

Finding Arguments for Pseudo-Resultative Predicates*

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1 Introduction

1.1 The Phenomenon

- In sentences such as (1), there is a sentence-final modifier which pertains to a result which is brought about by the event expressed by the predicate:

(1) Mary braided her hair **tight**. (Pseudo-Resultative)

- These sentences at least superficially resemble resultatives, such as that in (2):

(2) Susan hammered the metal **flat**. (Resultative)

- However, in this talk, I will argue that predicates like *tight* in (1) are ‘pseudo-resultatives’.
- In (2), the resultative predicate modifies the direct object.
 - The metal becomes flat as a result of Susan’s hammering it.
- In (1), the predicate does not modify the direct object.
 - Mary’s hair does not become tight as a result of her braiding it.
 - There is a tight braid created as a result of the event.

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1.2 The Problem

- In (1), there is no overt DP argument in the syntax for *tight* to modify.
- The adjective seems to modify something denoted by the verb, but not the event.
- A puzzle for the syntax/semantics interface - what argument are such modifiers modifying?
- This puzzle has not been previously observed in the literature.
- Examples like (1) have been analyzed as resultatives (sec. 2) or as adverbs (sec. 3 and 4).

1.3 The Proposal

- Pseudo-resultatives form a distinct category of predicate, apart from resultative adjectives.
- Pseudo-resultatives are dependent upon elements unique to the **semantic** decomposition of ‘**creation inchoatives**’, a subclass of inchoative verbs.
- Such verbs are derived from a root which denotes a created individual.
- This root is available for modification by the pseudo-resultative.
- This semantic decomposition in turn motivates a parallel **syntactic** decomposition which is necessary to provide a compositional account.

1.4 Significance

- Supports syntactic decomposition of the type proposed in the work of Hale and Keyser (1993, 2002) and Marantz (1997).
- Provides an explicit compositional account for a case of verbal lexical decomposition.
- Contributes to the understanding of the syntactic and semantic constraints on such structures.

1.5 Outline of the Talk

- Pseudo-resultatives are distinct from resultative adjectives
- Pseudo-resultatives are not predicates of events
- Pseudo-resultatives are not ‘resultative adverbs’ in the sense of Geuder (2000)
- Semantic decomposition of creation inchoatives
- Syntax and compositional semantics of creation inchoatives
- Compositional account for pseudo-resultatives with creation inchoatives
- Additional evidence supporting the proposal
- Open questions

2 Pseudo-Resultatives Are Not Resultatives

- Despite surface similarity, pseudo-resultatives are not syntactically or semantically equivalent to resultatives.
- All of the sentences in (3) are pseudo-resultatives:
 - (3) a. Mary braided her hair tight. \nrightarrow Mary's hair is tight.
 - b. She tied her shoelaces tight. \nrightarrow Her shoelaces are tight.
 - c. Mary piled the cushions high. \nrightarrow The cushions are high.
 - d. She chopped the parsley fine. \nrightarrow The parsley is fine.
 - e. She sliced the bread thin. \nrightarrow The bread is thin.
- The adjectives do not modify the DP objects of the verbs.

2.1 Lack of Event Homomorphism

- There is semantic evidence for a distinction between resultatives and pseudo-resultatives beyond the non-modification of the direct object.
- For one, the paraphrases available for one do not seem to carry over to the other:
 - (4) a. She hammered the metal flat. \approx She hammered until the metal was flat.
 - (5) a. Mary braided her hair tight. \neq Mary braided until her hair/the braid was tight.
 - b. She tied her shoelaces tight. \neq She tied until her shoelaces/the 'ties' were tight.
 - c. She sliced the bread thin. \neq She sliced until the bread/the slice was thin.
- That the paraphrase in (4a) is possible relates to Wechsler (2005)'s generalization that resultatives are subject to a constraint on event homomorphism, which constrains the relation between the theme and the resultative predicate.
- Pseudo-resultatives may violate this constraint, hence the lack of similar paraphrases in (5).

2.2 Morphological Distinctions

- Resultatives in Finnish bear translative case, with the suffix *-ksi*:
 - (6) a. Mari joi teekannu-n tyhjä-**ksi**.
 Mari drank teapot-ACC empty-TRANSL
 'Mari drank the teapot empty.'
 - b. Mari hakkasi metalli-n litteä-**ksi**.
 Mari.NOM hammered-ACC metal-ACC flat-TRANS
 'Mari hammered the metal flat.'

