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CAUSATION IS NON-EVENTIVE

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Abstract

This thesis presents a system developed to account for the observation that subverbal causation is present in stative structures, which requires a reanalysis of the subverbal primitives involved in causal structures (e.g. McCawley (1968); Dowty (1979)) where CAUSE is not attributed eventive meaning nor restricted to combining with eventive arguments. The foundation of the system developed here is the idea that the contribution and role of any functional head should be minimal and consistent across contexts. With this in mind, I show that CAUSE can not be attributed either the role of introducing Agent arguments, nor the role of introducing changes-of-state. The first task is factored out to DO, the latter to BECOME. The contribution of CAUSE itself is shown to be the following: i) it introduces inanimate Causers, either eventive or stative in its specifier, ii) it introduces the result in its complement, either directly as in statives, or by embedding another event, usually a change-of-state associated with BECOME, iii) when its specifier is unfilled, which can only be the case when the subject of the sentence is an Agent, an implicit event argument is inserted in the unrealised

specifier position. Further, it is shown that the arguments of CAUSE must be eventualities and these eventualities must be of the same ontological category: either both states or both events. This restriction CAUSE places on its arguments is termed ontological harmony.

Although developed to account for stative causation, the system presented here is shown to have a number of explanatory consequences. The conclusion that eventiveness must be associated with either DO or BECOME is seen to explain alternations in entailment patterns across a number of different verb classes, including *provoke*-class psych verbs, causativised activity verbs and biclausal quasi-causals, a class that cuts across familiar previously defined classes. This has implications for how verbs are classified, suggesting a move away from classifying verbs on the basis of Aktionsarten, towards on the basis of their subverbal meaning primitives.

Lay Summary

A large number of verbs have been shown to involve causation as part of their meaning. A sentence such as *John broke the glass*, for example, is well paraphrased by something like ‘John caused the glass to become broken’. This causal meaning has been associated with the subverbal primitive CAUSE, one of a family of subverbal operators (McCawley, 1968; Dowty, 1979). It is usually assumed that causation in natural language is related to events where ‘things happen’. In these thesis, I show that sublexical causation can also be involved in situations where nothing happens, I call this ‘stative causation’ and develop a theory set up to account for these cases (as well as for the prototypical eventive ones).

Additionally, I show that the subverbal primitive CAUSE is an operator that takes two arguments (a subject and a complement) of the same ontological type. This means that if the first argument of CAUSE is a state, then the other argument must also be a state description. Likewise, if one of the arguments describes or refers to an event, then so must the other. This claim accounts for the usual data sets analysed in the literature on causation such as causative-inchoative verbs (McCawley, 1968), but it also accounts for more recalcitrant data that hasn’t been discussed previously such as stative causation, *provoke*-class psych verbs, causativised activity

verbs, and biclausal quasi-causals. My analysis of CAUSE is embedded in a model of event structure which also includes new formulations of the Dowty operators DO and BECOME (Dowty, 1979). In this thesis, I arrive at a unified CAUSE present across different causal environments by factoring out various pieces of the assumed contribution of CAUSE and assigning them to other structural elements.

The system presented in this thesis was originally developed to explain sentences involving stative causation, which forced CAUSE to be considered a non-eventive operator. This conclusion turns out to have a number of explanatory consequences. Firstly, CAUSE being non-eventive means that eventhood must come from other structural elements, specifically either DO or BECOME. DO is associated with actions and agentivity while BECOME is associated with changes-of-state. The arguments of CAUSE are shown to be subject to the principle of ontological harmony meaning that both arguments must either be eventive or stative.

The conclusion that eventhood comes from either DO or BECOME makes sense of an alternation that happens (in slightly different ways) across a number of different verb classes between an ‘intention’ reading and a ‘change-of-state’ reading. In the intention readings, no change-of-state is entailed, while in the change-of-state readings, there cannot be a volitional Agent. I suggest that while these verbs need to be eventive (so they must have either

DO or BECOME), they do not permit both DO and BECOME at the same time. This also gives a language for describing another class of verbs (the biclausal quasi-causals), which follow a similar alternation, but this time between DO and CAUSE. This class never allows BECOME as part of its structure. Using this approach to verb classes, I look at data from Malagasy, a language which has been purported to have accomplishments (which are defined in part by the fact that their meanings entail culmination) that do not culminate. I show that these should not be thought of as accomplishments at all, but rather are instantiations of the ‘intention’ reading. I show that the puzzle that still needs to be solved is actually the fact that a particular rare and marked form of verbs in Malagasy adds culmination, not the fact that it is normally not there.

