PART II From causal meanings to causal structures

### CHAPTER 9 Causation at the syntax-semantics interface FABIENNE MARTIN AND FLORIAN SCHÄFER

#### 9.1 Introduction

The expression of causation at the syntax-semantics interface raises a number of issues that reveal much about the nature of the interface itself. In this chapter, we present an overview of these issues as they emerge in the context of causative verbal structures. The central set of lexical causative verbs are those undergoing the causative alternation illustrated in (1a, b).<sup>i</sup> These verbs have a transitive (causative) as well as an intransitive (anticausative or inchoative) use. In their intransitive use, such verbs denote a change of state (or change of location) of their theme argument. Their transitive use roughly means 'cause to v-intransitive'. A standard semantic representation of causative and anticausative verbs is given in (2a, b) (e.g. Dowty 1979, Levin & Rappaport Hovav 1995).

- (1) a. John opened the door.
  - b. The door opened.
- (2) a.  $\lambda y \lambda x [x CAUSE [BECOME [y < STATE>]]]$ 
  - b.  $\lambda y [BECOME [y < STATE>]]$

The causative alternation has been the topic of intense research leading to many insights about the relation between causative semantics and syntactic structure. These relate to the following questions: (i) What is the exact semantic decomposition of causative and anticausative verbs and how does it map to linguistically traceable event decomposition? (ii) At what level of linguistic representation are verbal (sub-)events encoded? (iii) What are the thematic as well as syntactic properties of the arguments of (anti-)causatives? (iv) Which verbs allow the causative alternation and why do not all verbs which are best characterized as causatives have an anticausative counterpart? (v) Finally, what is the derivational relationship between the alternants, i.e. is the causative version derived from the anticausative version via a process of causativization, or is the anticausative version derived via a process of detransitivization ; alternatively, are both derived from a common base? We will not discuss this last question in any detail here and we will also leave aside related questions about the role of morphological marking that can be found on one or the other member of the causative alternation in many languages (cf. Folli, this volume, for Italian and Ilic, this volume, for Serbian; see also e.g. Schäfer 2009a, Rappaport Hovav to appear, or Alexiadou et al. to appear, for recent overviews and further references to different proposals).

The chapter is structured as follows. The argument structure of causative/anticausative verbs is addressed in Section 9.2. In Section 9.3, we present and discuss proposals about their event decomposition. In Section 9.4, we illustrate the deep inter-connection between the argument structure/theta roles and the event decomposition of these verbs through several phenomena. Finally, in Section 9.5, we address some of the differences between mono-clausal vs. bi-clausal causatives, focusing on the distinction between direct and indirect causation. We will see that the thematic properties of external arguments play again a crucial role in this distinction (and more particularly in the possibility to use a lexical causative to express indirect causation).

#### 9.2. The argument structure of causative/anticausative verbs

#### 9.2.1. The Underspecified External Argument Condition and the causative alternation

We begin with the syntactic mapping of argument structure. The nominative subject of the anticausative in (1b) has the same thematic role (patient or theme) as the accusative object of the corresponding causative in (1a); in fact, anticausative verbs qualify as prototypical instances of unaccusative verbs, i.e. their nominative subject is base generated as an underlying object (Burzio 1986, see Schäfer 2009a for illustration and references). The external argument of the semantic CAUSE predicate is mapped to the syntactic external argument position.

As the b-examples in (3)-(6) below show, all causative verb have a passive counterpart. The causative alternation, on the other hand, is restricted to a subset of causative verbs. Research in this domain has shown that the specific thematic characterization of a verb's external argument strongly correlates with the availability of an anticausative use (e.g. Burzio 1986). We label this restriction the *underspecified external argument condition*: transitive verbs that cannot form anticausatives restrict their subjects to *agents* (or *instruments*) and disallow *causers*, cf. (3-4), while transitive verbs that allow anticausative formation have thematically underspecified external arguments, i.e. take either agent, instrument,<sup>ii</sup> or causer subjects, cf. (5-6); cf. Levin & Rappaport Hovav (1995), Reinhart (2002), Alexiadou et al. (to appear, a).<sup>iii</sup>

- (3) a. The terrorist assassinated/murdered the senator.
  - b. The senator was assassinated/murdered (by the terrorist).
  - c. \*The explosion/\*the bomb assassinated/murdered the senator.
  - d. \*The senator assassinated/murdered.
- (4) a. John removed the sand from the rocks.
  - b. The sand was removed from the rocks by (John).
  - c. \*The wind/\*the shovel removed the sand from the rocks.
  - d. \*The sand removed (from the rocks).
- (5) a. The vandals/The rocks/The storm broke the window.
  - b. The window was broken (by the vandals/the rocks/the storm).
  - c. The window broke.
- (6) a. John/The hammer/The storm enlarged the hole in the roof.
  - b. The hole was enlarged (by John/the hammer/the storm).
  - c. The hole in the roof enlarged.

This restriction on the causative alternation has sometimes been taken as an argument that anticausatives must be derived from their causative counterpart (Levin & Rappaport Hovav 1995, Reinhart 2002, Reinhart & Siloni 2005, Koontz-Garboden 2009, Horvath & Siloni 2011, a.o.). In Reinhart & Siloni (2005), for example, a verb lexically specifies the thematic role of its external argument to be either underspecified for agentivity (it is characterized with the underspecified causer role [+c]) or not (it is characterized with the role of a mentally involved causer [+c, +m]). Only in the underspecified case, can a lexical reduction operation delete the external argument theta-role and derive an anticausative lexical entry. However, the data in (3-6) are not decisive on the question of which version of the causative alternation is more basic and which one is derived. A process of causativization (Rappaport Hovav to appear) (or transitivization; Alexiadou et al. 2006, to appear, a) can cope with the phenomenon as well if it adds a thematically underspecified external argument to an anticausative verb.

### 9.2.2. Anticausatives lack external arguments

The semantic representation of anticausatives given in (2b) does not involve any kind of external argument, i.e. they differ from passives in that they do not even even involve an existentially bound implicit external argument. Although this view is broadly accepted, the topic deserves more elaboration than it often receives in the literature (see Kallulli 2007 and Koontz-Garboden 2009 for two quite different proposals according to which anticausatives involve an external argument.)

Standard tests supposed to diagnose the presence of an implicit argument in passives and the absence of an implicit argument in anticausatives are the (non)-licensing of (i) by-phrases, (ii) agentive adverbs, (iii) instrumental PPs and (iv) purpose clauses. This is illustrated in (7a, b):

(7)	a.	The ship was sunk	(i) by Bill/by the hurricane (ii) deliberately
			(iii) with a torpedo (iv) [PRO to collect the insurance]
	b.	*The ship sank	(i) by Bill/by the hurricane (ii) deliberately
			(iii) with a torpedo (iv) [PRO to collect the insurance]

However, most of these tests face the problem that they can only diagnose the absence of an implicit intentionally acting agent argument in anticausatives (see e.g. Marelj 2004, Kallulli 2007, Schäfer 2009a or Koontz-Garboden 2009, Alexiadou et al. to appear, a). But as just seen, a defining property of anticausatives is that they allow a transitive use with a non-agentive causer such as natural forces as external argument. Furthermore, while anticausatives do not allow *by*-phrases of any kind, recent literature has brought up the fact that anticausatives across languages do allow PPs other than passive *by*-phrases to introduce causers but, crucially, not agents (Kallulli 2006b, Alexiadou et al 2006, to appear, a, Levin 2009, Schäfer 2012, a.o.). We illustrate the phenomenon with English *from*-PPs, (which are, however, reported to be less productive than causer-PPs in other languages; Schäfer 2012).

- (8) a. The pressure / the explosion / John broke the window.
  - b. The window was broken by the pressure / the explosion / John.
  - c. \*The window broke by John / by the explosion.
  - d. The window broke from the pressure/from the explosion / \*from John.

One could hypothesize, therefore, that anticausatives contain an implicit external argument, which, however, must be a non-intentional causer (cf. Kallulli 2007 for such a proposal).<sup>iv</sup>

However, two arguments suggest that such a hypothesis cannot be maintained. Firstly, the fact that *by*-phrases in passives can take up both an implicit agent as well as an implicit causer argument (8b), but is ungrammatical in anticausatives (cf. 8c,d), suggests that passives and anticausatives do not differ in merely the type of theta role of their implicit argument. Secondly, as argued in Schäfer (2008a) and Alexiadou et al. (2006, to appear, a), the so-called *by itself* test allows for the absence of implicit external arguments in anticausatives of any thematic kind, as we will see now.

The adverbial *by itself* phrase (and its counterparts in other languages) is licensed in transitives, and in anticausatives, but not in passives (cf. 9a-c).

- (9) a. \*The door was broken by itself.
  - b. The door broke by itself.
  - c. John broke the door by himself.

English *by itself* has in principle two interpretations. The first one is 'alone', but as Levin and Rappaport Hovav (1995) argue, this reading is not relevant for the discussion of anticausatives. Alexiadou et al. (to appear, a) characterize the second, relevant reading as 'no particular cause'.<sup>v</sup> These authors argue that a speaker using *by itself* in this second reading "denies that anybody or anything can be identified that (directly or indirectly) caused the antecedent of *by itself* to participate in the event expressed by the predicate". The transitive sentence in (9c) expresses then that "no-one or nothing can be identified by the speaker to have forced or caused John to break the door". The anticausative in (9b) expresses that "nothing can be identified as responsible for the breaking of the door". In the passive clause in (9a), finally, the *by itself* phrase agrees formally with the theme 'the door' and, therefore, should express that nothing can be identified that caused this theme to undergo the breaking event. But exactly this is contradicted by the presence of the implicit external argument in the passive construction, which

denotes the agent of causer of the breaking event. Therefore, (9a) amounts to a contradiction. Crucially, this is so, although the implicit argument of (9a) could either be an agent or a causer. That is, the *by itself* test differs from many other tests diagnosing implicit arguments in that it is not sensitive to agentivity but to causation/responsibility (see Alexiadou et al. to appear for further illustration of this property of the *by itself* test).

We conclude, then, that anticausative predicates lack an implicit external argument of any kind, as suggested by standard semantic representations along the lines of (2a,b). But note that this also means that causer-PPs in the context of anticausatives such as English *from*-phrases in (8d) must differ from passive *by*-phrases in that they do not realize an argument of the underlying predicate. While passive *by*-phrases are syntactic adjuncts realizing a semantic argument of the verb, *from*-phrases must be adjuncts not only syntactically but also semantically. We will take up causer-PPs modifying anticausatives in section 9.3.2.2. In the next section, we turn to the event decomposition of causatives and anticausatives.

#### 9.3 Event decomposition of causative verbs

9.3.1 Two or three event components?

Under the standard event decomposition, causatives involve two events (CAUSE and BECOME) as well as a result state as a third event component, while anticausatives involve a BECOME-event and a result state, i.e. two event components; see e.g. the representation (10b), which Parsons (1990: 120) attributes to the transitive causative sentence (10a). Hale & Keyser (1993), Ramchand (2008) and Travis (2000) also opt for a "tri-eventive" analysis of causative verbs in a syntactic framework of verb formation. Under this conception, anticausative verbs lack the Agent predicate as well as the Cause predicate and the highest event e.

