The locus of the causative-unaccusative alternation: lexicon or syntax?

Abstract

The well-known causative-unaccusative alternation (e.g., *the heat melted the ice / the ice melted*) has been a source of an ongoing debate among linguists. Two major approaches attempt to explain it: (i) A syntactic, decompositional approach, which assumes that the relevant relation is established in the syntax. (ii) A lexicalist approach, which assumes that the alternation is derived in an active lexical component. This paper offers a meta-theoretic discussion for comparing these approaches. I pursue two complementary tracks of argumentation based on new empirical evidence, which lead to the conclusion that the alternation is lexically derived. First, I show that the generalizations taken to support syntactic decomposition have, in fact, systematic and productive counterexamples. Second, I present novel evidence demonstrating that syntactic operations cannot give rise to the causative-unaccusative alternation. The new data I discuss are consistent with lexical accounts, but not with syntactic ones.

Keywords

Causative・Unaccusative・Alternation・Syntactic Decomposition・Again・Lexicon

1 Introduction

The universal causative-unaccusative alternation received considerable attention in linguistic literature. Verbs such as *open*, *break*, *melt* and *cool* exhibit both causative and unaccusative alternates:

(1) a. John / the wind / the keys opened the door. (causative)

b. The door opened. (unaccusative)

The canonical characterization of alternating verbs is as follows: (i) the external argument of the transitive corresponds to an underspecified cause role, allowing for agents, natural forces and instruments, (ii) the internal argument (in both alternates) has a change-of-state interpretation, and (iii) the causative entails the unaccusative.

Although the characterization of alternating verbs is uncontroversial, there is little agreement as to the way our grammar implements the alternation. A detailed theory must provide a specific mechanism which generates the alternation. In this regard, there are two main syntactic research questions about such a generative mechanism. First, what is the directionality of the operation involved? is the output of the operation (i) the causative (ii) the unaccusative (iii) or they share a common input but are not directly related. The second question that has been asked is: In which component of the grammar is the alternation represented? (i) the lexicon (ii) the syntax. In table (i) below, I categorize representative theories according to the stand they make with respect to the aforementioned two questions.

Table (i): Types of theories

Locus of Alternation / Direction of Operation	**Lexical**	**Syntax**
Intransitive -> Causative	Hale & Keyser 1993	Pesetsky 1995;Harley 2008; Ramchand 2008;
Causative -> intransitive	Chierchia 2004; Koontz-Garboden 2009 (reflexivization); Levin & Rappaport-Hovav 1995; Reinhart 2002; Horvath & Siloni 2011b	

	(decausativization)	
Undirected		Alexiadou, et al 2006, Pylkkänen 2008 (common-stem) Borer 2005, Arad 2005, Harley 2012.

The purpose of the paper is to shed further light on the latter question: what module is responsible for the alternation? My hypothesis is that the alternation is derived lexically.

(2) **Main Hypothesis:**

The causative-unaccusative alternation is derived in the lexicon.

In order to establish my claim, I pursue two complementing tracks of argumentation. The first track, which corresponds to the first part of the paper, surveys the predictions made by syntactic decompositional accounts (Pesetsky 1995, von Stechow 1996, Beck 2005; Borer 2005; Pylkkänen 2008; Ramchand 2008 and Harley 2012, among others). I show that these predictions are not borne out, most notably, by the centerpiece of the decompositional hypothesis: the predictions regarding the restitutive reading of *again*. Briefly, the availability of a restitutive reading (in addition to a distinct repetitive one) is commonly taken to be a diagnostic of constituency, supporting syntactic decomposition. I show that a restitutive reading is found with non-constituents and therefore it must be accounted for on semantic grounds alone. As such, theories of syntactic decomposition are effectively left with no positive evidence.

In the second part of the paper I turn to the second track of argumentation and show that a lexical theory of English causatives makes specific predictions regarding the availability of the alternation, and that these are borne out. That is, not only is there no positive evidence for syntactic decomposition theories, there is evidence that the alternation is insensitive to compositionality. The argument I employ relies on the observation that no compositional introduction of RESULT STATEs into a causative or an intransitive structure gives rise to the alternation. It necessarily shows that the alternation cannot be derived from a structural relation alone, because syntactic decomposition theories explicitly argue that alternating verbs are represented by their decomposition into a RESULT STATE constituent (contained in a structure headed by a causative head in the case of the causative alternate). Therefore, such approaches would be untenable (Borer 2005; Folli & Harley 2005; Alexiadou et al 2006; Schäfer 2008 and Pylkkänen 2008 for the case of English zero-causatives). The findings presented below constitute robust evidence in favor of the hypothesis that the causative-unaccusative alternation is determined prior to the emergence of syntactic structure.

2 Predictions of decompositional accounts

2.1 Two representative syntactic accounts

In this section I present and carefully examine evidence for syntactic decomposition in English. First, in section 2.1, I review two representative accounts: Pylkkänen (2008) and Ramchand (2008). I show that they do not provide any positive evidence and do not perform better than competing lexical theories. Second, and more importantly, in section 2.2 I zero in on the common denominator of all decompositional accounts: the presence of a constituent of RESULT STATE (see Dowty 1979; von Stechow 1996 and Beck 2005, among others). This result state constituent is allegedly detected by the restitutive reading of *again*. I will show that restitutive readings are also available for non-constituents and thus arise from semantics alone. Thus, I argue that the availability of a restitutive reading is not evidence for syntactic constituency. Lastly, in section 2.3, I also tackle alleged evidence from temporal adverbials (e.g. *for x minutes*) and show that they do not support decompositional analysis. All in all, I believe that decompostional accounts are left with no positive evidence for the structure they postulate for English causatives.

To begin with, Pylkkänen's (2008) proposal will be challenged in the following way: she argues that the alternation is a relation between two syntactic structures that share a common syntactic unit: the *root* (Halle & Marantz 1993; Marantz 1997; Chomsky 1998, among others). I show that, contrary to her proposal, there is no evidence supporting the existence of such a syntactic unit in alternating verbs. Hence, derivation of the alternation based on the notion of roots cannot be maintained.

Pylkkänen (2008) proposes that the causative counterparts of unaccusatives in English are root-selecting causatives: a V_{Cause} functional head takes a category neutral root as its complement. She brings two empirically testable predictions to test this structure, one of which concerns sites of adverbial modifications and the other, verbal morphology. I examine each prediction in turn.

Regarding adverbial modifications, the fact that the English zero-causative does not generally allow VP-modifiers to attach below the causative head, has been often taken as an argument for a lexicalist analysis of those causatives, since an inner syntactic structure cannot be detected by adverbial modification (see Fodor 1970; Fodor & Lepore 1997). However, Pylkkänen (2008:111) suggests that degree-adverbs modify a resultant state, and hence attach below the causative head. Her prediction is that since the causative head takes a category neutral root, the adverb can likewise be combined with the root in a nonverbal environment (e.g. in adjectives). For instance (taken from Pylkkänen 2008:111):

(3) a. John closed the door partway.

b. a partway closed door.

c. Roger filled the glass halfway.

d. a half-full glass. (Pylkkänen's examples (66-67))

In contrast, *grumpily* cannot attach to a resultant state, and hence is unable to modify the corresponding adjective:

(4) a. John awoke Bill grumpily. (false if John was not grumpy)

b. *a grumpily awake boy. (Pylkkänen's examples (45),(68))

According to Pylkkänen, "whenever an adverb can attach below Cause in a root-selecting causative, it should be able to modify the root in a nonverbal environment as well", and "If *grumpily* is a VP modifier, it should not be able to modify the bare root under the causative" (2008:11).

Pylkkänen's predictions are incorrect. I provide below a range of VP-adverbials which cannot attach below Cause, and yet they freely appear in adjectival environments. That is, there are many counterexamples to Pylkkänen's argumentation based on example (4). I will show below that both alleged above-Cause and below-Cause modifiers are able to appear in adjectival environments. If so, then Pylkkänen's conclusions do not follow from the data, and (4b) is ungrammatical for independent reasons which I also explain below.

(5) **Relation-in-time adverbs**: *already, recently, previously*…

(6) a. John had opened the door already / recently / previously.

b. An already / recently / previously open door. (see Embick 2004:357)

c. John had filled the glass already / recently / previously.

d. An already / recently / previously full glass.

The examples in (6) above show that adverbs such as *previously* or *recently* do not attach below VP. If they were able to attach below-Cause, the examples in (6) would have a reading where John caused a state in which the door had already been open, which is an unacceptable one (since the result state would precede the causing event). Despite the fact that *previously* and *recently* are VP-modifiers, they freely attach to adjectives, as shown in (6b,d).