- However, Finnish marks pseudo-resultatives with illative case (7a), not translative case (8).

- (7) a. Mari leti-tt-i hiuksensa tiukka-**an**.
 Mari braid-caus-past hair.ACC.POSS tight-ILL
 ‘Mari braided her hair tight.’
- b. Mari sitoï kengännauhansa tiukka-**an**.
 Mari tied shoelaces.ACC.POSS tight-ILL
 ‘Mari tied his shoelaces tight.’
- (8) a. *Mari leti-tt-i hiuksensa tiuka-**ksi**.
 Mari braid-caus-past hair.ACC.POSS tight-TRANS
 ‘Mari braided her hair tight.’
- b. *Jussi sitoï kengännauhansa tiuko-i-**ksi**.
 Jussi tied shoelaces.ACC.POSS tight-PL-TRANS
 ‘Jussi tied his shoelaces tight.’

2.3 Crosslinguistic Availability

Further evidence that resultatives and pseudo-resultatives are distinct comes from Romance. For example, Catalan does not have resultatives of the canonical type (Mateu 2000, ex.4):

- (9) a. *El cambrer fregà els plats secs.
 The waiter wiped the dishes dry-pl
 ‘The waiter wiped the dishes dry.’
- b. *El gos bordà els pollastres desperts.
 The dog barked the chickens awake-pl
 ‘The dog barked the chickens awake.’
- c. *El riu es congelà sòlid.
 The river ES-REFL froze solid-sg
 ‘The river froze solid.’

However, there are pseudo-resultatives, as in (10) (see also section 4.1) (Mateu 2000, fn.21)¹:

- (10) a. M’ he lligat els cordons de les sabates ben estrets.
 Me-dat have-1st tied the laces of the shoes very tight-pl
 ‘I tied the laces of my shoes very tight.’
- b. Talla-les menudes.
 Cut-them fine-pl
 ‘Cut them fine (i.e., into fine pieces).’

¹Mateu (2000) calls these examples ‘fake resultatives’. However, he does not provide an analysis for these cases, and considers them to be adverbial.

3 Pseudo-Resultatives are not ‘Simply’ Adverbs (i.e., Predicates of Events)

- For some speakers, both (11a) and (11b) are possible in English.²:
 - (11) a. Mary braided her hair tight.
 - b. Mary braided her hair tightly.
- This fact has led some (Washio 1997, Kratzer to appear) to suggest that *tight* in (11a) is an adverb as it is in (11b).
- That these are actually equivalent is made more plausible by the facts that:
 - adverb morphology in English can be ‘omitted’ (descriptively speaking) in certain environments (see section 8.1)
 - adverbs and adjectives of certain classes bear identical (lack of) morphology in some languages (e.g. German)
- However, to claim that these are the same still does not provide one with a solution to the compositionality problem.
- Even if these can appear with adverb morphology, they are not predicates of events.
- While manner adverbs like *quick* may be analyzable as neo-Davidsonian predicates of events (Davidson 1967, Parsons 1990), *quick(e)*, what would it mean for an event to be ‘tight’ or ‘fine’?

4 Pseudo-Resultatives are not ‘Resultative Adverbs’

- Geuder (2000) presents an account for what he calls ‘resultative adverbs’, which are also predicates which modify a result without modifying the direct object.
- However, his analysis does not account for the set of data under consideration here.
- Pseudo-resultatives with adjectival morphology seem to be more restricted than these resultative adverbs in several respects.
- Geuder does consider the case in (12), which does have an adjectival ‘variant’.³:

(12) She sliced the bread thinly.

- However, the other cases he considers in (13) do not allow an adjectival form (14):

²Some speakers only accept the ‘adjectival’ form in post-verbal position with pseudo-resultatives. See below.

³According to Geuder, resultative adverbs are in complementary distribution with adjectives, based on the evidence in (14). He does not observe that the adjective form is possible, and for some preferred, with predicates like that in (12).

- (13) a. They decorated the room beautifully.
 b. She dressed elegantly.
 c. They loaded the cart heavily.

- (14) a. * They decorated the room beautiful.
 b. * She dressed elegant.
 c. * They loaded the cart heavy.