- (10) a. John closes the door.
  - Be [Agent(e, John) & ∃e'[Theme(e', door) & CAUSE(e,e') & ∃s[Being-closed(s) & Theme(s, door) & BECOME(e',s)]]]

Adverbial modification has proven a fruitful way to investigate the event decomposition of causative and anticausative verbs. The adverbs figuring most prominent in this context are temporal and manner adverbs (e.g. Fodor 1970, Fodor & Lepore 1997, Tenny 2000, Pylkkänen 2002) as well as the adverbs *again* (e.g. McCawley 1968, Dowty 1979, von Stechow 1995, 1996, Beck & Johnson 2004, Pylkkänen 2002) and *almost* (e.g. Rapp & von Stechow 1999). We concentrate on *again* and manner adverbs here.

The sentence (11a) involving the adverb *again* in the context of an anticausative verb has two readings, a so-called *restitutive* reading, and a so-called *repetitive* reading. While the latter presupposes the existence of a previous time at which the door changed from being closed to being open, the former just presupposes that there is a previous time at which the door was open but not that there was a previous opening event. One can capture the difference between these two readings in terms of scope as indicated in the simplified event decompositions of the anticausative in (11b, c). Under the restitutive reading, *again* scopes just over the resultant state of the door as in (11b). Under the repetitive reading, *again* takes scope over the whole change-of-state event as in (11c).

- (11) a. The door opens again.
  - b. [BECOME (*again* [the door <OPEN>])]
  - c. (again [BECOME [the door <OPEN>]])

The corresponding causative sentence in (12a) shows a very similar ambiguity. Under the restitutive reading, the subject causes the door to return to its previous state of being open; no further opening event is presupposed (cf. (12b)). Under the repetitive reading, the subject opens the door and it is presupposed that she had done this before (cf. (12c)).

- (12) a. She opens the door again.
  - b. [she CAUSE [BECOME (*again* [the door <OPEN>])]]
  - c. (*again* [she CAUSE [BECOME [the door <OPEN>]]])

Theories differ as to the status they attribute to such representations. Some assume that they are part of a verb's lexical-conceptual representation, with so-called linking rules that ensure that the undergoer argument is realized as the internal argument in syntax while the causer is mapped to the external argument position (e.g. Levin & Rappaport Hovav 1995, 1998; for a quite different lexical system involving linking rules see Reinhart 2002, Reinhart & Siloni 2005).<sup>vi</sup> Others take event structures to be essentially syntactic with the semantic predicates in (<u>11b</u>, c) and (<u>12b</u>, c) being associated to verbal heads within a decomposed verbal phrase (Hale & Keyser 2002, Borer 2005b, Ramchand 2008, among others). The fact that causers are external arguments and undergoers of change-of-state events are internal arguments follows because event structure directly corresponds to syntactic structure.

Von Stechow (1995, 1996) explicitly argues that event decomposition should take place in syntax because the interpretations possible for adverbs like *again* are influenced by word order.<sup>vii</sup> In English, for example, topicalization of the adverb prevents the restitutive reading, see (13a) vs. (13b). The same disambiguation effect occurs in German under scrambling of the theme DP over the adverb as in (14a, b). Von Stechow argues that in (13b) and (14b), the adverb can only be located in a syntactic position that c-commands the syntactic head introducing the CAUSE-event. On the other hand, in (13a) and (14a), the position of *again* could also be lower so that it only c-commands the head introducing the result state but is, itself, outscoped by the CAUSE-head.

(13)	a. b.	John opened the door again. Again, John opened the door.	(repetitive or restitutive) (only repetitive)
(14)	a.	Hans hat die Tür wieder geöffnet. John has the door again opened	(repetitive or restitutive)
	b.	Hans hat wieder die Tür geöffnet. John has again the door opened 'John opened the door again.'	(only repetitive)

If the repetitive and the restitutive reading of *again* result from different syntactic scope relations, then the standard assumption that causatives and anticausatives differ in the number of eventualities involved (the former have two events and a result state as in (12), while the latter have one event and a result state as in (11)) leads to the prediction that there should exist one

additional reading for *again* with causatives lacking from anticausatives. More specifically, the theory predicts for anticausatives the two readings already discussed and replicated in (15a), while it predicts for causatives three readings, as illustrated in (15b) (von Stechow 1995, 1996, Pylkkänen 2002, Schäfer 2008a, 2009, Alexiadou & al. to appear, a):

(15)a. The door opened again. (i) The opening event (and also the resultant state) is repeated: The door again became open. [*again* [ ... BECOME ... [ ... STATE ...]]] (ii) Only the resultant state is repeated: The door returned to a state of openness. [ ... BECOME ... [again [ ... STATE ...]]] John opened the door again. b. The agent's action (and also the opening event and the resultant state) is (i) repeated: John did something again and as a result the door opened. [again [... CAUSE ... [ ... BECOME ... [ ... STATE ...]]]] The opening event (and the resultant state) is repeated: (ii) John did something and as a result the door opened again. [... CAUSE ... [again [ ... BECOME ... [ ... STATE ...]]]] Only the resultant state is repeated: (iii) John did something and as a result the door returned to its previous state of being open. [... CAUSE ... [ ... BECOME ... [again [ ... STATE ...]]]]

Von Stechow (1995) suggested that the reading in (15b-ii) is not available for lexical causatives (for ease of reference, we call it the 'intermediate reading' of *again*). If true, the simplest way to account for the available readings in (15) would be that causatives and anticausatives do not differ in the number of event predicates involved. In fact, partly because of this reasoning (see below), some authors proposed that anticausatives and causatives only differ in that the former involve a BECOME event (cf. 16b) while the latter involve a CAUSE event (cf. 16d) (von Stechow 1995:106, Pylkkänen 2002):<sup>viii/ix</sup>

- (16) a. The door opened.
  - b [v-BECOME [the door OPEN]]
  - c. John opened the door.
  - d [John [v-CAUSE [the door OPEN]]]

However, we believe that lexical causatives *do* make available the intermediate reading in (15bii). This can be seen with a careful choice of the right context and the right choice of adverb. (17a-d) provide a set of examples to test the availability of the intermediate reading of *again* in French. In the targeted context, the agent's action described in (17b,c,d) does not repeat a previous action.

- (17) a. Mon MacBook s'est déjà bloqué cinq fois ce matin, tout seul. my MacBook REFL is already crashed five times this morning, by itself 'My MacBook has already crashed five times this morning (by itself).'
  - b. Maintenant, mon nouveau collègue l'a *re*bloqué avec son fichier Word. now my new colleague it-has re-crashed with his file Word 'Now, my new colleague crashed it again with his Word file.'
  - c. ?Maintenant, mon nouveau collègue l'a *de nouveau* bloqué avec son fichier Now, my new colleague it-has P new crashed with his file Word.

Word.

'Now, my new colleague has crashed it again with his Word file.'

d. Maintenant, mon nouveau collègue l'a bloqué *de nouveau* avec son fichier now my new colleague it-has crashed P new with his file Word.

Word

'Now, my new colleague has crashed it again with his Word file.'

The continuation (17b) where *again* is translated by the morpheme *re* is unproblematic.<sup>x</sup> When *again* is translated by *de nouveau* and in preverbal position, cf. (17c), some speakers do not accept the intermediate reading (and only admit the repetitive one). When *de nouveau* is in postverbal position, cf. (17d), the intermediate reading is licenced for most of our informants.

German lexical causatives show the same phenomenon (see also Alexiadou et al. to appear, a, with which we share the following German data as well as most aspects of their analysis). While for most speakers (18b) involving the adverb *wieder* (again) is, indeed, not a good continuation of the scenario in (18a), changing to a different adverb (*nochmal*, literally 'a further time') in (18c) makes the continuation well formed for all speakers (see Rapp & von Stechow (1999) for the observation that individual adverbs sometimes do not allow all scopal reading that are, in principle, available). Lexical causatives do, then, not differ fundamentally from periphrastic causatives in (18d, e), which allow the intermediate reading with both adverbs (although in German, the adverb *nochmal* is once again better for most speakers).

(18)	a.	Das Regal ist schon mehrmals (von selbst) umgekippt.
		the shelf is already several-times by self over-tipped
		'The shelf has tipped over already a number of times (by itself).

- b. #Jetzt hat Paul (*wieder*) das Regal (*wieder*) umgekippt. now has Paul again the shelf again over-tipped 'Now, Paul tipped over the shelf again.'
- c. Jetzt hat Paul (?*nochmal*) das Regal (*nochmal*) umgekippt. now has Paul again the shelf again over-tipped 'Now, Paul tipped over the shelf again.'
- d. ?Jetzt hat Paul das Regal *wieder* umkippen lassen. now has Paul the shelf again over-tip made 'Now Paul made the shelf tip over again.'
- e. Jetzt hat Paul das Regal *nochmal* umkippen lassen. now has Paul the shelf again over-tip made 'Now Paul made the shelf tip over again.'

We, therefore, conclude that the intermediate reading is, in principle, available with lexical causatives.<sup>xi</sup> One might, therefore, conclude that the classical (tri-eventive) decomposition of lexical causatives in to a CAUSE and a BECOME event besides a result state is correct. However, the behavior of manner adverbs (and more generally a deeper comparison between lexical and analytic causatives) provides a strong argument for the presence of only one event in causatives (see Fodor 1970, Fodor & Lepore 2000, Pylkkänen 2002).

The manner adverb modifying the lexical causative verb in (19a) can only describe the subject's waking action but not the object's awakening. However, in the anticausative in (19b), the latter reading is possible.

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

Lexical causatives differ in this way from periphrastic causatives. as the examples below from Higginbotham (2000) show; (20a/b) are ambiguous, (20c) is not.

- (20) a. John made Bill awake grumpily.
  - b. John caused his guests to sit down frequently/repeatedly.
  - c. John sat his guests down frequently/repeatedly.

(21a, b) shows the same phenomenon. Although ships normally do not sink in a single moment but more or less slowly, the example in (21a) cannot mean that John did something that caused that the ship sank slowly, but only that John did something slowly which caused the ship to sink. The corresponding periphrastic causative, on the other hand, is ambiguous.

- (21) a. John sank the ship slowly.
  - b. John made the ship sink slowly.

While these data might suggest that lexical causatives are simply opaque for modification of their sub-events, this cannot be generally the case. The reason is that the result state in (anti)-causatives is in fact accessible for modification with degree adverbs as the following examples show (cf. Parsons 1990, Tenny 2000, Pylkkänen 2002; the same must be concluded from the restitutive reading of *again* above):

- (22) a. John closed the door partway.
  - b. John partly closed the door.
  - c. Roger half filled the glass.
  - d. Nicolas mostly filled the glass.

In summary, we seem to have identified then two conflicting properties. On the one hand, we have argued above that the adverb *again* makes available a repetitive, an intermediate and a restitutive reading in causatives. Manner modification, on the other hand, can apply only to one event. Some researchers concluded from this latter fact that causatives and anticausatives do not differ in the number of event predicates involved and, consequently, causatives cannot be built from three but only from two event predicates (but see Pylkkänen 2002 for languages where

lexical causatives make available two events for manner modification). In the next section, we present some of these bi-eventive analyses of causative verbs. We will see that the so-called Voice-hypothesis (Kratzer 1996) allows reconciling the conflicting findings above. Assuming a Voice projection that introducing the external argument on top of the causative event makes the assumption of a BECOME event in causatives superfluous, as suggested by the data in (19-21), but still allows the derivation of the intermediate reading of *again*.