Next, consider evidence from the case of frequency adverbials:

(7) **Frequency adverbs** *always, often, frequently, rarely …*

(8) a. John always / often / frequently / rarely opened the gates.

b. The always / often / frequently / rarely open gates.

c. John always / often / frequently / rarely filled the glass.

d. The always / often / frequently / rarely full glass.

The examples in (8) above show that adverbs such as *always* or *often* do not attach below VP. A reading of (8a) where the gates are often open but John did not open them often is unacceptable. This means that frequency adverbials cannot attach below Cause.[1] Despite the fact that *always* and *often* do not attach below VP, they freely attach to adjectives, as shown in (8b,d).

An additional case showing the inadequacy of Pylkkänen's arguments is provided by manner adverbials:

(9) **Manner adverbs**: *suspiciously, inadvertently, carelessly*…

(10) a. John opened the door suspiciously / carelessly / inadvertently.

b. A suspiciously / carelessly / inadvertently open door.

Note that in (10b), the adverb does not imply the presence of an agent, but rather, the nature of the state of the door. By contrast, in (10a), a reading in which the door came to be suspiciously open without a suspicious agent is an unacceptable one. Also, if John opens the door in a suspicious manner, the door is not necessarily suspiciously open. Hence, the adverb must scope above-Cause. The same carries over to *inadvertently*. Despite the fact that *suspiciously* and *inadvertently* do not attach below VP, they freely attach to adjectives, as shown in (10b).

In light of the above, VP-modifiers such as relation-in-time (see (5)), frequency (see (7)) and manner (see (9)) adverbials are not exempt from appearing in adjectival environments, contrary to (4). Thus, Pylkkänen's argument does not stand since the availability of adverbials in adjectival environments does not correlate with their alleged below-Cause status in English zero-causatives.

So why is (4b) out? I suggest an aspectual explanation. It is safe to say that if an adverb is obligatorily interpreted as involving an event, it may not appear in a stative adjectival environment (i.e. an *open* door vs. an *opened door*). Hence, whereas *grumpily* must be interpreted as involving an event (e.g. **John saw the horse grumpily* vs. *John rode the horse grumpily*), many others need not (see (5) through (10)). Consequently, the distribution of adverbial modifiers does not constitute any positive evidence for a root-selecting causative hypothesis. In turn, it undermines a syntactic derivation of the alternation that is based on that hypothesis.

Turning to Pylkkänen's second prediction: there would be no intervening verbal morphology between the root and the Cause head in a root-selecting causative. Assessing the empirical validity of her prediction is relevant here since it corroborates (or weakens) her proposed decomposed syntactic architecture, and consequently, a syntactic treatment of the alternation. This prediction is particularly hard to test in English due to its zero morphology nature. When examining overt suffixation of *–en*, Pylkkänen proposes that the causative is not formed by an unpronounced cause head (in such a case, the unpronounced causative head would take a complement which already contains verbal morphology and not a category-neutral root, contrary to her proposed structure for English causatives). Rather, *–en* is allegedly homophonous between causative and intransitive morphology (e.g. [[hard] en_{Intr}] for intransitives and [[hard] en_{Cause} for causatives). To support this analysis, she claims that, under the assumption of an unpronounced

[1] The only known exception in English is the adverb *again*, which will be discussed extensively in section 2.2.

cause head, an *en*-causative structure fully contains the intransitive one. Hence, we would expect to find an intransitive alternate for every *en*-causative. According to Pylkkänen, this expectation is not borne out: a specific verb, *fatten,* has allegedly a causative but not an intransitive alternate (see 2008:113 for more details):

(11) a. We fattened the pig over the summer.

b. *The pig fattened over the summer. (Pylkkänen's example (74))

Pylkkänen therefore takes the ungrammaticality of (11b) to support a root-selecting causative analysis. However, I beg to differ: I am not certain that (11b) is downright ungrammatical. *Fatten* is perfectly acceptable for other intransitive uses, as is expected of a deadjectival verb. Below are some naturally occurring examples taken from the Corpus of Contemporary American (COCA). Note that the grammatical (12c) and (12f) share with (11) the animal husbandry context:

(12) a. As Ma has dwindled, Barbara has fattened. She wonders if her body knows something she doesn't, like famine is coming or the Big One is going to hit.

b. She called for the bartender's attention. "Another dry martini for me and an Irish coffee for my friend over here." She fattened avidly on the light of hope that kindled in Bixby's eyes, then extinguished with a quick, cruel: "Hold the coffee".

c. Grazing lands in Chile weren't fenced off, so herds from neighboring ranches mingled and were separated only after they had fattened enough for slaughter.

d. Four or five months after we arrived in Africa, my children looked better than I think I ever saw them; they were so fond of palm oil and rice, and ate so much of it, that they fattened very fast.

e. They both watched the tablecloth soak up the wine; the lace and the stitching fattened and swelled.

f. The steers fattened and grew sleek, the apple trees had been pruned, the fencing stood stout and impenetrable.

Clearly, the examples in (12) show that the ungrammaticality of (11b) does not entail that *fatten* does not have intransitive uses. Hence, the argument based on this example is untenable. To further weaken Pylkkänen's argument, there is an opposite pattern: *scintillate* (*-ate* is a causative morpheme, e.g. *accelerate, attenuate...*).

(13) a. *I scintillated the diamond ring.

b. The diamond ring scintillated in the sunlight.

In example (13) above, we observe a pattern opposite to (11): the intransitive is grammatical while the causative is not, because diamond rings do not typically take an external cause with respect to scintillation. On a par with (12), the causative becomes grammatical with a different choice of objects. Here are some examples from a Google search:

(14) a. The young woman was a jewel that scintillated the parlor room.

b. The acrylic has a bright finish so it really scintillated the light.

c. One day my sister and I sat on a rock gazing out as the sun scintillated the waters over beautiful Bright Lake.

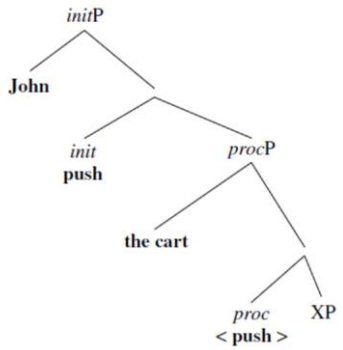
Therefore, if Pylkkänen's theory were right, the fact that *scintill-ate* has an intransitive instance would seem unexpected, on a par with her argument that *fatt-en* has a causative instance.

Recapitulating the discussion of Pylkkänen's predictions, there is no positive evidence motivating a syntactic decomposition analysis for English causatives. First, evidence from distribution of VP-modifiers is inconclusive since both wide and narrow scope adverbials may appear in adjectival environments. Second, lack of a specific intransitive use of a given verb (e.g. *fatten*) has been shown to be a misanalysis of an incidental example; other intransitive uses of

the same verb are acceptable, as well as a verb showing the opposite pattern (e.g. *scintillate*). If the syntactic existence of the root cannot be verified by the data, it clearly cannot serve as a basis for a syntactic derivation of the unaccusative alternation. Further cross-linguistic challenges for Pylkkänen's causative architecture are beyond the scope of this paper (but see Horvath & Siloni 2011a).

