In the video game scenario, the topic time for the sentence in (19a) is set by Sally asking who had already died. The set of people who had died prior to that point was exhaustively comprised of *John* alone.

(23) *Timeline for (19):*

```
<------------------------------------------------------------------------------------------->
         ↑                   ↑                                ↑                ↑
John dies.           Sally asks who died.             Mary dies.      Utterance time
                          (topic time)
```

Without using clefts, we could describe the temporal relationship shown in (24) with the past perfect:

(24) Sally asked "who died?" John had died.

Just as in (22a), the past perfect refers to a past that occurs prior to the topic time. However, this temporal relationship is shown through aspect, rather than an overt tense. If it were shown through tense alone, we would expect two past tenses in the second sentence of (24), in order to show that the dying event occurred prior to another time (the topic time) which was in turn prior to the utterance time.

The matrix tense in a cleft construction describes the relationship of the topic time to the utterance time. It is at the topic time that the exhaustive set is evaluated.

This holds true for the other clefts sentences besides *'It was John that died.'* For instance, consider the other cleft construction used in the video game scenario:

(25) a. It's John and Mary that died.

b. *Timeline:*

```
<------------------------------------------------------------------------------------------>
         ↑                   ↑                                ↑                ↑
John dies.          Sally asks who died.          Mary dies.     Utterance time
                                                                          (topic time)
```

The matrix present tense communicates that the topic time overlaps with the utterance time. The group of people who had died prior to that point is made up of *John and Mary.*

The following sections of this paper will attempt to provide a formal semantics for the generalizations described here.

4. Büring &Križ's cleft operator

In order to provide an accurate formal meaning for clefts, some sort of cleft operator is necessary. Many papers have sought to provide compositional answers to the enigma of clefts (e.g. Atlas & Levinson 1981, Bolinger 1972, Büring & Križ 2013, Percus 1997, Szabolcsi 1981, Velleman et al 2012), although none of them, to my knowledge, discuss the matrix tense of clefts. Here I will discuss a recently suggested cleft operator from Büring & Križ (2013). In the following section, I show that their cleft operator can be easily adapted to incorporate matrix tense.

As I have done above, Büring and Križ discuss clefts from the point of view of exhaustivity. Clefts assert a proposition, but also claim that this assertion is exhaustive. For instance, (26a) entails both (26b) and (26c).

(26) a. It was Mary that left.

b. Mary left.

c. (Out of the set of relevant people,) only Mary left.

Only sentences are often contrasted with clefts, as they likewise focus a single element and entail that any alternative to that element would not result in a true statement. Like (26a), (27) also entails (26b) and (26c).

(27) Only Mary left.

However, clefts and *only* sentences do not behave identically. Büring and Križ point out that exhaustivity (the (26c) portion of the (26) paradigm) is not asserted by a cleft and is therefore not negated when a cleft sentence is negated (28a); however, this is not the case in *only* sentences, as in (28b).

(28) a. # It wasn't Fred she invited. She also invited Gord.

b. She didn't only invite Fred. She also invited Gord.

(Büring & Križ 2013:2)

This contrast led them to the theory that exhaustivity is presupposed in clefts, and asserted in *only* sentences. However, the exact exhaustivity presupposition is not immediately obvious. As Büring and Križ point out, (29a) and (29b) below do not presuppose (29c).

(29) a. It wasn't Fred she invited.

b. Was it Fred she invited?

c. She invited Fred and no-one else. (Büring & Križ 2013:3)

If we were to assume that a cleft presupposes that the pivot is the exhaustive set that satisfies the description set forth by the cleft clause (for instance that *Fred* was the only invitee), then we would expect the question and negated forms to presuppose the same.

In light of these observations, Büring and Križ posit a presupposition which explains cleft exhaustivity in a different way, which is paraphrased and exemplified below:

(30) PRESUPPOSITION$_{BK}$: The pivot is not a proper part of any maximal entity that the cleft clause describes.

We will return to what it means to be a maximal entity in a moment, but to summarize this definition for now, the pivot cannot be a subpart of a larger set that satisfies the description in the cleft clause. For instance, the presupposition in *It was Fred that was invited* would fail if both *Fred and Mary* were invited, because the pivot, *Fred*, is a subpart of the set comprised of *Fred and Mary*.

Another way of stating this presupposition is that the pivot must either be the exhaustive collection of entities that the cleft clause describes, or it must not be described by the cleft clause at all (as in negated cleft constructions). Think of this concept in terms of set theory. If I claim that set A is not a proper subset of set B, then it must either be identical to B (and therefore be a non-proper subset), or it must not be a subset of B at all.