### 9.3.2 Typology of bi-eventive analyses

### 9.3.2.1 A causing event and a resultant state

Kratzer (1996) proposed that external arguments should be 'severed' from the lexical verb and be introduced by a (semi)-functional projection on top of the verbal phrase, the so-called *Voice projection*, so that a sentence as in (23a) below has a structure as in (23b). The lexical verb introduces an event variable and selects for the internal argument, as in (24a), while the external argument (the agent) is introduced by the (often phonetically silent) *Voice* head with the semantics in (24b). Semantically, the external argument is connected with the verbal event via the rule of 'event identification' which identifies the event variables respectively contributed by *Voice* and the verb. This yields the semantic representation in (24c). (See Bruening 2012 for a different semantic treatment of Voice; see Alexiadou et al. 2006, to appear, a, Harley, to appear or Legate, to appear for arguments that the external argument is introduced by a Voice projection, not by an eventive v-projection as e.g. in Chomsky 1995).

(23)	a.	Sue bough	Sue bought the doll.	
	b.	[VoiceP S	[VoiceP Sue <i>Voice</i> [vP bought the doll ]]	
(24)	a.	buy:	$\lambda x \lambda e [buy (x)(e)]$	

24)	a.	buy:	$\lambda x \lambda e [buy (x)(e)]$
	b.	Voice:	$\lambda x \lambda e [Agent (x)(e)]$
	c.	VoiceP + vP	$\lambda e $ [buy (the-doll)(e) & Agent (Sue)(e)]

If we adopt the Voice hypothesis, then the decomposition of causatives in (16d) should be updated as in (25b) (cf. Alexiadou et al. 2006, Pylkkänen 2002, Schäfer 2008a):

(25) a. John opened the door.

b. [John *Voice* [v-CAUSE [the door √OPEN]]]

Pylkkänen (2002) adopts the Voice hypothesis in her analysis of lexical causatives and also incorporates the result from adverbial manner modification discussed above which suggested that causatives and anticausatives do not differ in event complexity but involve the same number of eventualities (one event and a result state). Following a suggestion in von Stechow (1995: 106), she proposes that anticausatives, but not causatives involve a verbal head introducing a BECOME event. Anticausatives have the standard decomposition in (26b) while causatives have the decomposition in (27b). The latter involves a CAUSE-head which introduces a causing event, and a Voice head which introduces the external argument, but no BECOME head/event (see also Harley 1995, 2006, Marantz 1997; Pustejovsky 1991 proposes a similar bieventive analysis of causatives in a lexical setting).<sup>xii</sup>

(26) a. The door opens.

b.  $[v-BECOME [the door \sqrt{OPEN}]]$ 

- (27) a. John opens the door.
  - b. [John *Voice* [v-CAUSE [the door  $\sqrt{OPEN}$ ]]]

Since *Voice* does not introduce any further event but simply relates the external argument to the event introduced below by v-CAUSE, the decomposition in (27b) correctly makes available only one event for adverbial manner modification. But note that this decomposition involves three possible adjunction sites for adverbs like *again*, in particular one that c-commands the verbal event but not the external argument. Alexiadou et al. (to appear, a) suggest that the intermediate reading of (some translations of) *again* available in lexical causatives (cf. (17) and (18) above) is the result of *again* appearing in this position, i.e. *again* is adjoined to v-CAUSE. This proposal will become clearer in the next sub-section where we review their proposal that causatives and anticausatives involve exactly the same verbal event layer.

### 9.3.2.2 Anticausatives as causative verbs

A number of scholars proposed that anticausatives are inherently causative (Levin & Rappaport Hovav 1995, Chierchia 1989/2004, Kallulli 2006b, Koontz-Garboden 2009, Alexiadou et al. 2006, to appear, a, Schäfer 2012). Since these proposals differ substantially, we cannot do justice here to all of them but concentrate on one (but see Schäfer 2009a for a more detailed overview).

Kratzer (2005) argues that if the external argument of lexical causatives is introduced by Voice on top of v-CAUSE, we can dispense altogether with the BECOME predicate in the decomposition of change-of-state verbs. Under this view, causatives and anticausatives have exactly the same event decomposition and they differ only in the presence vs. absence of *Voice*. Anticausatives have the decomposition in (28b), and causatives have the one in (29b). The causative alternation boils down to a Voice alternation, as explicitly argued for in Alexiadou et al. (2006, to appear, a).<sup>xiii</sup>

- (28) a. The door opens. b.  $[v-CAUSE [the door <math>\sqrt{OPEN}]]$
- (29) a. John opens the door.
  b. [voice John Voice [v-CAUSE [the door √OPEN]]]

The decomposition of anticausatives in (28b) relies on two assumptions: i) causative events can occur without an external argument (Parsons 1990, Pylkkänen 2002),<sup>xiv</sup> and ii) a causative relation can hold between an event and a state.<sup>xv</sup> (28a) means that there is an event e (an opening event) which caused a state s (the door is in an open state). Since causatives and anticausatives involve the same event layer, the intermediate reading of *again* in causatives discussed above can be characterized as follows: under this reading, the sentence presupposes that an inchoative event, which lacks an external argument but involves a causative event leading to a result state, had happened before and asserts that it happens one more time, but this time under the involvement of an external argument.

Alexiadou et al. (2006, to appear, a) motivate the presence of a causative event in anticausatives by the observation that crosslinguistically, anticausatives license causer PPs (but

not agent PPs) as in the German example in (30a) and its English translation (30b). More concretely, they analyse these PPs as modifiers of the causative event present in anticausatives and other change-of-state constructions (see Alexiadou et al. to appear, a for a detailed discussion of this diagnosis and a defense of the idea that it is the verbal event, not the preposition, that provides the causative semantics).<sup>xvi</sup>

- (30) a. Das Segel zerriss (durch den starken Wind). the sail tore through the strong wind
  - b. The sail tore from the strong wind.

As a further argument for the presence of causative semantics in anticausatives, Schäfer (2008a, 2012) reports that anticausatives in many languages can combine with oblique DPs which are introduced by an applicative head and receive (besides other interpretations which are irrelevant for our purposes here) an interpretation where their referent is responsible for the change-of-state event expressed by the anticausative predicate. This is illustrated in the German example in (31).<sup>xvii</sup>

(31) Dem Peter ist die Vase (\*mit dem Hammer) zerbrochen. the.dat Peter is the vase.nom (with a hammer) broken 'Peter broke the vase accidentally (with a hammer).'

This concludes the section on 'standard' alternating verbs. In the following sections, we address several kinds of verb classes that have sometimes been argued to be causatives, and point to the problems raised by such an analysis.

# 9.3.2.3 Non-causative alternating verbs

Some verbs alternate between a transitive and an intransitive use but do not denote a (resultant) state. Contrary to verbs like *open*, these stateless verbs are never deadjectival. Some English examples are *walk (the dog), fly (the kite), run (the machine), rotate (the wheel), move (the table), roll (the ball), flip (the switch)*. That they do not denote a state can be verified in a number of ways. Firstly, they do not form adjectival passives, cf. (32a). In fact, some of these verbs embed an unergative event in their causative use (*walk, fly, run*); also, note that in most languages, only the unaccusative verbs from the above list have a transitive, causative counterpart. Secondly, they do not allow temporal adverbials to scope on a state, cf. (32b), nor the restitutive reading of *again*, cf. (32c). Thirdly, a result state/location can be added, cf. (32d).

- (32) a. \*The ball is rotated. (adjectival passive)
  - b. #I moved the table for ten minutes. (intended: the moved-state lasted ten minutes)
  - c. #I flew the kite again. (intended: the flew-state took place again)
  - d. I rolled the ball across the goal-line.

Some authors nevertheless analyse these verbs as causative in their transitive use: '*Mary flew the kite* means Mary did something that caused a flying of the kite' (Parsons 1990: 109). More particularly, Parsons argues that the interpretation of locative adverbials supports the bi-eventive (causative) analysis: in *Agatha flew her kite over the lake*, the adverbial either applies to the causing event (what Agatha is doing) or to the caused event (what the kite is doing). However,

Doron (2003) argued that the test of locative adverbials is not conclusive because the same kind of ambiguity arises with clearly non causative transitive verbs (see e.g. *I saw Mary on the bus*).

The adverbial *again* is in this sense safer, but as far as we know, its interpretation with these verbs has not been investigated in any detail.

In German and French, *again*-adverbials get, besides the obvious repetitive reading where the agent's action is repeated, a second reading illustrated in (33a/33b). As (33c) show, the restitutive reading is unsurprisingly not available, exactly the same as in English, cf. (32c).

(33)	a.	La semaine passée, le plomb d'une de mes dents a bougé tout seul.
		The week last, the filling of one of my teeth has moved by itself
		Mon dentiste l'a rebougé et maintenant tout va bien.
		My dentist it has re-moved and now all goes well
	b.	Letzte Woche hat sich eine meiner Plomben ein kleines bischen von selbst
		Last week has REFL one from-my fillings a little bit by itself
		bewegt.
		moved
		Mein Zahnarzt hat sie nochmal bewegt und jetzt ist alles in Ordnung.
		My dentist has it again moved and now ist everything OK
		'Last week, one of my fillings moved a little bit by itself.
		My dentist moved it again/a further time and now everything is fine.'
	C.	#Ma dent a rebougé. (intended: the moved-state took place again)
		'My tooth moved again.'

However, such data do not provide conclusive evidence for a bi-eventive analysis of the transitive verbs above; instead, we can analyze them as cases of the 'intermediate reading' of *again* identified in 9.3.1 for causative change-of-state verbs and analyzed in 9.3.2.1 as the result of the adverb scoping between Voice introducing an external argument and v introducing a process-like event.

# 9.3.2.4 Stative bi-eventive verbs

Kratzer (2000), Pylkkänen (2000) and Jackson (2005) focus on an interesting set of transitive verbs that they take to be bi-eventive, and whose first event can be either eventive or stative. Some of these verbs are object experiencer psych-verbs (*disgust*, see below), other not (*obstruct*), cf. e.g. (34).

(34) a. Because of a congenital malformation, tissue obstructs the blood vessel. (stative)
b. As the incision healed, scar tissue slowly obstructed the blood vessel. (eventive)

On the basis of Kratzer's analysis, Jackson (2005: 91) proposes the representation (35) for the verb *obstruct*; the stative/eventive ambiguity is captured in assuming that the variable *e* ranges over events or states. In the latter case, *obstruct* denotes a *stative causation* (note that the presence of an additional BECOME event would not allow to capture the stative reading).