- In contrast, some speakers accept **only** the adjective in pseudo-resultative cases (and thus don't accept Geuder's example in (12)):

- (15) For some speakers:
 a. She sliced the bread thin.
 b. * She sliced the bread thinly.

- I consider the examples in (16), also discussed in Geuder (2000), to fall outside the class of pseudo-resultatives as well, despite apparent adjectival morphology.

- (16) a. I opened the door wide.
 b. I shut the door tight.

- Note that these are both adjective-derived inchoative verbs, and that these forms of *wide* and *tight* are also possible as modifiers of these adjectives in non-verbal contexts:

- (17) a. The door is (wide) open (wide).
 b. The door is (tight) shut (tight).

- Geuder himself acknowledges the intuitive semantic differences between (12) and the rest in deliberately discarding an analysis that can only account for cases like (12) in favor of one that is more general.
- However, it is precisely this narrower, semantically coherent class that I want to account for, as these are the only result-related non-resultative modifiers that are possible with adjectival morphology.

4.1 Adjectival Morphology Cross-Linguistically

- Pseudo-resultatives resemble adjectives in other languages as well.
- Mateu (2000) observes that examples like those in (10) above in Catalan exhibit obligatory adjectival agreement on the predicate ⁴.
- One cannot claim that these are adverbs with omitted adverbial morphology.

⁴Note that, since the adjective does not semantically modify the argument that it agrees with, this highlights the purely syntactic nature of agreement.

- (18) a. Mari leti-tt-i hiuksensa tiuka-**sti**. (Adverb)
 Mari braid-caus-past hair.ACC.POSS tight-ADV
 ‘Mari braided her hair tightly.’
 b. Mari leti-tt-i hiuksensa tiuka-**an**. (Adjective)
 Mari braid-caus-past hair.ACC.POSS tight-ILL
 ‘Mari braided her hair tight.’

- The range of verbs which combine with pseudo-resultative predicates is limited.
- All verbs which license pseudo-resultatives are **inchoative**.
 - Parsons (1990): inchoatives encode a change-of-state via a **BECOME** operator
 - *The soup cooled* = The soup BECOME cool.
- Pseudo-resultatives only combine with a subset of these: **creation inchoatives**.
 - These are inchoative verbs which denote the change of some source material by some kind of rearrangement into a new object ⁵.
 - The object created may be nameable with the same root from which the verb is derived (one can describe the object created by braiding as a braid), or there may not be a form-identical nominal form of the room (one would not describe the pieces created by chopping as ‘chops’).

- Verbs such as *cool* can be derived from arguments of a BECOME operator which are predicates of states (as in Parsons (1990)).
- Verbs like *braid* are derived in a similar way from predicates of individuals.
- Pseudo-resultatives are able to combine via intersective modification with predicates of individuals, but not with predicates of states.

7

The following table illustrates the different types of inchoative verbs and their properties⁶:

(19)

verb	BECOME	CAUSE	ROOT TYPE	CLASS	PR?
cool (intr)	y	n	<s,t>	inchoative	n
cool (tr)	y	y	<s,t>	causative-inchoative	n
braid (tr)	y	y	< e ,t>	creation causative-inchoative	y

6 The Compositional Semantics of Creation Inchoatives

- The verb root, which denotes a set of individuals, must be accessible to the pseudo-resultative.
- The derivation from root to verb must occur in the syntax, with semantic composition.
- Syntactic composition parallel to the semantic composition motivated above is necessary.
- In English we can find a parallelism in overt syntax with *put* (or *make*) as in (20):

(20) She put/made her hair into a braid.

- In Finnish, the parallel examples also exhibit illative case (21):

(21) Mari pisti hiukse-nsa tiukka-**an** letti-**in**.
 Mari put hair-3SG.POSS tight-ILL braid-ILL
 ‘Mari put her hair into a tight braid.’

- I propose that sentences with pseudo-resultatives have verbs which decompose into structures that are very similar to that which appears in less ‘compressed’ form in (20) and (21).
- The created object merged as a root never forms a DP, but rather comes to ‘name’ the verb.
- *Braid* could be represented informally as ‘put-into-braid’, or ‘put-ILL-braid’, where ILL stands for the head responsible for illative case marking in Finnish⁷.
- The incorporation/conflation structure is more semantically restricted, however, than these non-incorporated parallels, as will be discussed in section 8.2.

