Tense in Cleft Constructions

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1. Introduction

- There are a number of accounts of clefts in existence, but none of them discuss the tense of the matrix copula. Thus, in any of these theories, (1) and (2) would have the same formal meaning:
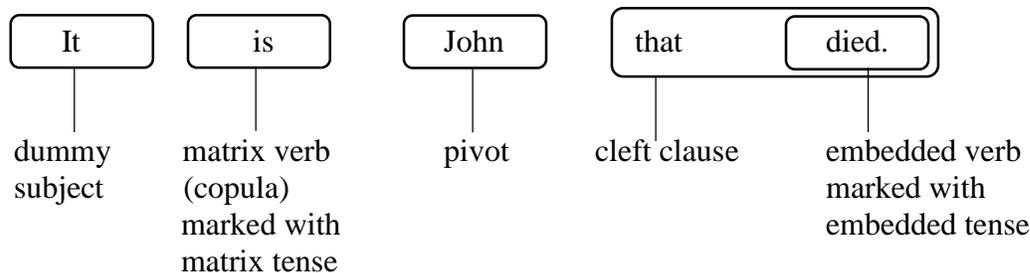
(1)   It was John that died.
(2)   It is John that died.

- Goals:
    - Discuss the meaning of the matrix tense
    - Incorporate the matrix tense into an established cleft operator

2. Data

(3) *Terminology:*

It	is	John	that	died.
dummy subject	matrix verb (copula) marked with matrix tense	pivot	cleft clause	embedded verb marked with embedded tense

2.1 Interchangeability

- When the embedded tense of a cleft construction is PAST, matrix PAST and matrix PRES seem more or less interchangeable:

(4)   a.   A: Who died?
               B: It's John that died.[1,2]

        b.   A: Who died?
               B: It was John that died.

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

- Other sentences differentiated only by a PAST/PRES difference are not interchangeable:
  - '*John loves Mary*' vs. '*John loved Mary*'
  - Why? There are situations where one can be uttered, but the other cannot.

- Are there situations for (1) and (2), where one can be uttered and the other cannot?

- Yes:

(5)   a.   Context: *A group of friends are playing a video game. John is the first to die. Someone 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."*

        b.   At the end of the context:
                 - Can say: It was John that died.   ✓
                 - Cannot say: It's John that died.   ✗

- Thus '*It was…*' clefts and '*It is…*' clefts are not interchangeable in every situation.

2.2 Scalar focus on the matrix tense

- It is even easier to get a difference between (1) and (2) with the help of a scalar pitch accent on the copula: (L*+H).[3]

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

- Hold on. What is this pitch accent?

(7)   A: How did the students do on the test?
        B: Well, **some**$_{L*+H}$ of the students passed.
            (implying: *Not all of the students passed.*)

- Intonation seems draw attention to implicature, as if the speaker's main point in 7B is that not all of the students passed. This intonation can even force a scalar implicature where one might otherwise not occur:

(8)   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 that raise.

        b.   Principle: Did some of your students pass the test?
                Teacher 1: Yes, some of my students passed the test.   ✗ *implicature*

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[3] L*+H is written using ToBI. It means that the stressed syllable is given a low pitch and the following syllable is given a high pitch.

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 L*+H on copulas:[4]

(9)   A: Josephine is a teacher, right?
      B: She **was**$_{L*+H}$ a teacher.
         (implying: *She isn't a teacher anymore.*)

- 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.[5]

- Scalar implicature in (9B):
  o Without L*+H: Josephine is no longer a teacher.
  o With L*+H: Josephine is no longer a teacher *and* some other predicate can describe Josephine's professional status in the present (*be a lawyer, be a doctor, be unemployed*, etc.)

- Consider this effect in predicates which exhibit lifetime effects[6]:

(10) a. Gregory was from America.
      b. Gregory had blue eyes.   (Musan 1997: 271-2)

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

- Implicature for *be from America* (10a/11a):
  o Without L*+H: Gregory is no longer considered to be from America, due to his death.
  o With L*+H: Gregory is no longer considered to be from America, because he is from somewhere else!

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[4] 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!*).

[5] Alshuler & 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).

[6] These individual-level predicates, when in the past tense, imply that the subject is dead in the present. Compare this with stage-level predicates, which do not imply anything about the current life status of the subject:
     (i)   a. Gregory was happy.
             b. Gregory had a cold.

- - Native speakers confronted with (11a) will give all sorts of explanations: *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 they will not assume that Gregory is dead.

- Very cool. But how does it apply to clefts?

(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."*

- Judgements from context above seem to be clear for more speakers with the L*+H intonation pattern.

- Recall that in (9) and (11), the scalar pitch accent on the past tense copula meant that the predicate was true in the past (entailment) and that some other predicate which could plausibly be a replacement for it was true in the present (implicature).