Another decompositional analysis of argument realization is put forth by Ramchand (2008). She proposes a two-tiered architecture. On the first tier, the semantics is generated compositionally from a pure labeled syntax, independently of lexical-encyclopedic information. Unlike radically constructionalist views (e.g. Marantz 1997; Borer 2005), Ramchand adds a second tier: the lexical item carries syntactically relevant features, which perform 'selectional' work. In more detail, the syntactic verbal projection is internally composed from three basic ones: init (for initiator), proc (process) and res (resultee) projections, which are projected according to specifications on the lexical item. In her words, "[A] lexical item with a res feature can project the res feature to form a resP predication, but it also carries lexical-encyclopedic content which can identify the content of the state in question… lexical item with an init feature can Merge as init and identify the nature of initiational conditions involved." (2008:58). Below I provide an illustration from Ramchand (2008:66):

(15) Lexical entry for *push*: [init, proc]. Syntax:



In Ramchand's system, a causative alternate is formed by adding a new argument to the specifier of an init projection. Causativization may be carried out in two different strategies. The first strategy adds an init head on top of an existing structure that lacks it, which is the case for unaccusatives (examples follow immediately in (16)). For unergatives, the structure already contains an init projection. Causativization then employs the second strategy: it unassociates the init feature from the category root features and adds a new distinct initiator. In English, the causative morpheme (which spells out the init head) is phonetically null, but in Hindi/Urdu it is *–aa* (among other morphemes, see Ramchand 2008:171; 191). When examining the verbal projections, the operation may be schematically written as follows:

(16) Causativization in Ramchand 2008:

1. Unaccusatives: Break-intransitive: [$proc_i$, res_i] -> Break-transitive: [$init_j$, $proc_i$, res_i].

2. Unergatives: Run- intransitive: [$init_i$, $proc_i$] -> Run-transitive [$init_j$, $proc_i$].

3. Causative morpheme: English: zero morpheme /, Hindi/Urdu: *-aa*: [init].

The main issue, in my opinion, is that one never gets to see the true generative power of syntax here; the eligible structures are in 1-to-1 relation to the actual verb classes, which are themselves constrained by lexical-encyclopedic information and do not have compositional power: it is not possible to obtain different interpretations for a single lexical item by assigning it different projections. For instance, one could mean that, in a specific context, the subjects of intransitive *melt*, *break* or *fall* are not only undergoers, but also initiators of the process in question. Namely, they are not [proc] verbs in that use, but rather [$init_i$, $proc_i$] ones (e.g. *run* verbs). In the same

vein, it is unclear why we cannot have a context of *run* in which the runner is not grasped as the initiator of the process but only as undergoing the running, on a par with intransitive *break*?

It is not the case that the syntax is unable to express the desired meaning of *run* or of *break* in these contexts: it is so because the verbs are encyclopedically constrained. Given this rigidity, what actual evidence do we have for the underlying existence of a flexible architecture of verbal heads? The eligible structures are mapped from the proposed verb classes, and these verb classes are not generated compositionally: they are a given list of features, specifying rigid lexical-encyclopedic content. Thus, Ramchand's two-tiered architecture is reducible to a lexical mapping system.

Let us now consider the syntactic causativization Ramchand advocates. A careful inspection of the rules as written in (16) reveals that there is nothing inherently structural about them. What is written in (16) is extensionally the following: a new verb class (set of features) is produced from a given verb class (another set of features). If the representations of verb classes are predetermined sets of features, there are two possible mechanisms ahead of us: (i) a lexical rule, which applies to the features of the verb, then the result is mapped to syntax. (ii) the verb is mapped to syntax, then a syntactic rule applies.

It has been convincingly argued in linguistic literature that both lexical and syntactic causativization mechanisms are available and differ considerably in their properties (Horvath & Siloni 2011a). What is relevant here is that various causative morphemes show different syntactic behaviours cross-linguistically. In particular, when probing for the number of syntactic predicates, one finds out that the (productive) Japanese -(s)ase causatives and Hungarian –(t)et causatives yield different results. Due to lack of space, I shall limit myself to two diagnostics identifying multiple predicates. First, Agent oriented adverbials scope only over the causative in Hungarian, but can scope either over the base or the causative verb in the Japanese counterpart (Shibatani 1972, see example (17) below). Similarly, VP-ellipsis is unambiguous in Hungarian, scoping obligatorily over the causative, whereas Japanese allows also the base verb to be elided (See (18), Shibatani 1972, examples are from Horvath & Siloni 2011a):

(17) a. Az ügyvéd {készség-gel/ habozás nélkül} (Hungarian)
The lawyer.NOM {readiness-INSTR/ hesitation without}
alá-ír-at-ta János-sal a szerz˝odés-t.
under-write-CAUS-PAST.DEF.DO János-INSTR the contract-ACC
'The lawyer made [János sign the contract]{readily/without hesitation}'
(unambiguous)

b. sono bengosi-wa {tyuuchonaku/ yorokonde} John-ni (Japanese)
the lawyer-TOP {without hesitation/with pleasure} John-DAT
keiyakusyo-ni sain s-ase-ta.
contract-DAT sign do-CAUS-PAST
'The lawyer made John sign the contract {without hesitation/with pleasure}.'
(ambiguous)

(18) a. Fel-olvas-tat-t-am Mari-val egy vers-et, mert János is az-t csinálta.
up-read-CAUS Mari-INSTR a poem-acc because János too that-ACC did
(i) 'I made Mari read out a poem because János made Mari read out a poem too.'
(ii) Impossible: 'I made Mari read out a poem because János read out a poem too.'

b. Yoko-wa [musuko-ni [huku-o ki]-sase]-ru to Junko mo soo si-ta.

Yoko-TOP son-DAT clothes-ACC wear-CAUS and Junko also so do-PAST

(i) 'Yoko made her son wear clothes, and Junko made her son wear clothes, too.'

(ii)'Yoko made her son wear clothes, and Junko wore clothes, too.'

In light of the above, it cannot be true that both Japanese –(s)ase and Hungarian –(t)et causative morphemes fit identically into the same structural position in Ramchand's architecture (i.e. the spell-out of the init head).

Summarizing the discussion regarding Ramchand (2008), the following points were made: first, the surface syntax ends up reflecting the encyclopedic constraints of the verb classes and not the range of compositional meanings one could have expected. That is, there is no evidence for the existence of hidden compositional mechanisms in the representation. Second, causativization in Ramchand's theory does not provide any empirical evidence that it is a syntactic operation since it is extensionally equivalent to a lexical rule: its representation could be potentially lexical, syntactic, or both. Moreover, cross-linguistic evidence shows that various causative morphemes exhibit different syntactic behaviors. Thus, they cannot fit uniformly into the same position of a complex verbal projection.

2.2 Nondecompositionality, again

2.2.1 *Again* in decompostional accounts

Another potential piece of evidence for a structural theory of English causatives is widely claimed to identify a RESULT STATE constituent. The motivation for the existence of such constituent arises from observing the contrast between repetitive and restitutive interpretations of the adverb *again* (see Dowty 1979; von Stechow 1996; Beck 2005 and Pylkkänen 2008, among others). The argument is as follows: the causative verb *open*, in the presence of *again,* has two readings (see (19)).

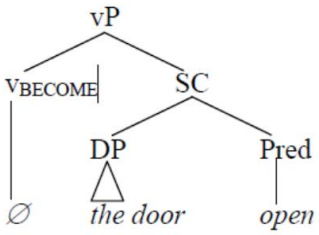
(19) John opened the door again.

(i) John did it again — he had done it before. (repetitive)

(ii) The door is in an open state again — it had been open before. (restitutive)

The claim advanced by proponents of syntactic decomposition is that these different readings are due to a structural ambiguity that results from the different structural positions that *again* (possessing a single constant meaning) occupies in the decomposed syntactic structure. In particular, the restitutive reading is obtained by having *again* modify the RESULT STATE, a constituent. Specific details vary among accounts. For instance, Folli & Harley (2005), Schäfer (2008) and Harley (2012) maintain that the relevant constituent is a small clause (henceforth SC) which contains a Pred head as a sister to the object (representative example in (20) below), whereas von Stechow 1996 and Beck 2005 assume that the SC is headed by PRO. The precise representation of the RESULT STATE constituent will be irrelevant here, since I am going to reject the validity of *again* as a diagnostic of syntactic constituency altogether. It suffices for my discussion to focus on the fact that *again*, under these theories, modifies a syntactically visible result state. A representative analysis of decompositional account for *open* appears in (20) below (Harley 2012, example (11b))

(20) Decomposition of unaccusative *open* (Harley 2012)



From a theoretical perspective, a structural analysis comes with a high price tag: the behavior of *again* stands in sharp contrast to the rest of similar adverbs (e.g. *repeatedly, never…* see also (7)).[2] As Beck (2005) acknowledges, ambiguous readings do not arise for the latter adverbials. To remedy this, a visibility parameter has been suggested in Beck (2005), which controls whether a given adverb can modify an SC. The choice is somewhat puzzling: the syntactic structure is masked for adverbs in general, with the exception of *again*. But beyond this observation, a structural analysis faces not only theoretical, but also empirical, challenges that cast doubts on the validity of *again* as a diagnostic of syntactic structure. In what follows, I present compelling evidence from several empirical domains that *again* may target a state which is not a constituent: possessors (section 2.2.2), VP-ellipsis (section 2.2.3), inference of results (section 2.2.4) and deadejctival verbs (section 2.2.5).