The following example shows how this concept is applied to clefts:

(31) It was Fred she invited

a. ASSERTION: She invited Fred.

b. PRESUPPOSITION$_{BK}$: Fred is not a proper part of the sum of all people invited by her.

[And therefore is either all or none of the people invited by her.]

(Büring & Križ 2013:4)

The presupposition claims that Fred is either all of the invitees or none of them. When combined with the assertion that *'she invited Fred,'* the conclusion is reached that Fred makes up the exhaustive sum of invitees. Also, since the presupposition itself doesn't claim that Fred was invited, it is compatible with the positive, negative, and question forms of the cleft.

Now, the presupposition definition in (30) refers to maximal entities. This requires first a concept of plurals as entities in their own right. Büring and Križ take plurals to be mereological sums, where the plural made up of entities *a* and *b* is the entity $a \oplus b$, which is also an element of D_e. Therefore, if both *John and Mary* could be described by the cleft clause, we would say that the cleft clause describes the single entity "*John and Mary.*"

Their presupposition definition claims that the pivot is not a proper part of any maximal entity. Given an entity $a \oplus b$, both *a* and *b* are then proper mereological parts of $a \oplus b$ (these relationships are written as $a \sqsubset a \oplus b$ and $b \sqsubset a \oplus b$, respectively). Additionally, $a \oplus b$ is a mereological part of $a \oplus b$, but not a *proper* mereological part ($a \oplus b \sqsubseteq a \oplus b$ but $a \oplus b \not\sqsubset a \oplus b$). More to the point, *John* would be a proper part of the entity *John and Mary*; thus, if *John* were the pivot of a cleft, but the cleft clause actually described *John and Mary*, the cleft would suffer a presupposition failure.

Finally, the presupposition in (30) says that the pivot cannot be a proper part of *any* maximal entity. Büring and Križ claim that each cleft clause has a set of maximal entities rather than a single maximal entity. This accounts for several potential issues (see their paper for more details), including the fact that a maximal entity can be referred to in many ways:

(32) Context: *Peter saw his sisters Mary and Sue, and no one else.*

a. It was Mary and Sue who Peter saw.

b. It was two of his sisters that Peter saw.

c. It was two girls that Peter saw. (Büring and Križ 2013:15)

Any of the pivots in (32a-c) accurately describes the scenario and must therefore be maximal entities. None of them are subparts of one another. Thus, the presupposition for any of the sentences in (32a-c) would be that any given pivot is not a proper part of any of the possible maximal entities (*Mary and Sue, Peter's sisters, two girls, etc.*).

The maximal entities make up a set which Büring and Križ call max(P), where P is the type <e,t> description provided by the cleft clause. (33) gives the formal definition of max(P), as well as a description in prose:

(33) *max(P) definition:*

a. for any $P \in D_{\langle e,t \rangle}$, $\max(P) = \{x \in P \mid \neg\exists y \in P[x \sqsubset y]\}$

b. for any property P of type <e,t>, max(P) is made up of all entities which are not proper mereological parts of any other entity in max(P)

Using max(P), Büring and Križ formalize their presupposition in the following way:

(34) $\text{PRESUPPOSITION}_{\text{BK}} := \lambda P.\lambda z{:}\ \forall x \in \max(P)\ [z \not\sqsubset x]$

Finally, to finish off their cleft operator, Büring and Križ add the assertion that the pivot is described by the cleft clause:

(35) $\text{CLEFT}_{\text{BK}} := \lambda P.\lambda z{:}\ \forall x \in \max(P)\ [z \not\sqsubset x].\ P(z)$

(where for any $P \in D_{\langle e,t \rangle}$, $\max(P) = \{x \in P \mid \neg\exists y \in P[x \sqsubset y]\}$)

5. Incorporating matrix tense

Büring and Križ's approach provides interesting and insightful information about clefts, but it does not consider the tense of the matrix copula. As it stands, Büring and Križ's cleft operator would predict that (36a) and (36b) would be synonymous. For either sentence, the cleft operator would presuppose that Mary constitutes either all or none of the invitees and assert that Mary was invited, leading to the conclusion that Mary and no one else was invited.

(36) a. It is Mary that was invited.

b. It was Mary that was invited.

In this section, I propose a way to incorporate matrix tense and the related truth conditions into Büring and Križ's cleft operator.