- So what is the equivalent implicature in (12a)?
    - Previous theories have shown that the cleft construction tells us that John constitutes the exhaustive group of those who had died. (More in §3)
    - (12a) entails that John constituted the exhaustive group *from the perspective of some past point.*
    - (12a) 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* (in this case, John and Mary).

2.3 Multiple PAST under PAST readings

- Above evidence aside, it is tempting to claim that tenses in cleft constructions are anaphoric—that there is only one tense, which is optionally accessed from multiple locations in the sentence.
    - This would imply that in past under past cleft sentences both past tenses are referring to the same time.
    - However, we can show that this is not the case.

- English sentences with a matrix PAST and an embedded PAST have two interpretations.

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

   b. Simultaneous reading: *Tom claimed, "Jane loves me."*

   b. Back-shifted reading: *Tom claimed, "Jane loved me."*

- Clefts work in same way:

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

   b. 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 "It was John that loved Mary."*

   c. 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 "It was John that loved Mary."*

2.4 Double access

- In English, when a sentence has an embedded PRES under a matrix PAST, the embedded event must occur continuously over an interval that includes both the utterance time and the time of the matrix event[7]:

(15) Bill said that Mary is pregnant.

- Clefts behave the same way:

(16) 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 "It was John that loves Mary."

- For the underlined sentence to be true, John must love Mary on both Tuesday and Wednesday (and continuously between them).

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[7] 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.

- Between multiple PAST under PAST readings, and double access readings, we can see that clefts ought 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.

3. Büring &Križ's (2013) cleft operator

- Many papers have sought to provide compositional answers to the enigma of clefts (e.g. Atlas & Levinson 1981, Bolinger 1972, Percus 1997, Szabolcsi 1981, Velleman et al 2012). Here I adopt the cleft operator proposed in Büring & Križ 2013. Their approach is described below:

- Clefts assert a proposition, but also claim that this assertion is exhaustive. For instance, (17a) entails both (17b) and (17c).

(17) a. It was Mary that left.
b. Mary left.
c. (Out of the set of relevant people,) only Mary left.

- *Only* sentences likewise focus a single element (here: Mary) and entail that any alternative to that element would not result in a true statement. Like (17a), (18) also entails (17b) and (17c).

(18) Only Mary left.

- Büring and Križ point out that exhaustivity is not asserted by a cleft and is therefore not negated when a cleft sentence is negated, as in (19a). However, when an *only* sentence, is negated, as in (19b), the exhaustivity *is* negated.

(19) 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)

- Conclusion: Exhaustivity is presupposed in clefts, and asserted in *only* sentences.

- However, the exact exhaustivity presupposition is not immediately obvious. Our immediate intuition is that an exhaustivity presupposition for *It was Fred she invited* would be something like (20c). However, the negated and question versions of the cleft do not presuppose (c).

(20) 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)

- Büring and Križ posit a presupposition which explains cleft exhaustivity in a different way:

(21) PRESUPPOSITION$_{BK}$: The pivot is not a proper part of the sum of individuals that the cleft clause describes.

- This means that the pivot (in (22), *Fred*) is either the exhaustive sum of the individuals that the cleft clause (*she invited*) describes, or the pivot is not a part of the set of individuals that the cleft clause describes.

(22)   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)

- When the presupposition that Fred is either all of the invitees or none of them is combined with the assertion that *'she invited Fred,'* the conclusion is reached that Fred makes up the exhaustive sum of invitees.

- Since the presupposition itself doesn't claim that Fred was invited, it is compatible with the positive, negative, and question forms of the cleft.

- Their presupposition refers to "the sum of individuals that the cleft clause describes." They formalize this as the set *max(P)*: [8]

(23)   *max(P) definition:* for any $P \in D_{<e,t>}$, $max(P) = \{x \in P \mid \neg \exists y \in P[x \sqsubset y]\}$

        (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))

- Büring and Križ's CLEFT operator:

(24)   CLEFT$_{BK}$:= $\lambda P.\lambda z: \forall x \in max(P) [z \sqsubset\!\!\!\!/\, x]. P(z)$
        (where for any $P \in D_{<e,t>}$, $max(P) = \{x \in P \mid \neg \exists y \in P[x \sqsubset y]\}$)

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[8] This operator assumes plurals to be mereological sums:
        a. $X \sqcup Y$ is the mereological sum of X and Y
        b. $X \sqsubseteq Y$, 'X is a mereological part of Y', iff $X \sqcup Y = Y$
        c. $X \sqsubset Y$, 'X is a proper mereological part of Y', iff $X \sqsubseteq Y$ and not $Y \sqsubseteq X$
        d. $X \sqsubset\!\!\!\!/\, Y$ if not $X \sqsubset Y$