2.2.2 *Again* with possessors

2.2.2.1 Restituted states of possessors

If the presence of *again* is no evidence for constituency, then it follows that there are good reasons to believe that restitutive readings cannot be explained by a scopal analysis. More specifically, I show that there is a systematic way to create sentences where the direct object is predicated of the external argument (examples follow immediately). Although the external argument and the direct object, to the exclusion of the verb, are not a constituent, all these cases show clear restitutive readings with *again*. My discussion is structured in the following way: In section 2.2.2.1, I present a wide range of verbs showing non-compositional restituted states. Hence, a decompositional theory of *again* must respond to the data by advancing an analysis which derives the restitutive reading by postulating a covert constituent. In section 2.2.2.2, I review the possible analyses and show that they cannot be maintained, thus establishing my claim that restitutive readings are available also in non-compositional environments.

Let us restate what is being repeated in a restitutive reading: a presupposed state of a given DP. This state is composed of that DP and an XP predicate. The XP can be either another argument (DP), a location phrase (DP/PP) or an adjective (AP). The XP is predicated of the DP such that the interpretation is that the DP has, once more, the argument (21a), the location (21b-c), or the property denoted by the adjective (21d-e):

(21) a. John gave **Mary the car** again. (Harely 2012)

b. Suresh walked **t_i to the village** again.[3] (Beck 2005)

[2] Contrary to assumptions of generative semanticists, the case of *almost* has already been convincingly argued in subsequent literature not to provide relevant evidence. The variation in its interpretation arises from vagueness, not from scope ambiguity (see Sevi 1998; Tenny 2000; Horvath & Siloni 2011a).

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[3] Beck (2005) analyzes (21b) slightly differently, but the relevant fact is that she proposes a VP-internal constituent which contains *Suresh* and *the village*.

c. John threw **the cat out** again.

d. John painted **the walls white** again.

e. John hammered **the metal flat** again. (Beavers & Koontz-Garboden 2012)

Recall that from a syntactic decomposition point of view, *again* modifies a constituent. Therefore, the state of the given DP is a constituent (e.g. the DP *Mary* is in a state in which she has the car). Unquestionably, the restituted state in (21) above, and in many similar examples, can correspond to a constituent. In light of these data, a syntactic account for alternating verbs along the lines of (20) would seem to be very appealing.

However, I present below empirical findings (below) that constituency is not a necessary condition to create the restitutive reading and thus a purely decompositional analysis is untenable. As to the semantics of *again* itself, it will suffice for my purpose to adopt the null hypothesis: *again* possesses a fixed meaning (see von Stechow, 1996; Klein 2001). As will be explained below (section 2.4), I will adopt Maienborn's (2003) account of semantic underspecification of adverbials in order to derive the behavior of *again*.

(22) $[[\text{again}]](P_{<i,t>})(e)$ = 1 iff $P(e) \& \exists e'[e' < e \& P(e')]$

0 iff $\sim P(e) \& \exists e'[e' < e \& P(e')]$

undefined otherwise.

In words, *again* expresses a relation between a property of events and an event. It presupposes that there was a previous event that has that property, and asserts that the property is true of the event. In my terms, the state of the given DP is the relevant property of events (e.g. in (21d), walls have the state in which they are white; white walls can be viewed as a property of events).

Let us begin with an example of a change-of-possession double object construction: [4]

(23) a. Thilo gave Satoshi the map again. (Beck & Johnson, 2004), example (48))

b. John threw [Sandy the ball] again. (Beavers & Koontz-Garboden 2012), example (76))

Beck & Johnson (2004) argue that the result state of double object constructions is uniformly a state of possession of the theme by the goal; a state which is syntactically represented as an SC. Specifically, the structure of (23a) is

(24) $[_{vP}$ Thilo $[_{v¢}$ v$[_{VP}$ give $[_{HAVEP}$ Satoshi $[_{HAVE}$ the map]]]]] (example (53)).[5]

The verb combines with the SC through application of von Stechow's (1995) principle of semantic composition.[6] By contrast, Pylkkänen (2008) argues that an SC analysis is incorrect for English double object constructions, and suggests a low applicative analysis in which the indirect object is the intended recipient (see 2008:14-16 for more details).

Now, consider the semantic inverses of *giving* and *throwing*, for which the goal/recipient is the external argument:

---

[4] I will discuss only change-of-possession verbs, but not change-of-location ones for a simple reason. Change-of-location verbs, as well as verbs of motion, when predicated of a resultant location, are argued to be unaccusatives. They are not suited for my purpose since their arguments are VP-internal, and hence, constituency is observed.

[5] Beck & Johnson develop the structure in (24) to include a BECOME operator. Harley (2012) argues that this treatments makes the an incorrect prediction. Whether or not there is a BECOME operator would be irrelevant here.

[6] The principle, as reformulated by Beck (2005), is:
If $\alpha[_{V\gamma_{SC}}\beta]$ and β' is of type <i,t> and γ' is of type <e, …<e, <i,t>>> (an n-place predicate), then
$\alpha' = \lambda x1 \ldots \lambda xn\lambda e.\gamma'_e\ (x1)\ldots(xn) \& \exists e'[\text{BECOME}_{e'}(\beta') \& \text{CAUSE}(e')(e)]$

(25) a. [Satoshi] acquired [the map] again.

b. [Sandy] grabbed/captured/caught [the ball] again.

Clearly, a restitutive reading is available for (25) on a par with (23). (25a) means that Satoshi got back a map that was originally his. (25b) means that Sandy has the ball again. Here is another naturally occurring example (from http://tabletennis.about.com/od/questionsanswers/Questions_Answers.htm)

(26) In table tennis, is the server allowed to throw the ball up and catch it again without a penalty?

The examples above show that it does not matter whether the recipient is projected internally or externally, the restitutive reading is available.[7]

Now that we have understood that a restitutive reading may be obtained by restoring an argument, be it external or internal, to a previous possession (or dispossession), let us compile a short preliminary list of types of things that an agent may have, and the related verbs for coming to have them or to remove them. I show below in (27) through (31) that these verbs have restitutive readings.

Table (ii): possessions types and their related verbs

Possessed type	**Adding**	**Removing**
Knowledge	*remember, learn*	*forget*
Money	*earn, gain*	*lose*
Clothes	*wear, put on*	*Remove, take off*
Physical objects	*catch, capture, grab, retrieve..*	*lose*
Non-physical objects	*accept, seize…*	*lose*

Below are representative examples for each class. The subject in each sentence is a genuinely external argument since the verbs may be passivized (as will be demonstrated in (34) below).

(27) **Restitutive verbs of knowledge**

a.[Mary] remembered [John's name] again.

b. A moment after the test was over, [John] forgot [the material] again.

(28) **Restitutive verbs of money**

a. John was born rich and never worked a day in his life. By the age of 30, he had squandered his entire fortune. Luckily, [He] earned [the money] again by gambling.

b. Hardworking and determined, a penniless Max managed to accumulate a large sum of money. Unfortunately, [He] lost [the money] again after a single visit to the casino.

(29) **Restitutive verbs of clothes**

a. [John] put on [the shirt] again (after the medical examination).

b. [John] removed [the shirt] again (deciding to stay at home after his workday has been cancelled).

[7] A third interpretation, an intermediate between repetitive and restitutive reading, also exists: Mary threw the ball to John, who caught it. John threw the ball to David, who caught it again. Here, the catching event itself is repeated to the exclusion of the agent. This is not a restitutive reading, which entails no event repetition. I will not be concerned with the intermediate reading here.

(30) **Restitutive verbs of physical possession**

a. [John] grabbed / captured / caught [the ball] again.

b. [The museum] acquired [the painting] again.

(31) **Restitutive verbs of non-physical possession**:

a. [George] accepted [the kingship] again.

b. I think I found God, but now [I]'ve lost [him] again.

c. After a debilitating crisis of faith, [John] found [God] again.

In light of the above, the easily accessible restitutive readings in examples (27) through (31) show that it is possible to have a restituted state in which the direct object is predicated of the external argument (both appearing in brackets), to the exclusion of a repetition of the event denoted by the verb.

2.2.2.2 Decompositional analyses of external possessors cannot be defended

In light of the data above, we face the question whether the restitutive reading may be attributed to syntactic constituency. For a syntactic hypothesis to be tenable, there needs be a corresponding VP-internal constituent which denotes the possession relation between the theme and the possessor. Thus, in order to preserve constituency, verbs such as *catch*, *put on, remember, grab, accept* and *earn*, among others, must be analyzed in one of the following ways (I use P_{HAVE} head for convenience, but also address a low applicative head analysis when necessary):

(32) a. adjunction analysis: $John_i$ caught [PRO_i P_{HAVE} the ball]. (constituent as adjunct)

b. raising analysis: $John_i$ caught [t P_{HAVE} the ball]. (constituent as complement)

c. covert double object analysis: $John_i$ caught [PRO_i P_{HAVE} the ball].