⁶All of the creation inchoatives under consideration are transitive. The lack of unaccusatives does not follow directly from my analysis, but may be due to the semantic unlikelihood of creation of an object occurring without a causer (e.g., *Her hair braided*). There may yet be unaccusative examples which I am not aware of.

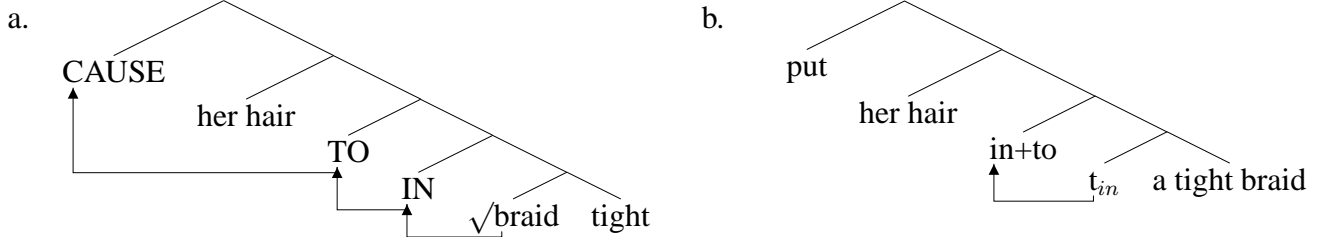
⁷The canonical use of the illative is as in (1):

(1) Mari meni talo-on.
 Mari went house-ILL
 ‘Mari went into the house.’

Thus the illative case appears to be semantically related to *into* in English. See section 6.1 for semantics proposed for *into*.

The basic outline of the structure I propose for the syntactic decomposition of creation inchoatives and the attachment of the pseudo-resultative is as in (22a), drawing a parallel with (22b)⁸:

(22)



In the next sections, I propose analogues between the incorporated and non-incorporated structures.

6.1 The Syntactic Locus of Inchoative Semantics

- The change-of-state in (22b) above seems to be mediated by the preposition *into*.
- I propose that a BECOME operator is introduced by the preposition *to* contained in *into*, in a Change-of-State (CoS) guise⁹
- The *in* element is responsible for taking a nominal argument and returning a predicate of states which is a suitable argument for the BECOME operator (in essence a syntactically overt type-shifter)
- This is supported by the fact that change-of-state semantics is possible with *to* alone in (23), where it takes an AP complement:

(23) The weather suddenly went from hot **to** [_{AP} cold].

- However, *in* is necessary where there is a DP complement:

(24) a. I made her hair **into** [_{DP} a braid].

b. I went **into** [_{DP} the store].

⁸In outlining the semantics of the structure in (22) given above, I will abstract away from the question of head movement of the root to higher verbal projections and will interpret the root in its base position, assuming that such head movement has no import in the semantics.

⁹The BECOME operator I propose has the semantics in (1), where type *e* is used for individuals, *s* for eventualities (both events and states), and *t* for truth values:

- (1) $\llbracket \text{BECOME} \rrbracket (f_{\langle e, \langle s, t \rangle \rangle})(x_e)(e_s) = 1$ iff *e* is the smallest event such that *f* is not true of the pre-state of *e* but *f* is true of the target state of *e*

This denotation is based on that found in Stechow (1996):

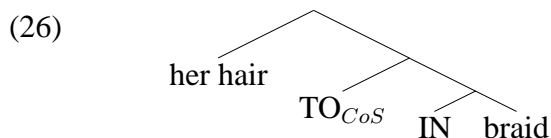
- (2) $\llbracket \text{BECOME} \rrbracket (P)(e) = 1$ iff *e* is the smallest event such that *P* is not true of the pre-state of *e* but *P* is true of the target state of *e*

TO_{CoS} , however, takes a state argument before it combines with the individual which will come to be in that state. In this way, TO_{CoS} more closely resembles Embick (2004)'s FIEN head.