(35) obstruct =  $\lambda x \lambda s \lambda e [CAUSE(s)(e) \& OBSTRUCTED(x)(s)]$ 

However, the work devoted to these verbs does not explicitly show that they are indeed bieventive. It also does not discuss in detail how CAUSE has to be interpreted here; some linguists might be reluctant to admit that a causal relation has simultaneous states as relata, since it is often assumed that causation requires temporal precedence. But in fact, no philosophical theory of causation requires more than that the causing eventuality start before the caused one starts (cf. Copley & Wolff, this volume). In practice this generally means that either the causing eventuality can finish as the caused eventuality begins, or it can take place at roughly the same time as the effect. Shibatani (1973a) calls the first 'ballistic causation' and the second 'controlled causation', van Lambalgen & Hamm (2003) call the first 'instantaneous' and the second 'continuous' (see Copley & Harley, submitted, for a more exhaustive list; as they note, in the case of continuous (or controlled) causation, the mapping between the temporal parts of causes and their effects is analogous to Krifka's (1992) homomorphism between events and affected objects). So a causing eventuality need not finish before the caused eventuality starts. Furthermore, there is no reason why a causing eventuality must be eventive. Given these two points, there is no reason why a causal relation should not be able to hold between two simultaneous states.

Pylkkänen (1999b) also proposes an analysis of Finnish Object Experiencer psych-verbs as stative causatives. These verbs are derived from (stage-level stative) Subject Experiencer psych-verbs with the help of causative morphology and are shown to exhibit many properties of (stage-level) stative predicates in Finnish (like the incompatibility with the progressive construction and partitive case on the object). In favour of the bi-eventive analysis, Pylkkänen (1999b) argues that the Finnish adverbial *melkein* 'almost' can have two readings depending on which event it scopes over. The ambiguity shows up only in the causative Object-Experiencer predicate (36b), not in the non-causative Subject experiencer predicate (36a).

(36)	a.	Maija	melkein inhoa-a	Matti-a.	
		Maija-N	OM almost find.disgusti	ng-3SG Matti-PAR	
		'Maija al	most found Matti disgusti	ng.' (The mental state fail	s to hold)
	b.	Matti	melkein inho-tti	Maija-a.	
		Matti-NO	OM almost find.disgustin	ng-CAUS. PAST Maija-PA	AR
		'Matti al			
		(i)	Matti did something or ha	ad some property that almost	ost caused a state
			of disgust in Maija (the m	nental state almost held)	
		(ii)	Matti almost did somethi	ng or had some property th	hat would have
			t almost occured)		

According to Pylkkänen's proposal, the causing eventuality is a perceptual state of the subject's referent. But under the higher reading (ii) of *almost*, (36b) is therefore predicted to mean that x *almost perceived* the subject's referent, which does not correspond to the translation given. In line with classical analyses of these verbs, we would rather assume that the causing eventuality is either a state or an event involving Matti; the verb is expressing a stative causation in the first case only, and the perception is simply part of the additional causal factors that enable the causation to take place.

Pylkkänen argues that the causal relation between the perception and the emotion is analogous to the one taking place between the two events denoted by *push the cart*. The relevant

property of *push the cart* seems to be that it expresses what Krifka (1999, 2011) calls a continuous imparting of force or controlled/continuous causation: for every temporal part of *e* there is a corresponding temporal part of *e*' such that the first causes the second, so that each part of the perception of Matti should correspond to a part of the state of disgust such that the first causes the second. But there does not seem to be a strict mapping in this case from temporal parts of the caused eventuality (Maiji's disgust). Another important difference between the causation expressed by these verbs and the one expressed by *push the cart* is that while in the latter case, the effect stops as soon as the cause stops (i.e., *simultaneous continuous causation*), the disgust may last longer than the eventuality involving the subject's referent ; the continuous causation is here not necessarily simultaneous.

Concerning verbs such as *obstruct*, a potential alternative analysis to the causative analysis presented above is suggested by Krifka (2012) for a subclass of posture verbs like *lie*, *sit*, and *stand*. Like these other stative verbs, *obstruct* allows the progressive, an unusual property for statives:

(37) A cyst is obstructing blood flow to the ovaries.

Following a suggestion of Bohnemeyer & Swift (2006), Krifka (2012) proposes to analyse stative posture verbs as involving two forces *à la* Talmy (2000), the gravitational force on the subject and a counteracting force emanating from an object (like a chair). Clearly, *obstruct* under its stative use could also be analysed as involving two counteracting forces rather than a stative causation. Krifka's suggestion is to express the meaning of such verbs in the formal framework of Warglien et al. (2012), who develop a semantics based on the notions of vectors in property space.

9.4 Interactions between the event structure and argument structure of causatives

9.4.1. Introduction

Section 9.2 was dedicated to the argument structure of causative and anticausative verbs and Section 9.3 to their event structure. But these structures are far from independent: they interrelate in a complex way, as e.g. shown by Tenny (1994) and van Hout (1996). In this section, we discuss three concrete examples of how argument structure, in particular thematic properties of arguments, and event decomposition, interact. Our examples are all concerned with differences between causer and agent subjects (see Section 9.4.3). Before this, we explore in further details the subtypes of external arguments that have been claimed to been relevant for the syntax/semantics interface (Section 9.4.2).

# 9.4.2 Subtypes of external arguments

# 9.4.2.1 Introduction

Traditional lexical frameworks typically only make a difference between agents and causers, where causers are generally underspecified for agentivity, see e.g. the Theta System of Reinhart & Siloni (2005), where agents are coded in the lexicon by the features [+c, +m] and causers as [+c] (see also Levin & Rappaport Hovav 1995). Both agents and causers are linked to a structural external argument position. The latter is simply underspecified for intentionality/mental state and therefore compatible with agents and non-agents (i.e.  $[+c, \pm m]$ ).

For clarity, we will label 'pure causers' those external arguments that refer either to a nonsentient entity, or to a sentient entity whose cognitive abilities do not play any role in the event she is involved in (i.e. [+c, -m]).

On the other hand, syntactic frameworks typically build on the Voice-hypothesis of Kratzer (1996), where external arguments enter the semantic computation via a syntactic position, namely SpecVoice. Not all syntacticians agree that the difference between types of external arguments is syntactically relevant. This is the reason why e.g. Ramchand (2008) assumes only one underspecified external argument position, Spec Init, which hosts agents (+/- intentional) as well as causers under the unifying label of *originator* or *effector* of an event (see also Borer 2005b, Copley & Harley, submitted).

Other authors propose two different types of Voice – one for agents and one for causers – which differ not only in the thematic role of their specifiers, but also in the syntactic context below Voice in which they can occur (cf. the different flavors of v in Folli & Harley 2005). The claim is that pure causers need a resultative syntax, while (intentional as well as unintentional) agents do not meet this restriction, cf. Folli & Harley 2005, Travis 2005, Schäfer 2012 (see section 9.4.3.1).

The hypothesis that the external argument position should be kept underspecified wrt agentivity is also questioned by the observation that the external theta role potential of verbs can depend on the specific grammatical voice the verb occurs in. For instance, in Greek, Icelandic or Hebrew, the active version of a verb licenses more external argument theta roles than the passive version (cf. Alexiadou et al. 2006, Doron 2003). In Jacaltec, even alternating lexical causatives do not license causer subjects but only agents (Craig 1976).

### 9.4.2.2 Subtypes of agents

Another related question concerns the exact differences between the subkinds of external arguments that can be realized by a DP referring to a sentient entity. After Dowty (1972), Zwicky & Sadock (1975) propose to distinguish three readings (i)-(iii) for a sentence like (38):

#### (38) John broke the vase.

a. John intended to break the vase and accomplished this (intentional agentive reading)b. John intended to act but did not intend to break the vase (non-intentional agentive reading)

c. John did not act (non-agentive reading)

John is an intentional agent in (a), an non-intentional (or involuntary) agent in (b) and a pure causer (or non-agent) in (c). (Reading (c) is perhaps not plausible out of the blue, but is selected by a continuation of (38) like *by falling out of bed while asleep*).

Following Kamp (1999-2007: 17-19), we can distinguish these readings as follows. Under the intentional agentive reading, the intention that led to the action coincides with the description provided by the VP. Under the non-intentional agentive one, the verb describes the act performed, but this act is the execution of another intention. Under the non-agentive reading, the event involving John is not an act under any description. If we adopt two additional features [+a] for an external argument who acts and [+i] for an agent whose intention coincides with the description of the VP, John is [+a, +i] under (38a), [+a, -i] under (38b) and [-a, -i] under (38c).<sup>xviii</sup>

\_\_What Kamp calls 'inherently intentional' verbs like *fetch* describe actions that the agent

intends as coinciding with the description given by the VP — these verbs specify fully the content of the intention, and are thus generally not acceptable with adverbs like *unintentionally* (Kamp *ibid.* p.19). Since their external argument has to be [+a, +i], they do not have the readings (b)-(c). What we could call '(inherently) agentive verbs' are those verbs that select an external argument  $[+a, \pm i]$ , which cannot easily have the reading (iii) with a subject referring to a sentient entity. The verb *paint* is a good example: in order for an event to be a painting event, it must 'qualify as the kind of event which is normally done with the purpose of directly bringing about [a] state [in which something is painted]' (Kiparsky 1997:4). Therefore, as Kiparsky notes, an explosion is in no position to paint anything. However, contrary to *fetch* verbs, *paint* does not fully specify the content of the intention. This explains why they are compatible with adverbs like *unintentionally* (cf. *While cleaning the wall, I unintentionally painted it --- I hadn't realized that the sponge was full of paint*).

A complicated related question concerns the relation between intentionality and control, as used to describe agents with full control or deprived of control in Salish languages (Demirdache 1997, Davis & Demirdache 2000, Davis et al. 2009, Jacobs, 2011) or Polish (Rivero & Arregui 2010 and references therein). Demirdache (1997: 5f.) defines an agent with control as an agent which, among others, (i) could avoid performing her action if she chose to and (ii) is taken as responsible for her action. She argues that (absence of) intentionality should not be equated with (absence of) control, and this for the two following reasons among others. Firstly, the famous 'out of control' morphology found in Salish languages, 'which emphasizes the absence of control over some state or event' (Thompson 1985:401), can appear in sentences without any agent. For instance, this morphology can be used in the translation of a sentence like the rock dropped, yielding a 'suddenly/all at once, accidental' reading. This shows that the denial of control cannot be equated with the denial of intention. For intention is normally denied in a context where agentivity is at least potential. Compare, in English, the rock dropped accidentally and *#the rock dropped unintentionally*. Secondly, Demirdache argues that an agentive sentence may entail that the agent has control on her action without entailing that the agent performs this action intentionally. She proposes that this is the case in a sentence like John is being rude, of which Dowty (1979) says that it does not entail that 'John is intentionally rude, but merely that the proprty of being rude is under his control, is something that John could avoid doing if he chose'. Jacobs (2011) provides examples of the reverse case where an agent is attributed intentionality but lacks control, as in (39a) from Skwxwú7mesh, where the verb bears 'limited/non control' morphology, although 'the agent is fully intending to shoot the bottle and there is nothing accidental about the coming about of the event'.