5.1 Modifying the cleft operator

In order to incorporate tense into Büring and Križ's system, we must discuss the difference between a cleft with a matrix past tense and a cleft with a matrix present tense with regard to their operator. Let us revisit the video game scenario (repeated from (19b)):

(37) *A group of friends are playing a video game. John is the first to die and the game makes a specific sound. Sally asks "Who died?" Another player, Tom, answers, "It was John that died," but just then, Mary's character also dies. Bill chimes in, "It* ***was*** *John that died. Now, it's John and Mary that died."*

This scenario gives us two clefts:

(38) a. It was John that died.

b. *Timeline:*

```
<------------------------------------------------------------------------------------------->
        ↑                  ↑                             ↑               ↑
  John dies.     Sally asks who died.          Mary dies.    Utterance time
                       (topic time)
```

(39) a. It is John and Mary that died. [8]

b. *Timeline:*

```
<------------------------------------------------------------------------------------------->
        ↑                  ↑                             ↑               ↑
  John dies.     Sally asks who died.          Mary dies.    Utterance time
                                                              (topic time)
```

In both of these sentences, the cleft clause (*P* in Büring and Križ's system) describes all those who had already died by the topic time. In (38), the topic time is at the time of Sally's question (made clear by the past tense on the matrix copula). The only person who died prior to this topic time is John. He makes up the exhaustive group of people who fit the description of P, "those who died in the past" when *the past* refers to the time prior to Sally's question. In a system which does not consider the matrix tense, a past tense within the cleft clause would always be evaluated relative to the utterance time by default. What we ought to have, and what I argued to be necessary in section 2, is a system in which a tense within the cleft clause is evaluated relative to the matrix evaluation time. "P" describes a property which can only be evaluated with the

[8] Note, however, that it is also possible to say (i), as long as the topic time in (i) occurs after Mary's death.
(i) It was John and Mary that died.

addition of another time variable. I therefore propose that P is of type <i,<e,t>> rather than type <e,t> [9] and that it always takes the matrix evaluation time as an argument.

The implications of this shift are surprisingly minimal. P was previously evaluated, albeit somewhat unintentionally, relative to the utterance time. (Based on the presented types, this was presumably at a level of the derivation below the point where P became an argument of the cleft operator). P is now evaluated relative to the matrix evaluation time, rather than the utterance time—a necessary change based on the data presented above. This means that every instance of P that we have dealt with previously will now become P(t)—the same property with an added time argument. What was once max(P) will now become max(P(t)), and so on.

This leads to the simple modification of Büring and Križ's cleft operator that is shown in (41) (as compared to the old operator in (40)). Each instance of P has been replaced with P(t): the cleft clause relative to the matrix evaluation time.

(40) *Büring and Križ's cleft operator:*

$\text{CLEFT}_{\text{BK}} := \lambda P.\lambda z: \forall x \in \max(P)\ [z \not\sqsubset x].\ P(z)$

(where for any $P \in D_{\langle e,t\rangle}$, $\max(P) = \{x \in P \mid \neg\exists y \in P[x \sqsubset y]\}$)

(41) *New cleft operator:*

$\text{CLEFT} := \lambda t.\lambda P.\lambda z: \forall x \in \max(P(t))\ [z \not\sqsubset x].\ P(t)(z)$

(where for any $P \in D_{\langle i,\langle e,t\rangle\rangle}$ and $t \in D_{\langle i\rangle}$, $\max(P(t)) = \{x \in P(t) \mid \neg\exists y \in P(t)[x \sqsubset y]\}$)

[9] Something of type <e,t> takes an entity as an argument and returns a truth value. Something of type <i,<e,t>> takes a time, and returns something of type <e,t>, which then takes an entity and returns a truth value.

The operator in (41) presupposes that the pivot is not a proper mereological part of any maximal entities that satisfy the description of the cleft clause *relative to the time specified by the matrix tense.* It asserts that the pivot satisfies the description of the cleft clause relative to the time specified by the matrix tense. In a positive cleft clause—that is, a cleft clause that is neither negated nor a question—these combine to lead to the conclusion that the pivot is a maximal entity described by the cleft clause relative to the time specified by the matrix tense.

This is merely a formal way of describing what we pointed out in section 2.2. Recall this timeline describing the video game scenario:

(20') *Timeline for (19b):*

```
  John dies.     Sally asks who died.     Mary dies.          Bill responds.
      ↓                  ↓                    ↓                      ↓
<------------------------------------------------------------------------------------------>
```

Including the matrix evaluation time in the cleft operator means that we can point to some point along this timeline, and say "this is when we want to know if it is true that John comprises the exhaustive group of those who have died already." The new operator allows us to define P with respect to the time specified by the matrix tense. For instance, let us apply this operator to (38a) and (39a):

(38a) It was John that died.