I will now show that none of the analyses above is possible.

Under the adjunction analysis, (32a), the possessed DP (e.g. *the ball*) is not an argument of the verb (e.g. *catch*). Clearly, this is incorrect, as can be shown by the ungrammaticality of (33a), in which the constituent is omitted, and a do-so test (33b), in which the constituent patterns with arguments, but not with adjuncts:

(33) a. John caught *(the ball).

b. *John caught the ball and Bill did so the stick.[8]

Alternatively, adjunction of a constituent with a low applicative head (instead of an SC) is not a possible solution under Pylkkänen's account. In detail, low applicatives in English are not licensed with unergatives, since they impose a relation between the indirect and direct object of the verb:

(34) a. I baked a cake

b. I baked him a cake (i.e., I baked a cake for him)

c. I ran.

[8] Recall that *do-so* may be substituted for a VP, hence one can make a distinction between arguments below the VP and modifiers above it. For instance:
i. *John broke the glass ball and Bill did so the stick
ii. John buys toys in ToysRUs and Bill does so in Big Toys.

d. *I ran him (i.e., I ran for him). (Pylkkänen 2008: example (11))

Since an adjunction analysis entails that *catch* is unergative, a low applicative head is not expected to be licensed.

The second analysis, (32b), raising an internal argument to the subject position, also cannot be defended. The recipient is a truly an external argument, as can be seen from the fact that these verbs trivially allow passivization (35):

(35) a. The ball was caught.

b. The shirt was put on.

c. The material was forgotten.

d. The money was earned.

Lastly, a covert double object construction, (32c), is also untenable. If double object constructions were allowed to realize the goal as a PRO, it would immediately raise the question: what blocks run-of-the-mill double object constructions from showing reflexive readings with a PRO? In other words, suppose the following two sentences are accorded the same structure:

(36) a. [$_{vP}$ John [$_{v¢}$ v[$_{VP}$ **give** [$_{HAVEP}$ Mary [$_{HAVE}$ the ball]]]]].

b. [$_{vP}$ John$_i$ [$_{v¢}$ v[$_{VP}$ **catch** [$_{HAVEP}$ PRO$_i$ [$_{HAVE}$ the ball]]]]].

It would then be unclear why ordinary double object constructions do not allow PRO, such that the following sentences are interpreted reflexively:

(37) a. *John$_i$ gave [PRO$_i$ the present] -> John gave the present to himself.

b. *John$_i$ threw [PRO$_i$ the ball] -> John threw the ball to himself.

c. *John$_i$ sent [PRO$_i$ the letter] -> John sent the letter to himself.

In light of the above, the analysis that *catch*-verbs are a covert double object construction would define a hitherto unobserved class of double object verbs, which is, of itself, stipulative and creates more problems than the ones it purports to solve.

It emerges that neither adjunction, nor raising, nor double object construction analyses are tenable. Crucially, observe that in the evaluation of the analyses above nothing hinges on the presence of an SC, a P$_{HAVE}$ head or an applicative head: my argument is independent of theory-specific details because it shows that verbs such as *catch*, *put on, remember, grab, accept* and *earn*, among others, do not pattern with unergatives, with raising verbs, or with double object constructions. Rather, all empirical evidence suggests that these verbs are run-of-the-mill transitives: they realize an external possessor argument and an internal argument (a possessed direct object). Since a possession relation holds between them, this demonstrates that it is enough to create a semantic state which serves as an input to *again* modification. Thus, the null hypothesis now is represented by the semantic approach to restituted states.

2.2.3 *Again* with VP-ellipsis

Another relevant argument is put forth by Horvath & Siloni (forthcoming) and Siloni (forthcoming): the behavior of *again* in VP-ellipsis constructions suggests that its interpretation is not reducible to constituency. In particular, an elided VP is interpreted as having a repetitive reading whereas its syntactic antecedent is interpreted as having a restitutive one, or vice versa. Consider a scenario, (38) in which Paul, a nosy neighbor of John and Bill, reports their movements this morning to the police:

(38) a. Paul: "This morning I saw John closing his door, which was installed wide open yesterday and left open since. When closing it, he must've heard that Bill, his neighbor next door, opened his door briefly to pick up the newspaper.

Afterwards John opened the door again and so did Bill."

b. "… afterwards Bill opened the door again and so did John". (Siloni forthcoming, example (22))

Given a constituent parallelism requirement for a VP-ellipsis (Sag 1976; Williams 1977; Fox 2000), sentences (38) are predicted to be infelicitous under a decompositional account since the alleged attachment sites of *again* in the antecedent and the elided VPs are different. This prediction is not borne out.

2.2.4 *Again* with inference of results

A second observation of Horvath & Siloni is that accomplishment verbs such as *dig* show a reading in which a restituted state is not one which obtains as a result of the activity. Rather, the state only indicates the existence of the object (Siloni forthcoming). Consider:

(39) They dug the cave again.

i. They did it again. (repetitive)

ii. There was a cave again (restitutive)

(40) Story tellers used to meet every year in a huge natural cave in mount Ida for a story telling festival. Ten years ago the cave collapsed. The locals dug it again and intend to renew the tradition. (Horvath & Siloni forthcoming, example (34))

Since the restitutive reading in (40) does not refer to a previous state in which the cave was dug, but only to a state in which there existed a natural cavity, *again* cannot be said to modify a syntactic RESULT STATE of the root *dig*.

In the same vein, I suggest that parallel behavior is exhibited by *slam* or *abandon*. These verbs encode both the state and the manner of activity in which the state is brought about (e.g. "to close in a forceful way that makes a loud noise" and "to leave with the intention of never coming back", respectively) They also show restitutive readings that exclude the manner of activity (google):

(41) a. Perplexed, just a bit awestruck by now, I cautiously and quietly followed the trucker to the back of his trailer. There, he threw open the rear door and hauled all of his flab into the opening. I could see inside for only a moment before he turned back, looked me square in the face, and slammed the door again.

b. But as suddenly as they appeared, the visitors abandoned the zoo again. By midweek there was no soul in sight.

Since the restitutive readings in (41) do not refer to a previous state in which the object was slammed or abandoned, but only to a closed or an unoccupied state, *again* does not correspond to the expected RESULT STATE of the root (i.e. *a slammed door, an abandoned village*). It emerges that verbs such as *dig*, *slam* and *abandon* allow the **inference** of a weaker restituted state. Admittedly, this is not a process that applies productively to verbs across the board, but there are cases in which *again* can probe semantically-derived antecedents, thus it is more parsimonious to hypothesize that legible antecedents are evaluated in the semantic level of interpretation. Since Montague's seminal work, we know that units of interpretation are largely constrained by compositionality, but the data proves that the behavior of *again* cannot be reduced to it.

2.2.5 *Again* with deadjectival verbs

Verbs which do not entail RESULT STATEs yet show restitutive readings pose a serious challenge to a purely syntactic analysis (arguments made in Fabricius-Hansen 2001, Pedersen 2014):

(42) The river widened again

(i) Repetitive: the river has undergone a second widening.

(ii) Restitutive: the river has undergone widening, following a previous narrowing.

Hence, a scopal analysis of the restitutive reading of (43) cannot be derived by scoping over a nonexistent RESULT STATE constituent (i.e. the river is not necessarily wide). Instead, von Stechow (1996) reverts to proposing a distinct syntactic decomposition which includes an abstract comparative morpheme:

(43) [the river [$_V$ BECOME [$_A$ wide -ER]]]

This proposal is problematic for two reasons. First, as far as I can tell, von Stechow does not establish the syntactic existence of the abstract morpheme with independently attested evidence. Hebrew, for instance, accords both telic and atelic change-of-state verbs the same morphological pattern (e.g. *hit-yabe*š 'dry', *hit-raxev* 'widen'; both show restitutive readings). The abstract comparative morpheme therefore seems to be speculative.