4. Incorporating matrix tense

- Using Büring and Križ's cleft operator, the truth conditions for the following two sentences would be identical:

(25) a. It is Mary that was invited.
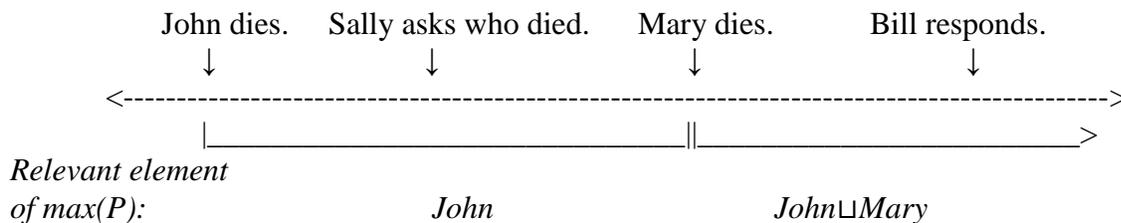   b. It was Mary that was invited.

- For either sentence, their 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.

- Reconsider the video game example:

(26) *A group of friends are playing a video game. John is the first to die. Someone 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."*

- When Tom answered the question, out of the relevant group of people only John had died.
    - At that time, John was an element of max(P).
    - Once Mary died, John was not an element of max(P).
    - From her death to present, the entity *John⊔Mary* is an element of max(P).

(27) *Timeline:*

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

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        John dies.    Sally asks who died.    Mary dies.         Bill responds.
           ↓                   ↓                 ↓                    ↓
  <--------------------------------------------------------------------------------------------->
           |_____||_____>
Relevant element
of max(P):                     John                       John⊔Mary
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- Over time, the set of people who have died changed. Thus max(P), which denoted the sum of people who have died, must change as well.

- *John* 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 the original question of "who died?"

- *John⊔Mary* 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 the utterance time.

- Thus, P is evaluated *relative to the time denoted by the matrix tense.*
  - Every instance of P should actually be P(t):

(28)   *New cleft operator[9]:*
  CLEFT := $\lambda t.\lambda P.\lambda z: \forall x \in \max(P(t))\ [z \sqsubset / x].\ P(t)(z)$
  (where for any $P \in D_{<i,<e,t>>}$ and $t \in D_{<i>}$, $\max(P(t)) = \{x \in P(t) \mid \neg\exists y \in P(t)[x \sqsubset y]\}$)

- Reconsider these examples:

(29) It is John and Mary that died.

(30) It was John that died.

- In (29), with the modified cleft operator:
  - Presupposition: that the set comprised of *John and Mary* is not a proper subset of the set of the deceased at utterance time.
  - Assertion: that *John and Mary* died prior to the utterance time
  - Conclusion: at the time of the utterance, John and Mary are a maximal entity of the set of those who died

- In (30), with the modified cleft operator:
  - The matrix past tense means $\max(P(t))$ is evaluated relative to a time *t* that is prior to the utterance time
  - Presupposition: *John* is not a proper subset of those who died prior to *t*
    - 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*
  - Assertion: *John died* prior to *t*
  - Conclusion: *John* is indeed a maximal entity of the set of those who died prior to *t*

5. Conclusion

- The matrix tense of a cleft construction interacts with the embedded tense in predictable ways, and causes a difference in meaning; therefore, we should include it in the truth conditions for the construction.

- The matrix tense of cleft constructions gives us a time from which to evaluate the property described by the cleft clause.

- This tense can be integrated into Büring & Križ's (2013) cleft operator by assuming that the cleft clause's property *P* is interpreted relative to the matrix time *t*.

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[9] See appendix for formal calculation of truth conditions for the back-shifted reading of (30) using the new cleft operator.

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Appendix A:

Formal truth conditions for the back-shifted reading of *It's John that died*:

(31) a. [John CLEFT-*past*$_{0,2}$ λ_0 [$\exists_3$ die-*past*$_{0,3}$]]