(39a) It is John and Mary that died.

In (39a), the modified cleft operator presupposes that the set comprised of *John and Mary* is not a proper subset of the set of the deceased at utterance time. Given the assertion of the cleft operator—that *John and Mary* died prior to the utterance time—we can conclude that, at the time of the utterance, John and Mary are a maximal entity of the set of those who died.

In (38a), the matrix past tense means max(P(t)) is evaluated relative to a time *t* that is prior to the utterance time. Thus, the presupposition supplied by the new cleft operator is that *John* is not a proper subset of those who died prior to *t*, and thus he is either a maximal entity of the set of those who died prior to *t*, or he is not in the set of those who died prior to *t*. In conjunction with the cleft's assertion—that *John died* prior to *t*—we can conclude that *John* is indeed a maximal entity of the set of those who died prior to *t*.

5.2 Further examples

Up until this point, we have only examined cases where the entities in max(P(t)) are expanding over time. Ideally, the cleft operator should also work when the entities in max(P(t)) are shrinking over time, as in (42), or when the set changes entirely, as in (43).

(42) a. It was Tom and Jane who successfully outran the zombies.

b. It is Jane who successfully outran the zombies.

(43) a. It was Hank that received the lowest score.

b. It is Fred that received the lowest score.

In the unfortunate scenario of (42), two people comprised the exhaustive set of those who had outrun zombies. This set diminished over time, leaving only one survivor at the time of the utterance of (42b).

In (42a), the matrix past tense means max(P(t)) is evaluated at a time *t* that is prior to the utterance time. Thus, the presupposition supplied by the new cleft operator is that *Tom and Jane* are not a proper subset of those who survived up to *t*, and thus they are either a maximal entity of the set of those who survived up to *t*, or they are, as a unit, not in the set of those who survived up to *t*. In conjunction with the cleft's assertion—that they survived up to *t*—we can conclude that *Tom*$\oplus$*Jane* is indeed a maximal entity of the set of those who survived up to the past time *t*.

In (42b), the modified cleft operator presupposes that the set comprised of *Jane* is not a proper subset of the set of the survivors at utterance time. Given the assertion of the cleft operator—that *Jane* survived up to the utterance time—we can conclude that, at the time of the utterance, *Jane* is a maximal entity of the set of those who survived.

In (43), students received test scores, and Hank received the lowest one. Sometime after that, the tests were found to be marked incorrectly, and the test scores were recalculated. Fred received the lowest score the second time around.

In (43a), the matrix past tense means max(P) is evaluated at a time *t* that is prior to the utterance time. Thus, the presupposition supplied by the new cleft operator is that *Hank* is not a proper subset of those who received the lowest score at some specific time *t'* prior to *t*, and thus he is either a maximal entity of the set of those who received the lowest score at *t'*, or he is not in the set of those who received the lowest score at *t'*. In conjunction with the cleft's assertion—that Hank received the lowest score at *t'*—we can conclude that *Hank* is indeed a maximal entity of the set of those who received the lowest score at *t'*.

In (43b), the modified cleft operator presupposes that the set comprised of *Fred* is not a proper subset of the set of those who received the lowest score at some *t'* prior to the utterance time. Given the assertion of the cleft operator—that *Hank* received the lowest score at *t'*—we can conclude that, at the time of the utterance, *Hank* is a maximal entity of the set of those who received the lowest score at *t'*.

5.3 Quantificational versus pronominal tenses

For many, the current standard practice is to use quantificational tenses over pronominal ones. While the cleft operator proposed in (41) above correctly represents the relationship between the cleft clause and the matrix tense, readers attempting to use the cleft operator to generate formal truth conditions in conjunction with quantificational tenses will encounter several issues.

The first issue is easily fixed with a slight adaptation to the lexical entries for past and present tense. The theory presented above is dependent on lexical entries for (quantificational) past and present which include reference to topic time. (44) and (45) give these definitions. These past and present tense operators take an index *n* which defines a contextually relevant interval in which the time defined by the tense operator occurs. This interval is the topic time.