Second, and more importantly, as Pedersen (2014) notes, there is a correlation between the inferences of adjectives and their corresponding deadjectival verbs. Gradable adjectives have been recognized as falling into two descriptive classes: relative adjectives, which require a contextually provided standard or comparison-class (e.g. *narrow*, *strong*), and absolute adjectives, which are not context sensitive in the same way (e.g. *straight, pure.* see Yoon 1996; Rotstein & Winter 2004; Kennedy & McNally 2005; Winter 2006). The same classification is carried over to the verbal domain: a deadjectival verb that is based on a relative adjective will not show an absolute, contextually-independent result states:

(44) a. The tree straightened ⇒ The tree became straight (absolute)

b. John purified the water ⇒ The water became pure (absolute)

c. The gap narrowed !⇒ The gap became narrow. (relative)

d. The muscle strengthened !⇒ The muscle became strong (relative)

In light of the above, the inferential patterns found with verbs are the same ones found with their corresponding adjectives. Under von Stechow's account, this generalization cannot be expressed in a non-stipulative way (since the adjective does not contain an abstract comparative morpheme). By contrast, if the observable patterns stem from the (scalar) semantics that are already present at the adjectival level, there is no need to stipulate syntax with an additional, abstract morpheme for the subset of verbs derived from relative adjectives.

2.2.6 Interim summary of *again*

Summarizing my discussion of *again*, I have shown that syntactic decomposition theories fail to account for data from the following domains:

(i) A restitutive reading may be obtained easily for external possessors. The restituted state does not correspond to a constituent (section 2.2.2).

(ii) VP-ellipsis allows the elided constituent to target an antecedent which contains *again* with a different reading. This is unexpected if the reading is dictated by the properties of the syntactic constituent (section 2.2.3).

(iii) Verbs such as *dig*, *slam* and *abandon* demonstrate that a restitutive reading may be inferred from an entailment of the activity rather than the alleged syntactic RESULT STATE (section 2.2.4).

(iv) The syntactic structure accorded to Degree Achievements such as *widen* or *rise* in the presence of *again* seems to be purely stipulative (section 2.2.5).

In all domains above, since the restituted state is not a constituent, it supports the view that *again* operates at the semantic level of representation: syntactic constituency is not a necessary condition. Of course, the restituted state coincides with a constituent in many cases, which is only to be expected, but it can also clearly fail to do so.

2.3 Temporal adverbials in decompostional accounts

A last potential piece of evidence for a structural theory of English causatives comes from the behavior of temporal adverbials. The argument is as follows: the durative phrase *for x minutes* may modify the RESULT STATE constituent, such that the interpretation is that the state holds for that period of time:

(45) a. John opened the door for 5 minutes → the door was open for 5 minutes.

b. John gave Mary the car for 5 days → Mary has the car for 5 days.

First and foremost, the set of verbs that project an external possessor (discussed extensively in section 2.2.2) allows the same adverbial interpretation:

(46) a. John put on his shirt for 5 minutes → John had his shirt on for 5 minutes.

b. John caught the ball for 10 seconds → John had the ball for 10 seconds.

c. John remembered Mary's name for 5 minutes (and then he forgot).

d. John earned 10K dollars for an hour (and then he lost them all).

The enduring state here, as before, is composed from an external possessor and a possessed direct object, to the exclusion of the verb. Thus, the adverbial fails to modify a constituent in the same way *again* does. Observe that the stipulation that the state modified by the temporal adverbial is the entire VP (or *v*P) is wrong. Under such a stipulation, both the agent and its associated verbal head would fall under the scope of the adverbial; this is quite wrong. (46a) does not mean that John engaged in a five-minute activity of putting on his shirt, or else that he was causing, for five minutes, a state where he is dressed. Rather, he put on the shirt once, which resulted in five minutes of being dressed.

I continue to draw from Horvath & Siloni's (forthcoming) arguments. Their central argument against the durative phrase as a diagnostic of constituency is that it is felicitous only under the interpretation that the external argument controls the termination of the result. If such interpretation is blocked, the durative phrase is infelicitous. Consider (47-48), taken from Horvath & Siloni, examples (43)-(44)):

(47) Danny found the big wrapped box that contained the present his parents bought for his birthday. He immediately wanted to see what he was getting, so he opened the box. He took a look at the present, and intended to close the box and wrap it up right away, before anybody noticed. But then he was called to dinner, and later forgot about the open box and went to sleep. He remembered to close it only the following afternoon.

(48) a. *Due to his forgetfulness, Danny opened the box for a whole day.

b. Due to Danny's forgetfulness, the box was open for a whole day

The examples above demonstrate that in the case where the agent did not intend the result state to terminate, (48a) cannot be uttered. This kind of evidence suggests that the durative adverbial is contingent upon the interpretation of the external argument. Generally, the durative adverbial is unconstrained by volitionality and depends only on aspectual information:

(49) a. The sun shone for 5 hours.

b. The horrible news worried David for the whole day.

c. This glacier has been melting for 5,000 years.

Horvath & Siloni's account is further strengthened by the observation that when a RESULT STATE is understood to have no natural termination, unintentional causers are infelicitous with the durative phrase:

(50) #The wind opened the door for five minutes (Siloni 2014, example (34)).

The example in (50) casts doubts on adverbial modification as a tool of detecting a constituent since it clearly depends on information that is external to it.

In light of the above, we have seen clear evidence that the durative phrase may target a state which is not a constituent (see (46)), and is contingent upon the interpretation of the external argument (see (48),(49)). These data cannot be reconciled with a syntactic decomposition approach.

Recapitulating section 2 entirely, having reviewed representative accounts of Pylkkänen 2008 and Ramchand 2008 (section 2.1), and having shown that neither *again* nor temporal adverbials are reliable as diagnostics of constituency (sections 2.2 and 2.3), decompositional theories of English causatives are effectively left with no positive evidence.

2.4 An alternative account of *again*: semantic underspecification

I believe that a theoretically desirable element underlies the assumptions of a decompositional account: a fixed-meaning analysis of *again* is preferable provided that that it explains the distributions of interpretations and grammatical word orders successfully.

Several proposals have been made in the literature towards this goal. For instance, Klein (2001) and Dimroth (2004) assign to *wieder/again* the meaning "… and not for the first time", leaving the rest of the interpretational burden to the context. For the sake of completeness, I introduce below Maienborn's (2003) account as a representative theory that derives the restitutive reading of *again* from world knowledge (rather than a scope ambiguity), while retaining a compositional treatment of adverbs.

In the core of Maienborn's theory lies the observation that there is a need to extend the Davidsonian event semantics to tackle variable interpretational contribution of adjuncts. For instance:

(51) a. Eva signed the contract in the office. (external modifier)

b. Eva signed the contract on a separate sheet of paper. (internal modifier)

The locative modifier in (51a) expresses the notion that the whole event specified by the verb is located in the office. By contrast, the locative in (51b) expresses that only a certain part of the event, pertaining to the signature, is located on paper. Such observations led Maienborn to propose the following architecture: in the case of external modification, the value of free variable introduced by the adverbial is identified strictly with the verb's own eventuality argument in a traditional Davidsonian way (e.g. (51a)). By contrast, in the case of internal modification, the value of the free variable is not the verbal event argument itself, but rather a certain part thereof that is determined by the conceptual system on the basis of contextually salient world knowledge. The actual target of such an event-internal modifier is semantically underspecified (e.g. (51b)). Maienborn suggests that the distinction between internal and external modification is compositionally reflected: externally-modifying adjuncts attach in the level of the maximal projection (XP) they modify, whereas internally-modifying adjuncts attach below it.

A repetitive *again* is thus base-generated in the VP periphery and modifies the verbal event variable in a standard way. The restitutive reading, however, is derived from an adverb that is base-generated in the V-periphery and whose contribution is computed on the basis of world knowledge (see also Jäger & Blutner (2003) free-variable-account of *again*). Maienborn puts forth a compositional theory in which syntax and pragmatics "conspire" to produce the relevant

interpretation via semantic underspecification which is associated with an adjunct generated in a low position (an event-internal modifier).[9]

If Maienborn is on the right track, then, her theory shares with von Stechow's account two theoretical constructs: (i) the semantic contribution of the adjunct is fixed (a free variable signifying repetition), and (ii) the way the variable of adjunct is assigned a specific value (e.g. a given event) is sensitive to its position in syntactic structure. However, her account differs significantly from von Stechow's by deriving the interpretation via a combination of compositional operations and semantic underspecification. This line of reasoning makes the correct prediction that *again* does not necessarily serve as a constituency test and may have subtler inferences according to conceptual information.

3 Predictions of lexical accounts

3.1 The causative-unaccusative alternation is independent of compositionality

Now it is time to turn to the second theoretical track and consider the alternative. What would constitute positive evidence for a lexical theory of English causatives? What specific predictions would such a theory make for the causative-unaccusative alternation?