   b. *Derivational tree:*
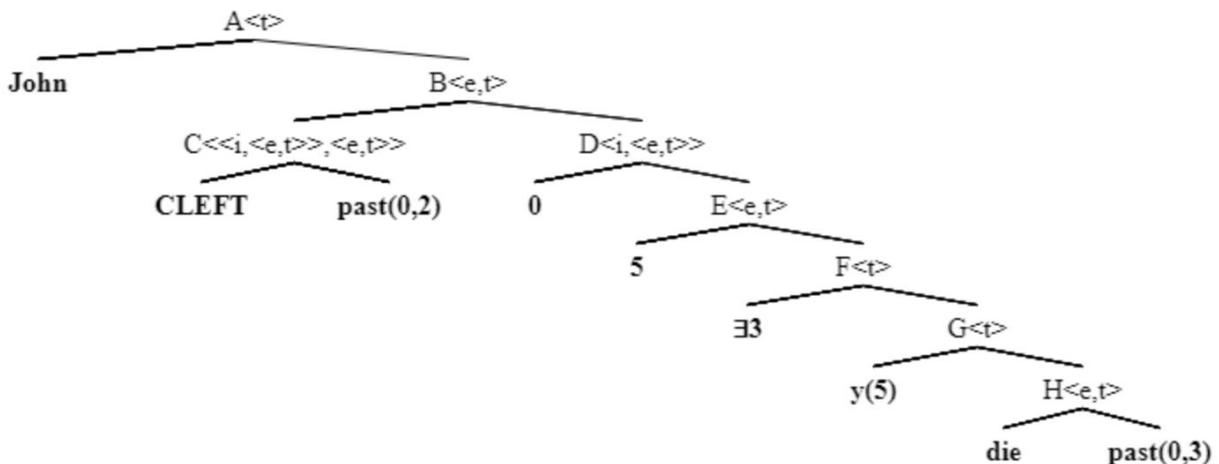
c. *Formal truth conditions:*

When defined:
$[\![A]\!]^{c,g}$ = $[\![B]\!]^{c,g}(john)$

= $[\![C]\!]^{c,g}([\![D]\!]^{c,g})$ $(john)$

= $[\![\text{CLEFT}]\!]^{c,g}([\![past_{0,2}]\!]^{c,g})($ $[\![D]\!]^{c,g})(john)$

= $[\![\text{CLEFT}]\!]^{c,g}(g(2))(\lambda t'.[\![E]\!]^{c,g(0\to t')})(john)$, where $g(2)<g(0)$

= $[\![\text{CLEFT}]\!]^{c,g}(g(2))(\lambda t'. \lambda y. [\![F]\!]^{c,g(0\to t',5\to y)})(john)$, where $g(2)<g(0)$

= $[\![\text{CLEFT}]\!]^{c,g}(g(2))(\lambda t'. \lambda y. \exists t''. [\![G]\!]^{c,g(0\to t',5\to y,3\to t'')})(john)$, where $g(2)<g(0)$

= $[\![\text{CLEFT}]\!]^{c,g}(g(2))(\lambda t'. \lambda y. \exists t''. [\![H]\!]^{c,g(0\to t',5\to y,3\to t'')}(x))(john)$, where $g(2)<g(0)$

= $[\![\text{CLEFT}]\!]^{c,g}(g(2))(\lambda t'. \lambda y.\exists t''.$ y dies at $[\![past_{0,3}]\!]^{c,g(0\to t',5\to y,3\to t'')})(john)$, where $g(2)<g(0)$

= $[\![\text{CLEFT}]\!]^{c,g}(g(2))(\lambda t'. \lambda y. \exists t''.$ y dies at t'', where $t''<t')(john)$, where $g(2)<g(0)$

= $[\![\text{CLEFT}]\!]^{c,g}(g(2))(\lambda t'. \lambda y. \exists t''<t'.$ y dies at t'')$(john)$, where $g(2)<g(0)$

= $[\lambda t.\lambda P.\lambda z: \forall x \in \max(P(t))$ $[z \,\square/\,x]. P(t)(z)]$ $(g(2))$ $(\lambda t'. \lambda y. \exists t''<t'.$ y dies at t'')
$(john)$, where $g(2)<g(0)$

= $[\lambda z: \forall x \in \max([\lambda y. \exists t''<g(2).$ y dies at t'']) $[z \,\square/\,x]. [\lambda y. \exists t''<g(2).$ y dies at t''](z)]
$(john)$, where $g(2)<g(0)$

$[\![A]\!]^{c,g}$ is defined only if:
$\forall x \in \max(\lambda y. \exists t''<g(2).$ y dies at t'') $[john \,\square/\,x]$, where $g(2)<g(0)$

$[\![A]\!]^{c,g} = 1$ iff
$\exists t''<g(2).$ *john* dies at t'', where $g(2)<g(0)$

Appendix B:

Further examples where the entities in max(P(t)) are shrinking over time, as in (32), or when the set changes entirely, as in (33).

(32)   a. It was Tom and Jane who successfully outran the zombies.
         b. It is Jane who successfully outran the zombies.

(33)   a. It was Hank that received the lowest score.
         b. It is Fred that received the lowest score.

- In (32a), 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⊔Jane* is indeed a maximal entity of the set of those who survived up to the past time *t*.

- In (32b), 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 (33), 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'.