(44) $[[PAST_n]]_{c,w} = [\lambda p: p \in D_{<i,t>}. [\lambda t: t \in D_i$ and $n \in Dom(g_c)$.

there is a $t' < t$ such that $t' \subseteq g_c(n)$ and $p(t') = 1]]$

(45) $[[PRES_n]]_{c,w} = [\lambda p: p \in D_{<i,t>}. [\lambda t: t \in D_i$ and $n \in Dom(g_c)$.

there is a $t' = t$ such that $t' \subseteq g_c(n)$ and $p(t') = 1]]$

Even with the tense definitions given above, a derivation of the truth conditions for a cleft construction using quantificational tenses will ultimately fail using our operator. To ensure that all of types match up, P must be of type <e,<i,t>>, rather than type <i,<e,t>>, under the assumption that the pivot is merged with the cleft operator (and therefore the embedded cleft clause) before the matrix tense is merged with either. (This is represented in the tree in (47b).) While not totally necessary, it is somewhat preferable to use a derivational tree which most naturally matches the spoken word order, which involves the matrix tense taking the pivot and the cleft clause in its scope. Fortunately, a vacuous lambda inside the *max* function is all that is necessary to change P from type <i,<e,t>> to type <e,<i,t>>. This change does not result in any difference in meaning.[10]

(46) <u>*New cleft operator (quantificational tenses version):*</u>

$\text{CLEFT} := \lambda t.\lambda P.\lambda z\text{: } \forall x \in max(\lambda y.P(y)(t))\ [z \not\sqsubset x].\ P(z)(t)$

---

[10] Some of the type issues that this theory faces would be fixed if we were to adopt a cleft operator proposed by Velleman et al. (2012) rather than Büring and Križ's. Velleman et al,'s operator takes and argument of type <t> (roughly equivalent to the cleft clause after it has taken the pivot as an argument) and operates on its alternatives. However, their operator is not any more conducive to incorporating matrix tense than Büring and Križ's and it is somewhat more opaque in its relationship to exhaustivity. Therefore, I will continue to use Büring and Križ's cleft operator.

It is worth noting another point made in Velleman et al. (2012). The primary draw of their cleft operator is that it is the exact inverse of the lexical entry that they propose for *only*, establishing a clear relationship between the two constructions. What *only* presupposes, their cleft operator asserts, and what *only* asserts, their cleft operator presupposes. I propose that this is the case for any functional cleft operator which excludes matrix tense (for although sentences with *only* have a covert topic time, as do all sentences, there is not overtly specified topic time). Therefore, we could just easily invert Büring and Križ's cleft operator to create an accurate lexical entry for *only:*

(ii) a. $\text{CLEFT}_{BK} := \lambda P.\lambda z\text{: } \forall x \in max(P)\ [z \not\sqsubset x].\ P(z)$
b. $[[only]] = \lambda P.\lambda z\text{: } P(z).\ \forall x \in max(P)\ [z \not\sqsubset x]$

(iii) She only invited **Fred**.
a. ASSERTION: Fred is either all or none of the people invited by her.
b. PRESUPPOSITION: She invited Fred.

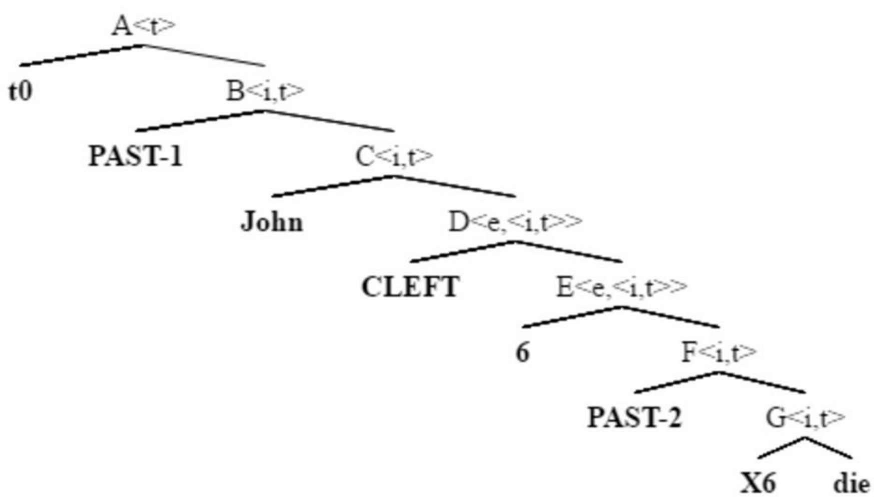
(where for any $P \in D_{<e,<i,t>>}$ and $t \in D_{<i>}$, $max(\lambda y.P(y)(t)) = \{x \in \{\lambda y.P(y)(t)\} \mid \neg\exists v \in \{\lambda y.P(y)(t)\} [x \sqsubset v]\}$)

It is also necessary to assume that, like relative clauses, cleft clauses include a trace and an index for that trace which scopes over the rest of the clause. (Some theories assume that clause-initial wh-words represent this trace, such as *who* in *It was John who died.*) This trace is shown in the tree in (47b).