First, let us recall what the properties of the alternation are. The pairs of alternating verbs are characterized by the following semantic criteria:

(52) Semantic criteria for causative-unaccusative pairs:

i. The external argument corresponds to a cause role and shows thematic underspecification; the subject position may be occupied by agents, natural forces, instruments and eventualities (Levin & Rappaport-Hovav 1995; Van Valin & Wilkins 1996; Reinhart 2002). Under decompositional views, it entails the presence of a causative event.

ii. The internal argument has a change-of-state interpretation (Fillmore 1970). Under decompositional views, it entails the presence of a RESULT STATE constituent. [10]

If the relation between the pairs is lexically determined, it means that no post-lexical operation would affect the availability of the alternation. Specifically, lexical theories predict that syntactic operations applied to structures of non-alternating verbs do not give rise to a corresponding alternate. Decompositional theories make the opposite prediction.

(53) Prediction of a lexical theory of the causative-unaccusative alternation:

Syntactic operations cannot give rise to the alternation.

In what follows, I survey different mechanisms to induce a syntactic structure which contains a causative event and a result state. As we will see, none of these structures exhibits the

[9] I cannot do justice here to a fully detailed account of the conceptual interpretation of event-internal modifiers. Generally speaking, an event-internal modifier (such as *again* in its restitutive reading) supplies further information on an already-established information in the conceptual structure (CS) of the event referent to which they attach. Maienborn (2003) uses abductive reasoning (Dölling 1997): the inference to the best explanation. In abductive frameworks, the interpretation of a sentence is the result of reducing it to its most economical explanation that is consistent with what we know. In that process of reduction, free variables are assigned values that depend on world knowledge, according to the available structures of the conceptual system during the course of the derivation (see Lang et al 2003:490-502).

[10] Recall that proponents of decompostional theories use the restitutive reading of *again* in verbs such as *open* as evidence for the presence of a RESULT STATE constituent. That is, verbs showing causative alternations are resultatives.

alternation (see Table (iii) below). That is, there are good reasons to suspect that the alternation is insensitive to syntactic structure.

Table (iii): Lack of alternation for compositional causatives

	Causative event?	Syntactic Result state?	Decompositional prediction: alternates?	Alternates?
Unergatives with resultative predication *The clock ticked the baby awake* (section 3.2.1)	Yes	Yes	Yes	No
Causative-transitives with resultative predication *The storm swept the beach clean* (section 3.2.2)	Yes	Yes	Yes	No
Causative-transitives with particles *The sea ate the beach away* (section 3.2.3)	Yes	Yes	Yes	No
Causative-transitives with goal PPs *The wind pushed the cart across the parking lot* (section 3.2.4)	Yes	Yes	Yes	No

3.2 Non-alternating resultative constructions

3.2.1 Resultatives with unergatives

I shall discuss the observations in table (iii). Let us begin the review of empirical findings by considering a fact I believe has not received much attention: there are no unaccusative alternates for unergatives with a secondary resultative predication, as is seen in (54) and (55):

(54) a. The clock ticked the baby awake. (Randall 1982)

b. The phone rang me out of my slumber. (Levin & Rappaport-Hovav 1995)

c. The plane flew the ozone layer thin. (Washio 1999)

d. The jackhammer pounded us deaf. (Randall 1982)

(55) a. *The baby ticked awake.

b. *I rang out of my slumber.

c.*The ozone later flew thin.

d. *We pounded deaf.

From the viewpoint of a decompositional approach, the data are not straightforward. The structures in (54) relate a causative argument in one predicate to a change-of-state argument in another. If the causative event and the result state are two decomposable parts, then a priori the absence of the unaccusative is surprising. Observe that the change-of-state argument may be raised to the subject position via A-movement in passives, the same movement witnessed in unaccusatives and possible also with examples (54):

(56) a. The baby was barked awake. (Goldberg 1995)

b. The baby was ticked awake (by the clock).

c. We were pounded deaf (by the jackhammer)

Thus, while other syntactic operations apply to these predicates, it is not so for the causative-unaccusative alternation. On the other hand, if the alternation were determined prior to the emergence of syntactic structure, the ungrammaticality of (55) would be fully expected, since these change-of-state verbs are not formed in the lexicon (e.g. **the baby ticked*). A decompositional analysis may account for the data in (54)-(55) by adding a stipulation which would rule out unergatives with resultative adjuncts:

(57) The alternation is exhibited only if the root selects a complement.

If the decision whether a verb takes a complement is based solely on lexical information carried by the root (e.g. relevant thematic information), then the availability of the alternation is decided by the lexicon. In such a case, there is no theoretical justification to derive the availability of the alternation from the presence of characteristic syntactic heads since that derivation is reducible to the lexical information which licensed them.

Hence, a decompositional theory must assume that the decision whether a verb takes a complement is not determined lexically. Rather, the merging of a constituent in a complement position must also be affected by compositional, syntactic factors. Under that view, a compositional theory of the alternation encounters a problem: why are there no unaccusatives like those in (55)? they are composed predicates with a RESULT STATE constituent (e.g. *the baby ticked-awake, we pounded-deaf*). As we will see, the same problem resurfaces in the following sections.

3.2.2 Resultatives of transitives

Confining ourselves to transitives, consider a further condition on alternating predicates: a change-of-state interpretation. Suppose that the alternation is syntactically governed. In such a case, the addition of a syntactic RESULT STATE to transitives, via secondary predication, should give rise to the alternation even in case of verbs that do not denote a result state. This is not borne out:

(58) a. The winter storms swept [the beach (clean)].

b. *The beach$_i$ swept [t$_i$ (clean)].

Since the syntax of (58a) is the same syntax postulated for alternating verbs, the ungrammaticality of (58b) cannot be predicted from structure alone. Rather, *sweep* does not denote a change of state in its argument. Thus, the evidence in (58) strengthens the hypothesis that the alternation is independent of syntactic structure.[11]

More data collected from Corpus of Contemporary American (COCA) is presented in (59) below. The ungrammatical corresponding unaccusatives follow in (60).

(59) a. A woman lies down on a sandbank, the waves fall over her, push, lift, carry, throw, and the sand buffs [the body smooth].

b. Overhead the sky lapses into rain, pelting [the pavement clean].

c. The fierce waves of the Pacific have pounded [the old wood here smooth].

d. You can see where these points have rubbed [the steel smooth].

e. This, they presumed, was often enough to scour [the land clean] without disturbing the deep sea bottoms where proper red-yellow algae still survived.

f. Once that dies down, the ice will scrape [the island clean] again.

g. Clouds of ash, gas, and rock that scrape [the landscape bare] for miles around.

h. Months ago, a realtor left the back door unlocked, and tonight it comes unstuck when a hard wind sucks [it open].

i. The mix has the ability to absorb a tremendous amount of water. So if you use dry mix, it will suck [the reservoir dry].

[11] Under a manner/result perspective (see Beavers & Koontz-Garboden 2012; Rappaport Hovav & Levin 2010), *sweep* is a manner verb. (58) shows that the compositional addition of a result state does not remove manner. Thus, only verbs lexicalized as result verbs alternate.

j. Richmond summers were just as hot, without benefit of ocean breezes to sweep [the air clean].

k. The night's rain washed [the glacier clean], making its face shine a pale but scintillating blue.

l. The blast threw Khan into the air, knocking [him unconscious] and covering him with debris.

m. The speeding car knocked [him dead]. (google)

n. The slight extra depth of the Micro SIM plus adapter had pressed [the pins flat].

o. She hit a snow hill. The wind had packed [it hard], but not so hard that it was solid ice.

(60)

a. *The body buffed smooth.	i. *The reservoir sucked dry.
b. *The pavement pelted clean.	j.* The air swept clean.
c. *The old wood pounded smooth.	k. *The glacier washed clean.
d. *The steel rubbed smooth.	l. *Khan knocked unconscious.
e. *The land scoured clean.	m. *He knocked dead.
f . *The island scraped clean.	n. *The pins pressed flat.
g. *The landscape scraped bare.	o. *The snow hill packed hard.
h. *The backdoor sucked open.	

In all examples (59) above, the verbs do not denote a change-of-state in their direct objects. Hence, a lexical account predicts they do not alternate, as is borne out. The induction of RESULT STATE via secondary prediction does not change the picture, which is an unexpected result for compositional approaches. In particular, the data above are strong evidence against both purely constructional approaches (Goldberg 1995) and purely decompositional approaches (Borer 2005).