(39)	a.	chen	kwélash- <b>nexw-</b> Ø ta	nexwlámay	(S <u>k</u> w <u>x</u> wú7mesh)
		1S.SUB	shoot-LCTR-30BJ DET	bottle	
		'I managed t	to shoot the bottle.' [Context:	the subject is pra	ctice-shooting bottles]
	b.	Maija-a	laula-tta-a.		(Finnish)
		Maija-PAR	sing-CAUSE-3SG		
		'Maija feels l	ike singing.'		

We found two other constructions that might be relevant. The first one is the desiderative construction in Finnish, studied e.g. by Pylkkänen (2002) and Kittilä (2013) and illustrated in (39b). Under most if not all interpretations (39b) has, Maija is 'not a typical agent, but rather feels an urge to sing' (Kittilä 2013:274). This suggests that she could not help doing it, a property of the absence of control as defined above. But under at least some interpretations of (39), Maija

is also singing intentionally. This is shown by the fact that one can continue (39) while saying ... *and she really wanted to!* (Seppo Kittilä, p.c.). Under this interpretation, the (atypical) agent is therefore acting intentionally, but does not control her action.

Another construction where the agent can act intentionally but does not have full control on her action is the so-called 'oblique agent' (also called 'oblique causer', cf. fn 17) construction, which exists in German, but also in many Slavic, Romance and Caucasian languages (cf. Schäfer 2012 and references there). The following German example is from Schäfer (2012), originally due to Torgrim Solstad (p.c.):

(40)springt der Wagen nie an, aber meiner Frau springt er a. Mir me.DAT starts the car.NOM never up, but my wife.DAT starts it.NOM immer an. always up 'I never manage to start the car but my wife always manages it.' ist der Wagen angesprungen! Hev! Mir b. hey me.DAT is the car up-started 'Hey! I (accidentally) managed to start the car!'

The verb *anspringen* is a non-alternating, unaccusative verb (but the construction also works with anticausative verbs). The dative DP denotes the Agent of the event. (40a, b) clearly entail that the referent x of the oblique adjunct (the dative DP) *intended* to start the car. However, (40a, b) also strongly imply that x did not fully control what he was doing; these examples somehow suggest that some magic or lucky circumstances are involved. So again, we are dealing with an agent who is intentional, but with no control over (the outcome of) her action.

It is also revealing that (40a, b) are paraphrased by German speakers with a verb similar to *manage to*. In several languages indeed, the morphology expressing a decrease in agentivity also has a 'manage-to' semantics (as noted in Davis et al. 2009 for St'at'imcets and by Dell 1987 for Tagalog). Besides, according to Baglini & Francez (2013)'s analysis of English *manage to*, while the performance of a typical agent is generally presented as the *sufficient cause* for the result, in the case of *manage to*, this performance is presented as a *necessary* but not sufficient cause for the result to take place. This suggests that this verb presents its subject as exerting less control on her performance than a typical agent: other factors have to enter the scene for the result to occur.

In sum, there is evidence that intentionality and control have to be disconnected, although we are still waiting for a full-fledged definition of control. That means that once control is taken into account, four types of agent can be distinguished, among which three are not 'full' agents (i.e. deprived of intentionality and/or control): (i) non-intentional agents with control, (ii) intentional agents without control, (iii) agents without intention nor control.

### 9.4.3. Agents vs causers: repercussions on the event structure

The difference between agents and causers influences the verbal event structure in many interesting ways. Apart from the fact that agents licence lexical causatives in more situations than do causers (cf. Section 9.5), the difference between full agents and unintentional agents or pure causers has been claimed among others to influence (i) the availability of non-resultative structures, (ii) the possibility to deny the occurrence of the result with causative verbs and (iii) the transitivity of the verb, three phenomena addressed in the three following subsections

### respectively.

### 9.4.3.1. Agentivity and resultativity

Causers have been argued to restrict the inner aspectual properties of the event (Travis 2005, Folli & Harley 2005, Schäfer 2008a, 2012). While Travis (2005) claims that in order for a causer to be available, a verbal event must be telic, Schäfer (2012) argues that it can be atelic as long as it involves a bi-eventive/resultative event structure. One crucial test case for these different proposals is the case of degree achievements, which involve a change of state in a theme's property, but which can show atelic behavior.

One context where this inner-aspectual restriction on causers surfaces are non-agentive manner of motion verbs such as *roll* or *move* addressed above in section 9.3.2.3. While these verbs alternate in many languages between an intransitive/unaccusative and a transitive/causative version, their transitive version is special compared to alternating verbs expressing a change of state in that it allows only agents but not causer subjects in Germanic languages.

- (41) a. John rolled the ball.
  - b. ??The wind rolled the ball.
  - c. The ball rolled.

However, a causer subject is possible if the verb combines with a resultative PP, as in (42b).

- (42) a. John rolled the ball (across the goal-line).
  - b. The wind rolled the ball ??(across the goal-line).

Interestingly, this licensing condition on causers can be fulfilled in different ways across languages which have not yet been studied in detail. As an illustration, we compare here a specific verb in German and French.

The manner verb *wash* is a so-called non-core transitive verb in the terminology of Levin & Rappaport Hovav (1998). These verbs are essentially mono-eventive and allow their object to be dropped, in particular under iteration cf. (43b). Note that a result is not entailed by this verb but is only conventionally associated to it (cf. Talmy 2000, Levin & Rappaport Hovav 2008; see also below).

- (43) a. Hans wäscht (den Boden). 'John washes the floor.'
  - b. Hans wusch, wusch, wusch. 'John washed, washed, washed.'

In accordance with the above restriction on causers, this verb only licenses agent subjects but not causers; cf. (44a). However, the example in (44a) drastically improves if a resultative phrase is added, as in (44b,c), which shows that a manner verb can license causer subjects if it enters a bieventive/resultative construal.

(44) a. \*Der Regen wäscht die Straße. 'The rain washes the street.'

- b. Der Regen wäscht die Straße sauber. 'The rain washes the street clean.'
- c. Der Regen wäscht den Staub von der Straße. 'The rain washes the dust from the street.'

It is well known that Romance languages do not form syntactic resultatives of the type shown for German in (44b, c), cf. (45a) (Talmy 1985 and a lot of subsequent literature). Instead, Romance speakers have to make use of lexically resultative verbs such as deadjectival *nettoyer* 'clean' in (45b).

(45) a. \*Jean a lavé la rue propre.
'Jean washed the street clean.'
b. Jean a nettoyé la rue.
'Jean cleaned the street.'

From this one might predict that a causer subject can only combine with *clean* but not with *wash* in French. This turns out to be wrong, as example (46) shows. One might conclude, therefore, that the aspectual restriction on causers only holds in Germanic but not in Romance.

(46) La pluie a lavé la rue. 'Rain washed the street.'

However, there are striking differences in aspectual properties between 'agent *wash*' and 'causer *wash*' in French too. Firstly, only agent *wash* allows object drop (under iteration), cf. (47a-b). This already shows that *laver* with a causer subject does not behave like a non-core monoeventive verb. Secondly, as the negation of the result state shows, agent *laver* is not resultative – it is what Talmy (2000) calls an implied-fulfillment verb – while causer *laver* does entail the result state (48a, b).

(47)	a.	Pierre a lavé, lavé, lavé.
		'Pierre washed, washed, washed.'
	b.	#L'eau ruisselante a lavé, lavé, lavé.
		The fullning water washed, washed, washed.
(10)		

- (48) a. Pierre a lavé la vitre, mais elle est aussi sale qu'avant! 'Pierre washed the window, but it is as dirty as before!'
  - b. #L'eau ruisselante a lavé la vitre, mais elle est aussi sale qu'avant! 'The running water washed the window, but it is as dirty as before!'

We therefore conclude that although French does not form syntactic resultatives, the behaviour of *laver* seems to confirm the generalization according to which a causer subject only appears in bi-eventive/resultative structures, since causer *laver* appears to entail the resultant state that is only implied by agent *laver*.

# 9.4.3.2 Agentivity and defeasability

Another correlation between the theta-roles and the event structure of causative verbs concerns the so-called non-culminating readings of perfective accomplishments (also addressed in Copley

& Wolff, this volume and Copley & Harley, this volume). For instance, consider the Mandarin sentence in (51a) from Koenig & Chief (2008). The use of the prototypical accomplishment verb 'kill' with the perfective marker *le* in the first clause of (51a) does not entail culmination of the described event, Lao Luo's killing, since the speaker explicitly denies the latter's death in the subsequent clause. In contrast, the English counterpart to (51a) in (51b) is contradictory. The infelicity of (51b) indicates that English accomplishments give rise to culmination entailments.

(51) a. Xu Mei he Sun Mazi Lao Luo le ba sha mei sha-si. Sun Mazi PERF not Xu Mei and BA Lao Luo kill kill die b. # 'Xu Mei and Sun Mazi killed Lao Luo but didn't make him die.'

This phenomenon has been reported for Mandarin (Koenig & Chief 2008 and the references therein), Thai (Koenig & Muansuwan 2000), Korean (Park 1993, van Valin 2005), Japanese (Ikegami 1985), Hindi (Singh 1998, Altshuler 2013), Tamil (Pederson 2008), Salish languages (Bar-el et al. 2005, Jacobs 2011), Tagalog (Dell 1987), Russian, Karachay-Balkar, Mari and Bagwalal (Tatevosov & Ivanov 2009), and Adyghe (Arkadiev & Letuchiy 2009).

Similar effects have been observed for perfective accomplishments in the more familiar Romance and Germanic languages, but for a much more restricted set of verbs. For instance, in the French example in (52), we see an accomplishment predicate in the perfective (simple) past form failing to entail the occurrence of the expected result. Such interpretations have been documented for double object verbs in English by Oehrle (1976), Gropen et al. (1989) and Beavers (2010), and for other verbs by Koenig & Davis (2001).

 (52) Marie lui expliqua le problème en une minute, et pourtant il ne le Marie him explained the problem in one minute, and nevertheless he NEG it comprit pas understood NEG 'Marie explained the problem to him in one minute, and nevertheless he didn't understand it.'

Relevant for our point is the correlation documented by Demirdache & Martin (2013) between the availability of non-culminating construals for accomplishments and the control of the agent over the described event. The sentences in (51a) and (52) describe events brought about under the willful control of an agent. Suppose, however, that we substitute for the animate subject in (51a) and (52) a *causer* subject. Then, either the resulting sentence becomes infelicitous, as is the case in (51b), because the Mandarin verb *sha* 'kill' can only be used to describe an event coming about under the control of an agent (Demirdache & Sun 2013), or the non-culminating reading disappears altogether, cf. Martin & Schäfer (2012, 2013). This is what happens in (53), which differs from (52) only in having an inanimate subject. (53) sounds contradictory because, unlike (52), it gives rise to a culmination entailment that cannot be denied.

(53) Ce résultat lui expliqua le problème de l'analyse, # pourtant il ne le This result to-him explained the problem of the-analysis, nevertheless he NEG it comprit pas. understood NEG 'This result made him understand the problem of the analysis, and nevertheless he didn't understand it.'