With all of these changes in hand, example (47) shows the derivation of the cleft sentence *It was John that died.*

(47) a. It was John that died.

b.



c. *Truth conditions:*

When defined:

$[\![A]\!]^{c,w} = [\![\text{PAST}_1]\!]^{c,w}([\![C]\!]^{c,w})([\![t_o]\!]^{c,w})$

$= [\![\text{PAST}_1]\!]^{c,w}([\![D]\!]^{c,w}(j))(t_c)$

$= [\![\textsc{past}_1]\!]^{c,w}(([\![\textsc{cleft}]\!]^{c,w}([\![E]\!]^{c,w})(j\,))(t_c)$

$= [\![\textsc{past}_1]\!]^{c,w}(([\![\textsc{cleft}]\!]^{c,w}(\lambda x.[\![F]\!]^{c,w,g[6\rightarrow x]})(j\,))(t_c)$

$= [\![\textsc{past}_1]\!]^{c,w}(([\![\textsc{cleft}]\!]^{c,w}(\lambda x.\ [\![\textsc{past}_2]\!]^{c,w}([\![G]\!]^{c,w,g[6\rightarrow x]}))(j\,))(t_c)$

$= [\![\textsc{past}_1]\!]^{c,w}(([\![\textsc{cleft}]\!]^{c,w}(\lambda x.\ [\![\textsc{past}_2]\!]^{c,w}(\lambda t.\ x \text{ dies at } t))(j\,))(t_c)$

$= 1$ iff $\exists t'<t_c$ such that $t' \subseteq g_c(1)$ and

$[\![\textsc{cleft}]\!]^{c,w}(\lambda x.[\![\textsc{past}_2]\!]^{c,w}(\lambda t.\ x \text{ dies at } t))(j)(t')=1$

$= 1$ iff $\exists t' < t_c$ such that $t' \subseteq g_c(1)$ and $[\lambda t.\lambda P.\lambda z{:}\ \forall x \in \max(\lambda y.P(y)(t))\ [z \not\sqsubset x].$

$P(z)(t)]\ (\lambda x.\ [\![\textsc{past}_2]\!]^{c,w}(\lambda t.\ x \text{ dies at } t))(j\,)(t')=1$

$= 1$ iff $\exists t'<t_c$ such that $t' \subseteq g_c(1)$ and $\forall x \in \max(\lambda y.[\lambda x.\ [\![\textsc{past}_2]\!]^{c,w}$

$(\lambda t.\ x \text{ dies at } t)](y)(t'))\ [j \not\sqsubset x]=1$ and

$[\lambda x.\ [\![\textsc{past}_2]\!]^{c,w}(\lambda t.\ x \text{ dies at } t)](\,j)(t') =1$

$= 1$ iff $\exists t' < t_c$ such that $t' \subseteq g_c(1)$ and $\exists t < t'$ such that $t \subseteq g_c(2)$ and

$\forall y \in \max(\lambda y.\ y \text{ dies at } t)\ [j \not\sqsubset y] =1$ and $[j \text{ dies at } t] =1$

d. *Idealized timeline:*

```
      (embedded tense)        (matrix tense)
      |------gc(2)------|      |-------gc(1)------|
<---------------------------------------------------------------------------------->
             ↑                        ↑                        ↑
             t                        t'                       tc
      John dies.               topic time              utterance time
```

(47d) depicts the ideal relationships between times. *t'* represents the topic time specified by the matrix tense and *t* represents the event time specified by the embedded tense.

The truth conditions in (47c) claim that the sentence is true if and only if there is a time *t'* prior to the utterance time which is a subset of the contextually relevant interval $g_c(1)$ and there is a time *t* prior to *t'* which is a subset of the contextually relevant interval $g_c(2)$ and John is not a proper mereological part of any maximal entity that fits the description of dying at *t* AND there is a time *t'* prior to the utterance time which is a subset of the contextually relevant interval $g_c(1)$ and there is a time *t* prior to *t'* which is a subset of the contextually relevant interval $g_c(2)$ and John dies at *t*.