- I further propose that there is a null variant of *in*, IN, which takes a nominal root argument and also returns a predicate of states
- These heads are parts of a creation inchoative such as *braid*
- Their denotations are as in (25):

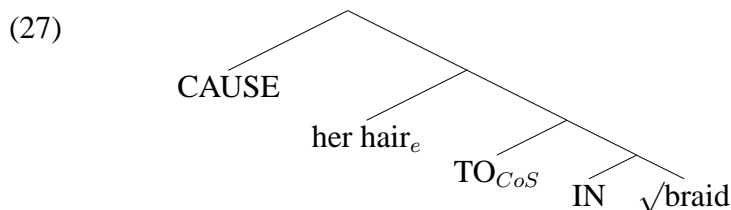
- (25) a. $\llbracket \text{IN} \rrbracket = \lambda f_{\langle e, t \rangle} \lambda x_e \lambda s_s. f(s) \ \& \ \text{in}(s, x)$
 b. $\llbracket \text{TO}_{CoS} \rrbracket = \lambda f_{\langle e, \langle s, t \rangle \rangle} \lambda x_e \lambda e_s \exists s_s. \text{BECOME}(f(s)(x))(e)$

- In sum, there are the following possibilities for *to* and TO:
- | | | | |
|------|---|---------------------------------------|---|
| to | + | AP _{<e, <s, t>>} | (as in 23) |
| into | + | DP _e | (as 24) |
| INTO | + | √<e, t> | (as in decomposition of creation inchoatives) |
- These elements combine as in (26) (see the appendix for semantic detail):



6.2 CAUSE

- CAUSE will merge as in (27)¹⁰ (see the appendix for semantic detail):



- Support for *braid* being a causative verb comes from the overt causative morphology found in Finnish:

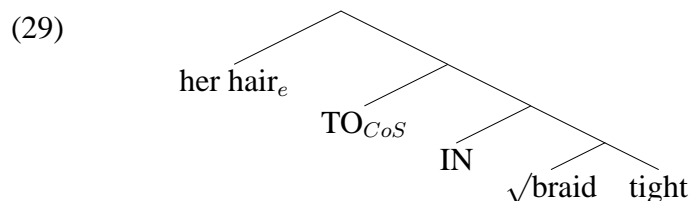
- (28) Mari leti-**tt**-i hiuksensa tiukka-an.
 Mari braid-**caus**-past hair.ACC.POSS tight-ILL
 ‘Mari braided her hair tight.’

- The verb *braid* will be derived by conflation/incorporation.

¹⁰Pyllkänen (2002) argues that such causative heads are always ‘bundled’ with the *voice* head in English. I notate *cause* and *voice* as separate heads, however, simply for ease of exposition.

6.3 Pseudo-Resultative

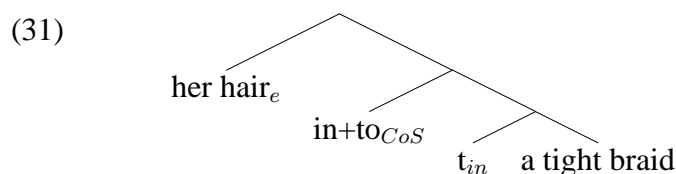
- The pseudo-resultative enters the structure as an adjective of type $\langle e, t \rangle$ and combines with *braid* by intersective modification (see also (45) in the appendix):



6.4 Overt Syntactic Counterparts

- The overt syntactic counterparts to creation inchoatives have a similar structure with overt *in* and *to* instead of the null variants
- the semantics for overt to_{CoS} is the same as the null TO_{CoS}
- overt *in* takes a DP complement of type e rather than a type $\langle e, t \rangle$ argument taken by IN

- (30) a. Mari pisti hiukse-nsa tiukka-an letti-in.
 Mari put hair-3SG.POSS tight-ILL braid-ILL
 ‘Mari put her hair into a tight braid.’
 b. Mary made/put her hair into a tight braid.



7 Additional Evidence

- In examining the predictions of the analysis, we must see whether these are correct not only for verbs like *braid her hair*, but also for expressions such as *put her hair into a braid*.
- The data below illustrates that creation inchoatives have much in common with such structures, versus other possible paraphrases such as *make a braid out of/from/with hair*.

7.1 Availability of Passive

- Assuming that voice assigns accusative case to the closest DP argument below it via Agree, in the given structures *her hair* should receive structural case.
- Also assuming that arguments assigned structural case by voice can passivize, the structure given predicts that passivization of the ‘source’ argument should be available, as is the case in (32):

- (32) a. **The string** was braided by Mary.
 b. **The string** was put/made into a braid by Mary.
 (33) * **The string** was made a braid out of by Mary.