Demirdache & Martin (2013) collect four cross-linguistic pieces of evidence in favour of a correlation largely unnoticed in the literature on non-culminating construals and agenthood, what they call the Agent Control Hypothesis (ACH). Firstly, in work on English, French and German data (cf. Martin & Schäfer 2012 & 2013 and references therein), it is mentioned that among verbs whose subject can be an agent or a causer, some entail the occurrence of an action while allowing the denial of the result state but with agent subjects only; the result cannot be denied with causer subjects (recall (52) vs. (53) above).<sup>xix</sup> The same correlation arises in at least some of the languages investigated in Tatevosov & Ivanov (2009) (Sergei Tatevosov, p.c.), but also in Finnish, where non-culminating construals have not been investigated in detail yet. For instance, while (54a) is possible in Finnish (Kupula 2010:203), (54b) is weird, at least if *nauraa* 'laugh' keeps the same reading in both clauses (Seppo Kittilä, p.c. ; see also Ilic, this volume):<sup>xx</sup>

- (54) a. Liisa nauratti Maria, mutta Mari ei nauranut.
   Liisa laugh-CAUS Marie-PART but Mari.NOM NEG laugh
   'Liisa made Mari laugh, but Mari didn't laugh.'
  - b. #Täma vitsi nauratti Maria, mutta Mari ei nauranut. This joke laugh-CAUS Marie-PART but Mari.NOM NEG laugh 'This joke made Mari laugh, but Mari didn't laugh.'

The mere existence of this ambiguity confirms the connection between agenthood and nonculmination and between inanimacy and culmination. As Demirdache & Martin notice, no languages have been documented with verbs showing the opposite behaviour – that is, where the non-culminating reading is licensed by causer subjects, while the culminating one is licensed by Agent subjects.

The second type of data put forth by Demirdache & Martin in favour of the correlation between non-culminating construals and agenthood is provided by Salish languages. These are known for pervasive morphological marking of so-called control (cf. Section 9.4.2.2 above). Control predicates entail agency, while limited-control ones do not (Davis 2000). Demirdache (1997), Davis & Demirdache (1995, 2000), and Jacobs (2011) argue that the range of readings that control vs. limited/out of control morphology yields is conditioned by aspect. On Jacobs' proposal, control is about event (*non)culmination*: non-control causatives (Saanich, St'at'imcets) or limited-control causatives (Skwxwúmesh) entail culmination, while so-called 'control' perfective transitives do not, allowing both culminating and non-culminating readings (see also Bar-el et al. 2005 for St'at'imcets).

The third type of data pointed out by Demirdache & Martin (2013) comes from Fauconnier (2012, 2013), who observes that in many languages from unrelated families, completive markers, i.e. markers indicating that the event is completed (like *finish* or *up*) can also be used to indicate that the action was performed non-intentionally/inadvertently. Fauconnier describes this connection between completive and non-volitional semantics for Japanese, Korean, Kannada, Malayalam, Oriya, Bengali, Mandarin and Burmese. In Tagalog, the verbal prefix *-ma*, which is used with Causers or involuntary Agents, can also be used to express the result of a completed action (Himmelmann 2006) or the successful completion of an action (Dell 1987). This connection between causers/involuntary agents and completion further confirms the correlation argued for by Demirdache & Martin. Finally, as a further confirmation

of this correlation, they note that in Germanic languages, it has been argued that Causer subjects are only possible with resultative predicates (Folli & Harley 2005, Travis 2005, Schäfer 2012): as we saw in Section 9.4.3.1, while causers are generally fine in bi-eventive verbs, they are claimed to be acceptable as subjects of mono-eventive verbs only if these are augmented with a resultative phrase, cf. (41-44). Given that the resultative particle/PP adds a culmination to the events described by the VP, the generalization proposed confirms the link between Causer subjects and event culmination.

#### 9.4.3.3 Agentivity and transitivity

The difference between agents and causers has also been argued to affect transitivity, especially in the typological literature devoted to so-called 'involuntary agent constructions' (IACs). The idea is that a decrease of agentivity may not only be encoded through a special marking on the subject (Malchukov 2006), but also on the level of the verb, either by avoiding the *transitive* form regularly used with full agents or by using a morphosyntax elsewhere used with *intransitive* verbs (Kittilä 2005). For instance, in Godoberi, in the presence of the causative affix typically used to transitivize a predicate, the subject is necessarily marked as an intentional agent. If this affix is not used, the subject can be interpreted as an involuntary agent. In Dhivehi, the involitive affix used on verbs whose subject is an involuntary agent also has an anticausative function. On the basis of observations of this kind, Kittilä argues that there is a cross-linguistic connection between IACs and reduced morphosyntactic transitivity.

Recently, Fauconnier (2011) tested this claim on a much broader sample of 150 languages, compiled to ensure genetic and areal diversity. On the basis of her results, she argues that although it is indeed a common strategy to encode IACs through the use of an intransitive verb with an oblique agent expressing an involuntary agent (as in the German construction in (40a, b) above), there is in fact no *direct* correlation between IACs and reduced morphosyntactic transitivity. In fact, in many languages, IACs use a marker associated with uncontrolled semantics on the verb, without showing a reduced transitivity (as in St'at'imcets, where the out-of-control morphology that encodes involuntary instigation can be used in transitive or intransitive clauses, cf Davis et al. 2009).

This closes our section dedicated to the interplay between the event structure and the argument structure of causatives. We turn our attention now to the differences between monoclausal and bi-clausal causatives. We will see that again, the difference between agents and causers plays a crucial role.

### 9.5 Direct vs. indirect causation

#### 9.5.1 Introduction

A very popular idea in the literature devoted to causative structures is that mono-clausal (lexical) causatives tend to express 'direct' causation, while bi-clausal (periphrastic<sup>xxi</sup>) causatives may also express 'indirect' causation (see Ruwet 1972, Shibatani 1976, McCawley 1978, Pinker 1989, Levin & Rappaport Hovav 1995 & 1999, and Wolff 2003; on direct vs. indirect causation, see also Ilic, Ramchand, Tatevosov & Lyutikova and Thomason, this volume). Direct causation is often understood as requiring temporal adjacency between the cause and the effect, so that no third event is allowed to intervene. We will confine ourselves to this definition until Section 9.5.3, where we turn to the other definitions of directedness used in the literature.

We do not repeat here the basic facts illustrating the difference in terms of directedness between lexical and periphrastic causatives, since they are presented by Copley & Wolff, this volume (section 2.2.3.6). They also discuss some of the difficulties triggered by the notion of direct causation defined through temporal adjacency. What we do here is to discuss the arguments that have been proposed against the idea that periphrastic causatives cannot express direct causation but also against the claim that lexical causatives cannot express indirect causation (Sections 9.5.2 and 9.5.3).

9.5.2 Lexical vs. periphrastic causatives and direct vs. indirect causation

McCawley (1978) agrees that lexical causatives necessarily express direct causation, but argues that periphrastic causatives are neutral with regard to directedness and can express all types of causation, including direct ones. In favor of this idea, he notes that in a context where Black Bart shot the sheriff to death, the question below cannot be answered negatively (McCawley 1978: 250).

(55) Did Black Bart cause the sheriff to die?

Yes/#No, he shot him through the heart and the sheriff died instantly.

McCawley concludes from this that the inference typically triggered by periphrastic causatives that the causation denoted is indirect is not an entailment, but rather a conversational implicature arising from general Gricean principles: if the speaker wants to describe direct causation, she should use a lexical causative (if available) rather than a periphrastic one since the former non-ambiguously conveys this meaning. Blutner (2000) reanalyses the competition between the two structures as described by McCawley (who worked outside of the Aronoff/ Kiparsky line) as an instantiation of the *partial blocking* phenomenon: the existence of lexical causatives restricts the distribution of their periphrastic counterparts. Since then, many sophisticated accounts of the competition between the two forms have been developed in formal pragmatics (see e.g. Blutner 2000, Beaver & Lee 2003, van Rooy 2004, Benz 2006), and it is generally admitted that although the periphrastic causative is preferrably interpreted as conveying indirect causation when the lexical causative is available, it can truth-conditionally express both kinds of causation.

Apparently less controversial is the idea that lexical causatives only express direct causation (let's call it the 'lexical causatives constraint', LCC), supported e.g. by Fodor (1970), Katz (1970), and Bittner (1998). For instance, it seems clear that (56) below is true if and only if the psychologists moved the mouse by direct manipulation – it is not felicitous in a context where they attract it to the other box with some cheese (so that the mouse moves by itself). Note that if the psychologists do not cause the moving by direct manipulation, the possibility is opened that a third event intervenes between the subject's action and the effect—the mouse realizing that some cheese is around, deciding to move, etc.—and therefore that we do not deal with a direct causation, since the action and its effect are not temporally adjacent.

(56) The psychologists moved the mouse in the other box.

The possibility to answer the question in (57) negatively in a context where the causation is clearly indirect also militates for the view that lexical causatives truth-conditionally differ from periphrastic ones.

(57) Did the psychologists move the mouse in the box?No, they put some cheese in it so that the mouse moved by itself. So, they MADE it move in the box.

However, the LCC as defined through temporal adjacency has been called into question, too. Firstly, Geuder & Weisgerber (2006) observe that when lexical causatives are formed from unergative verbs of movement like *run*, they generally express indirect causation. For instance, they argue that in (58), it is understood that the rat itself does the running, which is therefore not necessarily temporally adjacent to the action of the psychologists. The contrast between (56) and (58) is indeed clear: while the insertion of *make* triggers a clear (truth-conditional) semantic difference in (56) (*make move*), it does not in (58) (*make run*).

(58) The psychologists ran the mouse through the maze.

Whatever is the explanation of these facts, this observation shows that the way lexical causatives encode directedness vary through verb classes and more particularly the role associated to the argument of the intransitive variant.

Neeleman & van de Koot (2012) go one step further and reject the LCC altogether (since it does not fit with their hypothesis that causative verbs do not encode the causing event). Their point of departure is Katz (1970), who provided an apparently solid argument in favour of the LCC. Katz illustrates his claim through his Wild West story about a sheriff whose gun is faultily repaired by the local gunsmith. As a consequence of this, the sheriff is killed in a gunfight the day after. Katz's claim is that in this context, 'clearly, the gunsmith caused the death of the sheriff, but equally clearly, the gunsmith did not kill him'. What Neeleman and van de Koot accurately note is that Katz's example in (59) becomes in fact acceptable in a context where the gunsmith has the *intention* of causing the sheriff's death (if he e.g. decides to sabotage the gun when the sheriff brings it in for servicing), although cause and effect are clearly *not* temporally contiguous, as in Katz's original scenario.

(59) The gunsmith killed the sheriff.

Neeleman and van de Koot's attack against the LCC is forceful, but not new. Wolff (2003), whom they cite as a LCC's defender, indeed already showed experimentally that speakers are more willing to choose lexical causatives to describe causally related events that are not temporally contiguous when the subject is an intentional agent than when it is a causer. These experiments therefore already made clear that lexical causatives *can* express indirect causation *if* directedness is defined through temporal contiguity.<sup>xxi</sup> But as we will see below, this does not mean that the LCC has to be given up right away: it has been defended (e.g. by Wolff) through alternative definitions of directedness.

Neeleman and van de Koot also provide data as in (60) that they claim to show that lexical causative can also express non-temporally adjacent events *with a causer subject*.

- (60) a. Negligence of NHS killed my brother.
  - b. A kind word with the manager will no doubt open the door.
  - c. A slip of the lip can sink a ship.