An astute reader may notice that this derivation is slightly problematic. As the presupposition and the assertion both need to be under the scope of the same existential operators which claim the existence of *t* and *t'*, the presupposition here is considered part of the truth conditions. If we treat the presupposition as one normally would, we run into the issue that some $t<UT$ and some $t'<t$ are defined for both the presupposition and the assertion, but there is no requirement that the *t* and *t'* used for the presupposition be at the same times as the *t* and *t'* used for the assertion. While using quantificational tenses, there seems to be no way to guarantee that the times accessed by the presupposition are the same as the times accessed by the assertion.

Fortunately, pronominal tenses can aid us here. Pronominal tenses, originally suggested in Partee (1973), treat tenses as pronouns; therefore, the same times will be accessed whenever the pronoun is used. This means that the same times will be accessed in both the presupposition and the assertion.

Additionally, there is no need to use vacuous lambda extractions in the pronominal tense system, so we can return to the original (tensed) cleft operator proposed in (41):

(41) CLEFT := $\lambda t.\lambda P.\lambda z$: $\forall x \in \max(P(t))\ [z \not\sqsubset x]$. $P(t)(z)$

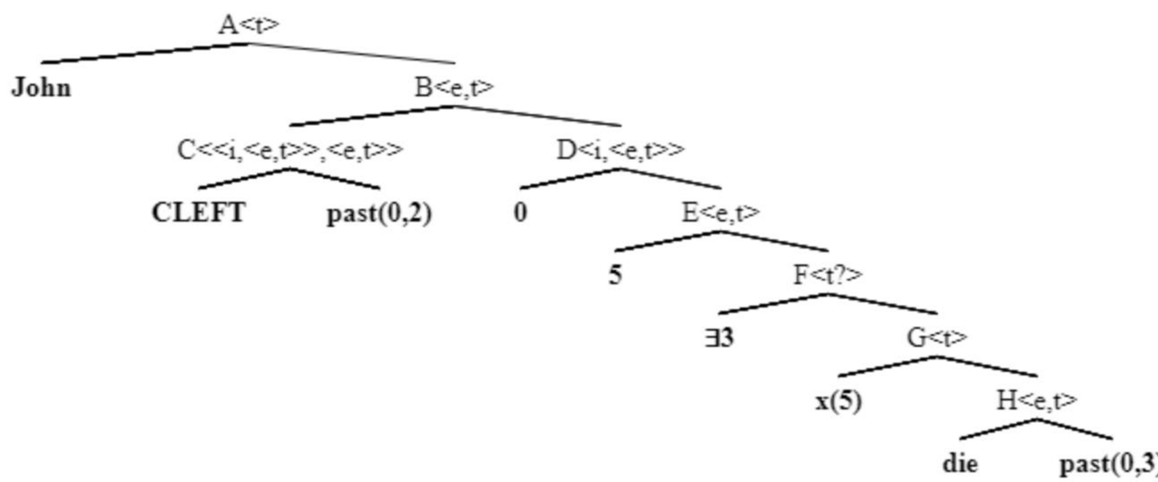
(where for any $P \in D_{<i,<e,t>>}$ and $t \in D_{<i>}$, $\max(P(t)) = \{x \in P(t) \mid \neg\exists y \in P(t)[x \sqsubset y]\}$)

(48) shows how pronominal tenses are used in the derivation of the truth conditions for a cleft construction:

(48) a. It was John that died.

b. [John CLEFT-$past_{0,2}$ λ_0 [$\exists_3$ die-$past_{0,3}$]]

c.



d. *Truth conditions:*

When defined:

$\llbracket A \rrbracket^{c,w,g} = \llbracket B \rrbracket^{c,w,g}(\textit{john})$

$= \llbracket C \rrbracket^{c,w,g}(\llbracket D \rrbracket^{c,w,g})\ (\textit{john})$

$= \llbracket \text{CLEFT} \rrbracket^{c,w,g}(\llbracket \textit{past}_{0,2} \rrbracket^{c,w,g})(\ \llbracket D \rrbracket^{c,w,g})(\textit{john})$

$= \llbracket \text{CLEFT} \rrbracket^{c,w,g}(g(2))(\lambda t'.\llbracket E \rrbracket^{c,w,g(0\rightarrow t')})(\textit{john})$, where $g(2)<UT$

$= \llbracket \text{CLEFT} \rrbracket^{c,w,g}(g(2))(\lambda t'.\ \lambda x.\ \llbracket F \rrbracket^{c,w,g(0\rightarrow t',5\rightarrow x)})(\textit{john})$, where $g(2)<UT$