In this stage, one may be tempted to argue that unaccusatives composed of two predicates are unattested in English because English does not allow the formation of overt complex predicates (e.g. **John red-painted the walls*). That is, it is possible to argue that the second predicate cannot raise from inside the RESULT STATE constituent to the verbal projection because the latter projection is already occupied by the first predicate. However, this line of reasoning is false, because the ungrammaticality of these unaccusatives is also observed in Dutch, a language known to allow overt complex predicates. Consider:

(61) a. *Dat de storm het strand schoon veegde*

that the storm the beach clean wipes

'that the storm wipes the beach clean.'

b. **Dat het strand schoon veegde*

that the beach clean wipes

c. *dat de slag Jan buiten westen sloeg*
that the blow Jan out west beat

'that the blow knocked Jan unconscious.' (out west = knock unconscious)

d. **dat Jan buiten westen sloeg*

that Jan out west beat

e. *dat de golven het hout glad beukten*

that the waves the wood smooth pounded

'that the waves pounded the wood smooth.'

f. **dat het hout glad beukte*

that the wood smooth pounded

The example above shows that although there is an overt complex predicate for the causatives (61a,c,e), the unaccusatives with the same complex predicate are ungrammatical (61b,d,f). Therefore, the hypothetical availability of composed unaccusatives (e.g. example (60)) does not depend on whether or not a language allows complex predicates.

3.2.3 Non-alternating causatives with particles

The same state of affairs is observed in more syntactic environments. For instance, Folli & Harley (2005) claim that the addition of certain particles renders verbs of consumption causatives. They argue that the particle changes the event structure to resultative and the flavor of little *v* from *v*-DO to *v*-CAUSE. Nonetheless, the presence of a causative event and a result state still does not license an unaccusative alternate, as seen below (62a,c,e are taking from Folli & Harley 2005):

(62) a. The sea ate away the beach.

b. *the beach ate away.

c. The wind carved the beach away.

d. *the beach carved away.

e. The washing machine chewed up the laundry.

f. *the laundry chewed up.

The examples above again show that outputs of syntactic operations do not give rise to the alternation. The same data is repeated in Italian. Folli & Harley claim that *si* in verbs of consumption is a light verb which changes the event structure to resultative. Yet, the very same structure does not license an unaccusative alternate:

(63) a. *Il mare si é mangiato la spiaggia.*

the sea si is eaten the beach

'The sea ate away the beach.'

b. **la spiaggia si é mangiata.*[12]

the beach si is eaten.

c. *Il vento si é ritagliato un pezzo di spiaggia.*

the wind si is carved a piece of beach

'The wind carved away a piece of beach.'

d. **un pezzo di spiaggia si é ritagliato.*

a piece of beach si is carved

e. *L'inflazione si é (ri)succhiata i risparmi.*

the inflation si is sucked the savings

[12] The intransitives in (63) are not rescued by an additional *ci* (assuming that a clitic is independently required to form the unaccusative).

'the inflation sucked up the savings.'

f. **i risparmi si sono (ri)succhiati.*

the savings si is sucked.

Once again, the examples above show that post-lexical operations do not give rise to the alternation.

3.2.4 causatives and transitives with goal PPs

Schäfer (2008) argues, following Folli & Harley, that the phenomenon discussed in section 3.2.3 is not limited to consumption verbs; causatives may also be licensed by resultative syntax as well as particles. However, the resultative syntax does not show an unaccusative alternate, as is seen below:

(64) a. The wind pushed the shopping cart ??(across the parking lot).

b. *The shopping cart pushed across the parking lot.

More widespread is the modification of agentive manner of motion verbs e.g. *run*, *march*…) with PP goals or with directional particles. For the sake of discussion, let us entertain the hypothesis that these structures are unaccusatives (see Borer 2005; Folli & Harley 2006; Hoekstra & Mulder, 1990; Levin & Rappaport-Hovav 1995, among many others). Although they are assumed to be unaccusatives that have syntactic RESULT STATEs, the causative alternate is not productive for them (Narasimhan et al 1996):

(65) a. *John swam/ran/danced the children apart.

b. *She jumped/leapt the dog clear of the oncoming vehicle.

c. *The general trudged/ambled the tired soldiers to their tents.

d.*We sashayed/swaggered the models along the catwalk.

Even when they do sporadically show transitive alternates, the external argument does not correspond to the canonical, underspecified cause role, which licenses agents, natural forces and instruments. The transitive is strictly agentive, as seen below:

(66) a. The soldiers marched to their tents.

b. John / *the rain / *the hunger marched the soldiers to their tents.

c. The mouse ran through the maze.

d. John / *the trap / *the hunger ran the mouse through the maze.

e. The horse jumped over the fence.

f. John / *the stick / *the fright jumped the horse over the fence.

Therefore, in spite of the fact that these constructions have syntactic RESULT STATEs, formed by the productive addition of goal PPs, the lack of alternation in (65) and (66) supports the conclusion that the availability of alternation is determined in the lexicon. Differently put, since the verbs do not alternate in the absence of the goal PP, they do not alternate when the PP is introduced compositionally.

3.3 Summary of the empirical findings

I reviewed evidence motivating a lexical analysis of the causative-unaccusative alternation. Syntactic operations which induce causative structures were shown not to give rise to unaccusative alternates. Table (iii) is repeated below:

Table (iii), repeated:

	Causative event?	Syntactic Result state?	Decompositional prediction: alternates?	Alter-nates?
Unergatives with resultative predication *The clock ticked the baby awake* (section 3.2.1)	Yes	Yes	Yes	No
Causative transitives with resultative predication *The storm swept the beach clean* (section 3.2.2)	Yes	Yes	Yes	No
Causative transitives with particles *The sea ate the beach away* (section 3.2.3)	Yes	Yes	Yes	No
Causative transitives with goal PPs *The wind pushed the cart across the parking lot* (section 3.2.4)	Yes	Yes	Yes	No

Syntactic approaches that maintain that the alternation expresses a non-directional relation between two structures (Alexiadou et al., 2006; Borer, 2005; Folli & Harley, 2005; Schäfer, 2008, Pylkkaenen for the case of English Zero-causatives, among others) cannot explain the absence of the intransitives.

Theories arguing for syntactic causativization are also compromised given my findings. There are three relevant problems:

(i) I have shown in the first part of the paper that is no positive evidence for the existence of decomposed structure for English causatives. That is, syntactic theories failed to show that there are good reasons to accept a causative head on top of a RESULT STATE constituent.

(ii) Suppose that manner verbs with goal PPs are unaccusatives. Syntactic causativization fails to predict the absence of corresponding productive causatives alternates or their sporadic agentive versions (see (65)-(66)).

(iii) Syntactic theories also do not explain what blocks the formation of a unaccusatives with a composed RESULT STATE constituent that may serve, in turn, as input to causativization (i.e, **the reservoir [sucked dry]* is a possible unaccusative which has a change-of-state interpretation: *the reservoir dried*). If only lexical change-of-state unaccusatives may give rise to the alternation, assuming a syntactic operation is clearly superfluous (see also (i)).

Recapitulating the second part of the paper (section 3), I have shown a pattern: the alternation is insensitive to syntactic structure.

4 Conclusions

This paper addresses the question: which component of the grammar is the locus of the causative-unaccusative alternation? I have hypothesized that it is derived lexically (abstracting away from the question of directionality). The hypothesis has been validated in a two-fold way. First, I showed that decompositional theories have no positive evidence. Specifically, evidence from adverbial modification, primarily the ambiguous readings of *again* and temporal adverbials, has been shown to be inconclusive. Thus, decompositional theories are, at best, compatible with the data so far, but do not perform better than competing lexical alternatives.

Second, I went on to demonstrate that, in fact, decompositional theories do perform less well. I compiled evidence corroborating the claim that the alternation is insensitive to syntactic decomposition. Namely, in any environment in which we introduced RESULT STATEs compositionally into a causative or an intransitive structure, that structure did not exhibit the alternation, given that it did not alternate in the absence of compositional modifications. This

necessarily shows that the causative-unaccusative alternation is not a syntactically derived structural relation, given that decompositional theories explicitly argue that alternating verbs decompose into a RESULT STATE constituent, as allegedly detected by the restitutive reading of *again* in verbs such as *open*.

Recapitulating, there is no positive evidence for deriving the causative-unaccusative alternation in the syntactic component. Rather, all empirical findings point to the contrary: it is fixed prior to the emergence of syntactic structure.

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