This is more surprising, since Wolff's experiments show that speakers are very reluctant to choose lexical causatives instead of periphrastic ones when asked to describe a case of indirect causation triggered by a non-sentient entity. However, these examples are not entirely convincing. They involve metaphorical contexts, metonymical subjects or modal contexts, which might have crucial influences here. The French data we provide below do not present these problems; lexical causatives are all acceptable here, although the causation described is indirect (in each case, the context makes clear that a third event intervenes between cause and effect) and the subject inanimate:

- (61) a. La première bille *a déplacé* la troisième en touchant la seconde. The first marble has displaced the third in touching the second 'The first marble moved the third one by touching the second one.'
  - b. Le fort coup de chaleur d'hier *a cassé* mon moteur! Ça a fondu une partie The strong stroke of heat of yesterday has broken my motor! It has melted a part du réservoir d'huile. Ça a provoqué une fuite à la source de mon accident ce of-the tank of oil. It has provoked a leak at the source of my accident this matin.

morning.

'Yesterday's heat-stroke broke my motor! It melted a part of the oil tank. This triggered a leak at the source of my accident this morning.'

With causer subjects, the picture is therefore unclear. Unfortunately, Wolff (2003) only tests speakers' *preferences* when asked to choose between descriptions of a causation with lexical or periphrastic causatives. Truth Value Judgment Tasks would certainly be useful to see whether sentences with lexical causatives with non-sentient entities as subject are judged *false* when applied to a causation between temporally non-adjacent events. This would in turn help to see whether the difference in meaning between lexical and periphrastic causatives is truth-conditional or simply reflects a difference in saliency within a shared set of potential readings. As far as we know, experiments of this kind have never been conducted.

# 9.5.3 Alternative definitions of directedness

'Direct' causation as expressed by lexical causatives has not only been defined through temporal adjacency between cause and effect. It has also been claimed that the degree of directedness mainly depends on the *control* exerted by the subject's referent over the whole causation. For instance, for Wunderlich (1997: 38), 'direct causation is at issue when the Agent controls the final result, whereas indirect causation holds when the Agent controls the input situation but not all intervening stages'. That lexical causatives often require *manipulative* causation (Shibatani 1976) can be seen as a consequence of this: direct manipulation of the Theme by the Agent plausibly better guarantees control on the whole causation. As an illustration, French *fondre* 'melt' can only be used if the subject directly (and continuously) manipulates the object, cf. (62b) (note that the effect seems to be less strong with German *schmelzen*). The periphrastic causative is required if the subject only causes another entity to act on the object, cf. (62a); cf. Ruwet (1972). Note that (62a) would be acceptable in a context where the general is imparting continuous force on the object (directly manipulating it) during the whole change of state (e.g. crushing his sugar lumps with a spoon).

(62) a. #Le général a fondu deux sucres dans son café/le fromage au micro-ondes. The general has melted two sugars in his coffee/the cheese at-the micro-waves 'The general melted two sugar lumps in his coffee/cheese in the micro-wave.'
b. Le métallurgiste a fondu le métal/le fromage dans un pot avec une cuillère. The metallurgist has melted the metal/the cheese in a pot with a spoon 'The metallurgist melted the metal/the cheese in a pot with a spoon.'

That a higher degree of agentivity/control of the subject favours the availability of transitive structures is a classical and well-documented claim. According to the prototype approach of Hopper & Thompson (1980), the prototypical transitive event is performed by an intentional agent whose act is the sole and immediate cause of the event. One deviation from this prototype, like absence of intention or shared responsability, is likely to force the use of other codings than a transitive verb. For instance, in Newari, the transitive verb translating kill can be used to describe a complex causal chain if the subject has the sole responsability for the death (and this even if he does not have the intention to cause it). If the responsibility is shared with the object, extra morphology has to be used (DeLancey 1983:55). In Hungarian, Finnish or Turkish, unergative verbs can form (morphological) causative verbs only if the causative verb has an agentive subject (e.g. Father made him save money can be translated with a morphological causative, while Inflation made him save money has to be coded with a periphrastic causative or another causal construction), cf. Brennenstuhl & Wachowicz (1976:397-398). In English, the small set of unergative verbs that can be transitivized (like run, cf. (58) above) can only be transitivized if the subject is agentive (cf. e.g. Horvath & Siloni 2011). In French, some verbs like monter 'go up/carry up' can be used transitively only with a agentive subject and with an object devoid of any control on the change of state:

- (63) a. Pierre a monté les papiers/le bébé endormi/#les enfants.
   Pierre has carried-up the papers/the baby asleep/the children
   'Pierre carried up the papers/the baby asleep/the children.'
  - b. Le vent a #monté/ fait monter les papiers.
    - The wind has gone-up/made go-up the papers
    - 'The wind carried up/ made go up the papers.'

Psycholinguistic studies on English also confirm that a higher degree of agentivity of the subject favours the use of lexical causatives over periphrastic ones. For instance, Wolff (2003) shows that speakers are more willing to use lexical causatives to describe causal chains showing intended results than chains showing non-intended results. Recently, similar findings have been provided by Muentener & Lakusta (2011), whose data confirm that children tend to use lexical causatives more often in the presence of an intentional Agent than in the presence of a Causer. Wunderlich's definition of direct causation in terms of control on the whole causation raises several problems, however (see also Copley & Wolff, this volume and Lyutikova & Tatevosov, this volume for further criticisms). Firstly, Neeleman & van de Koot's attack of the LCC also applies here: the context they build for Katz's example (59) shows that the Agent of lexical causatives can very well control the input situation only: in their scenario, the gunsmith does not exert control on the shooter involved in the gunfight.<sup>xdiii</sup> Secondly, if direct causation implies the presence of an agent (as Wunderlich's definition suggests), the LCC is obviously wrong, since many causative verbs take a Causer subject.

Related to Wunderlich's claim that the Agent of lexical causatives always controls the whole causation (including the final result) is the idea that the subject's referent of a lexical causative is the only Agent involved in the whole causal chain (let us call it the 'single Agent constraint'). Indeed, being the sole Agent prevents another entity from controlling some final part of the causation (and therefore helps the causation to be direct in Wunderlich's sense). The 'single Agent constraint' is argued for by Cruse (1972), who claims that direct causation as expressed by lexical causatives means that 'no agent intervenes in the chain of causation' between the subject's and the object's referent. Piñón (2001a/b) goes a step further and claims that a lexical causative can be successfully derived from a verbal stem only if this stem denotes what he calls a 'pure' change of state, that is a change of state of which the Theme is not also an Agent. This guarantees that the subject is the only Agent of the whole causation (and therefore possibly exerts control on the whole causation). In his view, if (64) is odd, it is because the roses are also agentive in some sense, such that Rebecca is not the single agent involved. Piñón argues that this is independently shown by the possibility to present the roses as agentive through the *do* test (*what did the roses do? They bloomed*).

#### (64) \*Rebecca bloomed the roses.

However, the single Agent constraint has been challenged, too. Firstly, we already reported above the observation that lexical causatives can express complex causal chains involving intermediate agents, cf. Neeleman and van de Koot's example (56), as well as Geuder & Weisgerber's example (55) (cf. also Goldberg 1995:169). Secondly, when internally-caused change of state verbs like *bloom* are successfully transitivized (Wright 2002, Coppock 2009, Levin 2009, Crone 2012, Rappaport Hovav & Levin 2012, Alexiadou to appear, Rappaport Hovav to appear), they sometimes leave open the interpretation where both the subject's and the object's referents are agentive in some sense. For instance, in (65), both the sun and the roses can be conceived as Agent according to the test used by Piñón (*what did the sun do? It wilted the roses; what did the roses do? They wilted*).

### (65) Bright sun wilted the roses. (Wright 2002)

In conclusion, despite the fact that a higher degree of agentivity seems to favour lexical over periphrastic causatives (as Wolff's studies suggest), it is not true that the subject of lexical causatives always exerts exclusive control over the full causation (and is always the sole Agent implied).

Wolff (2003), who defends the LCC, adopts still another definition of direct causation, which in a way combines the two previous ones. According to him, a causation is construed as direct not only when *no intermediate causer* intervenes between the cause and the result (situation 1), but also when the intermediate causer, *if there is one*, is conceived as an 'enabling condition' (situation 2). An enabling condition is defined as an entity that does something 'that is concordant with the tendency of the causer [i.e. the subject's referent]' (p. 6). Wolff claims that concordance of this kind is often present when the subject is sentient and intentional. However, in his experiments, it is not entirely clear how the situation under which the intermediate causer is conceived as an enabling condition can be independently defined from the situation where the subject is intentional (no example is given where the subject is non-sentient and the intermediate entity construed as an enabling condition, although Wolff suggests that it is also theoretically

possible). So ultimately, Wolff's claim seems to be that the causation is construed as direct either when no third event intervenes between cause and effect, or when the subject is an agent. The only explicit criterium provided to check whether the intermediate entity can be conceived as 'enabling' the Causer is the possibility to paraphrase 'x *V-ed* y' by 'z *enabled* x *to* Vy', z being the intermediate entity. But note that applied to Neeleman and van de Koot's gunsmith example, this test gives the wrong result --- (59) repeated below is not appropriately paraphrased by (66) in their scenario, although the lexical causative is acceptable there:

- (59) The gunsmith killed the sheriff.
- (66)  $\neq$  The shooter enabled the gunsmith to kill the sheriff.

Finally, Lauer (2010) suggests approaching the notion of direct causation as expressed by lexical causatives by still another way, namely by taking into account the necessity vs. sufficiency distinction. His proposal is that the cause expressed by lexical causatives is both necessary *and* sufficient, while some periphrastic causatives like *cause*+inf. assert that the cause is a *necessary* (but not sufficient) condition for the effect, and others, like *make*+inf., assert that the cause is *sufficient* (but not necessary). It remains however to be seen how the nature of the cause can be concretely tested. We agree with Lauer, though, that looking at the necessity vs. sufficiency distinction in studies devoted to causative constructions might be illuminating.

In sum, it is still unclear whether *one* definition of directedness can make true the claim that lexical causatives only express direct causation *and* adequately covers the empirical situation both with causer and agent subjects, given that the constraints on the availability of lexical causatives vary so much with the nature of the subject. Additionally, there is the fact that languages differ in the range of situations that can be described with lexical causatives (see e.g. van Voorst 1996 for a comparative study). As Wolff (2003:39) emphasises, it is still unclear whether these discrepancies reflect differences in the way direct and indirect causation are conceptualized across languages, or differences in linguistic constraints.