7.2 Unavailability of a Low Applicative Arguments

- The analysis also correctly predicts the unavailability of low applicative, or Goal, arguments, if we assume an analysis of these as in Pylkkänen (2002).
- On that account, the low applicative head, APPL, takes three arguments: two individual arguments and then a function of type $\langle e, \langle s, t \rangle \rangle$.
- There is no position in the structure where an APPL head can be attached.
- In the case of *braid*, there is only one individual argument to begin with.
- In the case of *put*, there are two individuals, but these are arguments of other elements.

- (34) a. * I braided Mary the string.
 b. * I put/made Mary the string into a braid.
 (35) I made Mary a braid out of her hair.

7.3 Availability of Depictives

- Following the analysis of depictives in Pylkkänen (2002), we predict the availability of object depictives, which are indeed possible (as well as subject depictives)¹¹:

- (36) a. I braided her hair_i (tight) wet_i.
 b. I put her hair_i into a braid wet_i.
 (37) * I made a braid out of her hair_i wet_i.

¹¹The object depictive at first seems possible with the paraphrase with *with*:

(1) I made a braid with her hair_i wet_i.

However, here *wet* is a modifier within a reduced clause introduced by *with*, as in *with her hair being wet*. Such a clause cannot be introduced by *out of* or *from*, and thus these do not show this confound.

7.4 Obligatory Arguments

- The analysis predicts that the direct object of the verb *braid* will be obligatory, since it is selected by the state introduced by the root.
- This prediction is borne out, as shown in (38).

- (38) a. I braided *(her hair).
 b. I put/made *(her hair) into a braid.
- (39) I made a braid (with her hair).

8 Open Questions

8.1 Relevance of Adverb Morphology

- What is the status of adverb morphology in cases like (40)?

- (40) She braided her hair tightly.

- Such morphology cannot be ‘hypercorrection’, as proposed in Parsons (1990), since this would incorrectly predict that such hypercorrection is possible with true resultatives as in (41):

- (41) a. *John wiped the table cleanly.
 b. *Mary hammered the metal flatly.

- With a participle, only the pseudo-resultative form with adverb morphology is possible:

- (42) a. *Mary’s hair was tight braided. (without compound intonation)
 b. Mary’s hair was tightly braided.

- This particular morphological ‘alternation’ doesn’t seem to correspond with any semantic difference in the adverb that I have found
- This supports the proposal of Corver (2005) and references therein arguing that adverb morphology like English *-ly* is a reflex of syntax, like inflectional, rather than derivational, morphology
- Adverb morphology does not seem to be a reliable indicator of semantic argument type (see also cases like *beautiful dancer*)
- It remains to be determined whether cases like (40) are mere syntactic variants of pseudo-resultatives like (42b), or diverge truth-conditionally in some systematic way

8.2 Semantic Restrictions

As mentioned above, pseudo-resultatives are more restricted semantically than their ‘overt’ counterparts.

- There is a very limited range of possible adjectives, varying with the predicate

- (43) a. # She braided her hair thick.
b. # She piled the pillows wide.

- This restrictedness of the adjective is reminiscent of the constraints on resultatives noted in Wechsler (2005), although it is not the same constraints at work, as was shown in section 2.1
- Also there are cases which seem to involve change-of-state and creation don’t necessarily allow pseudo-resultatives¹²:

- (44) a. The witch changed the prince into a frog.
b. * The witch frogged the prince green.

- This may be the same problem as in (43) - perhaps there is no possible adjective for this predicate
- We ultimately need a more fine-grained semantic analysis which would rule such structures out - making explicit reference to the semantics of ‘material rearrangement’ or something of the kind
- These restrictions that surface in conflated but not non-conflated structures may also relate to the restrictions on concealed causatives discussed in Bittner (1999)

9 Conclusion

- I have shown with cross-linguistic evidence that pseudo-resultative predicates are distinct from true resultatives, and also from ‘resultative adverbs’.
- I have argued that syntactic lexical decomposition of a class of verbs I have called ‘creation inchoatives’ can provide a means for accounting compositionally for the availability of pseudo-resultatives which seemed to pose a problem for the syntax-semantics interface.
- In doing so, I have also drawn parallels between the decomposition of creation inchoatives and other structures which are found in overt syntax in English and Finnish.

¹²I would like to thank Anna Szabolcsi for providing this example.

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10 Appendix

(45)