$= \llbracket \text{CLEFT} \rrbracket^{c,w,g}(g(2))(\lambda t'.\ \lambda x.\ \exists t''.\ \llbracket G \rrbracket^{c,w,g(0\rightarrow t',5\rightarrow x,3\rightarrow t'')})(\textit{john})$, where $g(2)<UT$

$= \llbracket \text{CLEFT} \rrbracket^{c,w,g}(g(2))(\lambda t'.\ \lambda x.\ \exists t''.\ \llbracket H \rrbracket^{c,w,g(0\rightarrow t',5\rightarrow x,3\rightarrow t'')}(x))(\textit{john})$, where $g(2)<UT$

$= \llbracket \text{CLEFT} \rrbracket^{c,w,g}(g(2))(\lambda t'.\ \lambda x.\exists t''.\ x \text{ dies at } \llbracket \textit{past}_{0,3} \rrbracket^{c,w,g(0\rightarrow t',5\rightarrow x,3\rightarrow t'')})(\textit{john})$, where

$g(2) < UT$

$= [\![\text{CLEFT}]\!]^{c,w,g}(g(2))(\lambda t'.\ \lambda x.\ \exists t''.\ x \text{ dies at } t'', \text{ where } t''<t')(\textit{john}), \text{ where } g(2)<UT$

$= [\![\text{CLEFT}]\!]^{c,w,g}(g(2))(\lambda t'.\ \lambda x.\ \exists t''<t'.\ x \text{ dies at } t'')(\textit{john}), \text{ where } g(2)<UT$

$= [\lambda t.\lambda P.\lambda z\!: \forall x \in \max(P(t))\ [z \not\sqsubset x].\ P(z)(t)]\ (g(2))\ (\lambda t'.\ \lambda x.\ \exists t''<t'.\ x \text{ dies at } t'')$

$(\textit{john}), \text{ where } g(2)<UT$

$= 1 \text{ iff } \forall x \in \max([\lambda t'.\ \lambda x.\ \exists t''<t'.\ x \text{ dies at } t''](g(2)))\ [\textit{john} \not\sqsubset x] = 1$

$\text{and } [\lambda t'.\ \lambda x.\ \exists t''<t'.\ x \text{ dies at } t'']\ (g(2))(\textit{john}) = 1, \text{ where } g(2)<UT$

$= 1 \text{ iff } \forall x \in \max(\lambda x.\ \exists t''<g(2).\ x \text{ dies at } t'')\ [\textit{john} \not\sqsubset x] = 1 \text{ and}$

$[\lambda x.\ \exists t''<g(2).\ x \text{ dies at } t''](\textit{john}) = 1, \text{ where } g(2)<UT$

The truth conditions in (48d) claim that the sentence in (48a) is true if and only iff $g(2)<UT$, *John* is not a proper mereological part of any maximal entity that fits the description of dying prior to g(2), and *John* dies prior to g(2). This simplifies as the (correct) conclusion that the sentence is true if and only if *John* is a maximal entity fitting the description of dying prior to g(2), which is in turn prior to the utterance time.

6. Implications

This paper proposes that an overt tense in an English construction gives an evaluation time for a property defined by a cleft operator, namely the exhaustive set specified by the cleft clause. This is not common in English, where most tenses give an evaluation time for predicates.

But what are predicates but properties? Take a simple sentence, like (49).

(49) John walked.

This sentence tells us that at some time prior to the utterance, John was a member of the set defined by the property of being a walker. This set of walkers is different depending on the time at which the property is evaluated.

I propose that not only predicates, but all properties take a time argument. We know that the properties defined by verbal predicates do, and a number of papers propose the concept that nouns are interpreted relative to a time variable as well (see Enç 1981 and Musan 1995, among others). The data presented in this paper provides evidence that the set described by the relative clause-like element of a cleft construction is also sensitive to tense. Unlike the tenses which act on English nouns, the tense which acts on these cleft clauses is overt, which will ideally help with future theories on the temporal evaluation. I hope that this paper serves as a useful piece of the puzzle of tensed property evaluation.

7. Conclusion

By modifying Büring and Križ's cleft operator, we have managed to account for the fact that the matrix copula tense in cleft constructions contributes an overt topic time to the construction. This allows us to account for the truth conditions for clefts with an accuracy that was not allowed previously. Furthermore, it provided data in favor of pronominal tenses over quantificational ones, as it showed that quantificational tenses are not capable of being accessed equally from both presuppositions and assertions.

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