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### Notes

i This work is part of the projects B5 'Polysemy in a Conceptual System' and B6 'Underspecification in Voice systems and the syntax-morphology interface' of the Collaborative Research Center 732 hosted by the University of Stuttgart and financed by the *Deutsche Forschung Gemeinschaft*. We would like to thank Bridget Copley and Marcel Pitteroff for their careful reading and helpful comments. We are also very grateful to Hamida Demirdache for collaboration on Section 9.4.3.2, mainly taken from Demirdache & Martin (2013), and for her valuable suggestions on a previous version of this work.

ii For discussion of the type of instrument allowed in subject position of causative verbs, see Kamp & Rossdeutscher (1994), Alexiadou & Schäfer (2006), Grimm (2011) and the references there.

iii We know of three exceptions to this condition. Firstly, 'destruction' and 'killing verbs' allow agent and causer subjects but do not have an anticausative counterpart (cf. Alexiadou et al. 2006, to appear, a, Schäfer 2009, Alexiadou 2010, Crone 2012, or Rappaport Hovav to appear). Secondly, manner of motion verbs like 'roll' or 'move' alternate although they only take agent subjects (see Section 9.3.2.3 for further discussion). Thirdly, some alternating verbs expressing meteorological events allow causer subjects only, e.g. 'wash ashore'. So-called internally caused verbs, like 'blossom' or 'decay' should probably be subsumed under the last phenomenon. These change-of-state verbs are only rarely used transitively, but if they are, they require a causer subject and refuse agentive subject, cf. McKoon & Macfarland (2000), Wright (2002), Crone (2012), Alexiadou (2010, to appear), Rappaport Hovav (to appear).

iv This hypothesis seems to receive support from languages such as Albanian and Greek where a subset of anticausatives shows the same morphological marking as passives (cf. Kallulli 2007). However, Alexiadou et al. (2006, to appear, a) argue that a passive-like analysis of such marked anticausatives is not tenable (at least for Greek).

v Chierchia (1989, 2004) and Koontz-Garboden (2009) argue that the second reading expresses that the formal antecedent of *by itself* is 'the only cause' of the event. More generally, these authors propose a theory of anticausatives as reflexivized causatives. This proposal is driven by the observation that many languages mark a subset of their anticausatives with the same reflexive morphology as canonical reflexive verbs. Under this analysis, the theme argument of an anticausative is also assigned the external argument causer role so that it is interpreted as the causer of its own change of state. For reasons of space, we must refer the reader to Alexiadou et al. (to appear, a) and the references there for a detailed discussion of why, despite its morphological motivation, this characterization of anticausatives in general and of *by itself* in particular, is not tenable.

vi Also, among lexical accounts, one should distinguish those for which CAUSE makes part of the semantic representation (as e.g. Levin & Rappaport Hovav 1995 et seq.) and those for which CAUSE is not part of it but rather inferred from extra-lexical principles. This position is argued for by Wunderlich (2012), who proposes the following representation for *die* and *kill*:

(i) <i>die</i> :	λγλε		BECOME DEAD( $y$ ) (e)
(ii) kill:	λуλе	[ACT(x) &	BECOME DEAD $(y)$ ] (e)

Note that in (ii), e has the action of x and the BECOME event as proper subparts. The event e expressed by *kill* is thus composed of two parts, but nevertheless, *kill* expresses only *one* event. This is the way Wunderlich explains how temporal adverbials cannot apply separately to either the first event (his ACT) or the BECOME event. We come to related considerations immediately below.

vii Bale (2007) provides a further argument involving English *again*; but see also the critical discussion in Jäger & Blutner (2000, 2003) and a rejoinder in von Stechow (2003).

viii Therefore, (16c) does not mean that 'John causes the door to *become* open' but that 'John causes the door to *be* open'. The CAUSE operator is defined by Kratzer (2005) through counterfactual dependency, following Lewis (1973): ('Let e and c be two distinct actually occurring events in our universe of events E. Then e depends causally on c just in case e wouldn't have occurred if c hadn't'; Kratzer 2005:28). Lewis's 1973 counterfactual theory of causation is discussed in more detail in Copley & Wolff (this volume).

ix The structures in (16b, d) reflect Pylkkänen's (2002) proposal that causatives in languages such as English (or German and Greek for this fact) qualify as 'root selecting causatives' where the root reflects the a-categorial encyclopaedic core of a lexical item. Note that Pylkkänen, on the basis of manner adverbs, also identifies languages with 'verb selecting causatives', i.e. causatives that involve a CAUSE and a BECOME event. We discuss manner adverbs immediately below. See Section 4 of Lyutikova & Tatevosov (this volume) for arguments against Pylkkänen's view that causatives fall under exactly one of the three structure types (root-selecting, verb-selecting and phase-selecting).

x Note that French *re*- differs from its English counterpart, which allows only a restitutive reading (e.g. Williams 2006, Marantz 2009).

xi Paslawska (1998) as well as Bale (2007) also argue that the intermediate reading in (15b-ii) exists. However, in our opinion, their examples do not represent this intermediate reading but a further reading not discussed so far which is exemplified in (ia-d).

- (i) a. The bottle is without a cork.
  - b. John corks the bottle.
  - c. Mary uncorks the bottle.
  - d. Tom corks the bottle again.

(id) does not qualify as the intermediate reading. While the agent Tom is involved in a corking event for the first time, *again* presupposes that earlier corking events were triggered by some agent (we call this the 'agent alternative' reading). In fact, Bale (2007) identifies such a reading for transitive verbs that are not causative (i.e. that lack a CAUSE as well as a BECOME predicate in their decomposition) and argues that it results from *again* scoping between VoiceP and the verbal phrase below VoiceP as in (ii). (We discuss Voice in more detail below).

(ii) [<sub>VoiceP</sub> Tom Voice [<sub>VP</sub> [<sub>VP</sub> corks the bottle] *again* ]]

However, it is unclear why, under the scoping in (ii) the presupposition of *again* should involve the participation of an agent in earlier events. It seems to us that the only structural position that could correspond to the agent alternative reading in (id) is one where *again* takes VoiceP but not the external argument as its complement and the external argument is combined with this complex only afterwards, as in (iii). However, such a structure does not comply with the idea defended in Bale (2007) that *again* always takes a propositional level as its complement.

(iii) [VoiceP Tom [VoiceP Voice [VP cork the bottle]] again ]

Perhaps the difference between the agent alternative reading and the intermediate reading is not structurally represented but depends on further (conceptual or contextual) information, e.g. whether the verb under consideration does or does not form an anticausative. In this case, the structure in (ii), which we will propose below to be the source of the intermediate reading in (15b-ii), might be the basis of both readings.

xii In the system assumed in Pylkkänen (2002) as well as in the system of Alexiadou et al. (2006, to appear, a) to be discussed below, the result state is represented by an a-categorial root (e.g.  $\sqrt{\text{OPEN}}$ ).

xiii A note is in order about the status attributed to the label CAUSE in the syntactic representations in (28) and (29). Some syntacticians use verbal heads annotated with tags such as CAUSE (cf. v-CAUSE in (28)-(29)) in a *mnemonic* way only, with CAUSE serving as a pure tag, without endowing the tags themselves with meaning at this level of representation. The idea is that the syntax of causatives and anticausatives only refers to a verbal event v<e> that takes a stative eventuality <s> as its complement (a verbal head introducing a state, an adjective, a PP or a root ontologically associated with a state). In this perspective, the causative semantics is not coded on any syntactic atom, but it is rather induced during the semantic computation. That is, the most natural interpretation of the syntactic combination of a projection introducing an <e> with a projection introducing an <s> is interpreted as a causative relation between <e> and <s>, see e.g. von Stechow 1995, Higginbotham 2000, Beck & Snyder 2001, Rothstein 2001, Ramchand 2008, Schäfer 2012 or Alexiadou et al. to appear, a, for different proposals along this line. Wunderlich 1997 & 2012 proposes something similar in a lexical framework (cf. footnote 6 above). Tatevosov & Lyutikova (2012, this volume), on the other hand, argue that subevents and their semantic relations (e.g. CAUSE) are represented on different syntactic heads.

xiv Analyzing anticausatives as causative predicates without an external argument requires a reanalysis of so-called 'unaccusative causative predicates' in Pylkkänen (2002). Schäfer (2008a: 61) explores the possibility that such causatives involve a Voice head which projects a covert external argument in its specifier (which refers to an underspecified ambient condition similar to weather expletives). Such an analysis has also been proposed for the so-called Fate accusative construction in Icelandic in Haider (2001) and Schäfer (2008a).

xv Note that in general, philosophical theories of causation do not make a distinction between events and states. So any theory of causation can be used to interpret the causal relation involving a state. If events are involved, these can be extended to states; also, propositions can describe events or states. It is certainly true, however, that in current usage of Dowty's revision of Lewis (where the caused event is a BECOME event), linguists usually think of causation as relating events. But nothing from theories of causation requires this, see Copley & Wolff (this volume) for discussion.

xvi Recall from our discussion of the *by itself* test in Section 9.2.2. that passives but not anticausatives involve an implicit external argument, which, in principle, can be a causer (cf. *The sail was torn by the wind*). It follows that passive *by*-phrases must be treated fundamentally differently from causer-PPs in anticausatives. The former take up (or replace) an existentially

bound external argument. Causer-PPs, on the other hand, modify the event variable, whose nature, in the case of change-of-state verbs verbs, is typically left underspecified. Note in this connection that causer-PPs can also appear in causatives as long as their presence is in accordance with the presence of an external argument as in the German example from Alexiadou et al. (2006):

(i) Peter verschlechtert die Luftqualität im Raum durch das Rauchen von Zigaretten. Peter worsens the air-quality in-the room through the smoking of cigarettes 'Peter worsens the air quality in the room by smoking cigarettes.'

xvii See also Koontz-Garboden (2009) for this argument. Note that although the oblique DP is human, it cannot be interpreted as a *full* agent, as the unavailability of instrumental phrases in (31) shows. Schäfer (2008a, 2012) argues that the oblique DP is actually a causer and that the human restriction is an independent side effect of the applicative head that introduces this causer in its specifier.

xviiiSee also Egré (this volume) for a slightly different take on intentionality, which involves belief or foresight of the agent.

xix Martin & Schäfer (2012) also present data where inanimate subjects are exceptionally allowed with non-culminating construals. We argued in this paper that this is possible in a context where the event involving the inanimate subject is of a type that normally/stereotypically triggers the result described by the verb (see Copley & Wolff, this volume, Section 2.3.2.4 for further discussion).

xx However, see Ilic (this volume) for data that tend to show that the non-culminating construal is available with a causer subject in Finnish (different from the type of causer subject allowing the non-culminating reading in Martin & Schäfer 2012).

xxi Apart from lexical and periphrastic causatives, one traditionally distinguishes morphological causatives, that is verbs derived from a base-verb through some morphology. Whether morphological causatives express direct or indirect causation appears to depend on the kind of structures they compete with. For instance, Miyagawa (1989) claims that in Japanese, morphological causatives express indirect causation if a corresponding lexical causative exists. See e.g. Harley (2008) and Ramchand (this volume) for discussion of the interplay between morphological causatives and syntactic structures of mono-eventive/sentential vs. bi-eventive/sentential causative meanings.

xxiiWolff (2003:15) notes that Talmy (1976) already observed that lexical causatives can more readily express complex causal chains in presence of an agentive subject (cf. e.g. Talmy's example *I'm going to clean my suit at the dry-cleaning store on the corner*). The idea that direct causation can have a temporal gap is also proposed in Copley, to appear, for futurate cases.

xxiii What the gunsmith has is an *epistemic* control on the events: he *knows* that the actor will act the way they act --- but epistemic control is not what is generally meant by control.