This thesis is structured as follows. In the first chapter I present a background to the relevant literature on subverbal causation, and present the datasets that form the core data around which the system I present was developed. In Chapter 2, I present my system and motivate the principle of ontological harmony. In Chapter 3, I show that the system I laid out in Chapter 2 allows us to make sense of phenomena that otherwise look puzzling and unrelated. In Chapter 4 I discuss non-culmination in verb meanings in Malagasy.

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*We must above all avoid letting ourselves be deceived by words,
for there are few things that lead to greater foolishness.*

MARCEL PROUST

Chapter 1

What I talk About When I Talk About CAUSE

1.1 In the beginning McCawley Said, “Let There be CAUSE” and there was CAUSE. And we saw that CAUSE was good¹

There is a joke that circulates in a variety of forms but the basic set up is this: one semanticist asks another “What is the meaning of life?”, “LIFE”, the other responds, and they move on, inexplicably satisfied with the conclusion.

One of the primary aims of theoretical linguistics is to determine the underlying structures of sentences and words by ascertaining systematic and predictable rules based on generalisations over grammatical behaviour. In

¹Lakoff (1966) also discusses subeventual causation, as does Davidson (1967b), but he does not use the capital-letter CAUSE notation.

other words, a key assumption underlying theoretical approaches is that linguistic elements that share the same grammatical behaviour can (*a priori*) be assumed to be following the same rule and that they thus share something of their underlying structure. That is to say that linguistic elements can be grouped into categories on the basis of their grammatical behaviours.

The empirical pay off of this is being able to view language as a system of organised rules that can be described, learned, and transmitted rather than as an arbitrary collection of knowledge that we all somehow end up with. The fact that language is rule-based is demonstrated maybe most famously in the ‘Wug Test’ (Berko, 1958).² In this experiment, children are shown a picture of a made-up animal which they are told is called a *wug*. The experimenter then shows a second wug and prompts the children, “Now there are two ...?”. Most of the children in the experiment respond to the prompt by pluralising *wug* as *wugs* following the standard English rule for how to form plurals. Since the children had never heard the word *wug* before, and thus could not have already learned the plural form for it, the results of this experiment show that they successfully applied a generalised rule to a novel form. Another example is from the sorts of mistakes that children make with irregular verb forms, for example saying “She goed there” instead of “She went there”, which demonstrates that while they have learnt that

²Not to mention every time we parse a new sentence.

adding “-ed” forms plurals, they have not yet learned the specific, irregular exception to that rule (Pinker, 1995).

Since the evidence is robust that linguistic knowledge is rule-based, the goal then becomes determining what those rules are. That is, what do speakers of a language not know that they know? Rules of morpho-syntactic agreement, such as pluralisation and past-tense formation, tend to be (relatively) straightforward to identify as the effects are associated with the addition of certain morphemes. Rules related to other types of grammatical behaviour can be more difficult to identify and describe. One grammatical phenomena that has received a lot of attention in this light is the causative-inchoative alternation. In this alternation, a large number of words each appear in several different structures and the meanings associated with each of those structures is (to some extent) predictable. For example, there appear to be systematic meaning differences present in both of these sets of sentences.

- | | | | |
|-----|----|-----------------------|----------------|
| (1) | a. | John closed the door. | (causative) |
| | b. | The door closed. | (inchoative) |
| | c. | The door is closed. | (stative) |
| (2) | a. | Mary broke the glass. | (causative) |
| | b. | The glass broke. | (inchoative) |
| | c. | The glass is broken. | (stative) |

The meaning of the sentences in (1a) and (2a) entail this meanings of the sentences in (1b) and (2b) respectively. This fact can be demonstrated by attempting to assert the former but negate the latter:

- (3) a. # John closed the door but the door did not close.
b. # Mary broke the glass but the glass did not break.

The sentences above are semantically impossible on account of being contradictory. Similarly, the examples in (1b) and (2b) seem to entail the meanings of (1c) and (2c) plus some additional information, namely that the door or the glass did not originate in the state they begin. The situation is made more complex by the fact that while it is possible that a closed door has never been in a state other than closed, it is not possible for a broken glass to never have been in a state other than broken (otherwise it would never have been a glass at all).³ However, I will leave that type of question aside for the time being. There are at least 284 verbs that participate in the alternation described here (Levin, 1993). In general, it is safe to say that the causative forms entail the inchoative forms plus ‘something’, but not the

³This point is contestable. One might argue that in the same way one can manufacture ‘pre-ripped jeans’, it may be possible to manufacture ‘pre-broken glasses’, but as with the jeans where one could picture the following exchange, it is not clear this would mean the glasses were actually broken.

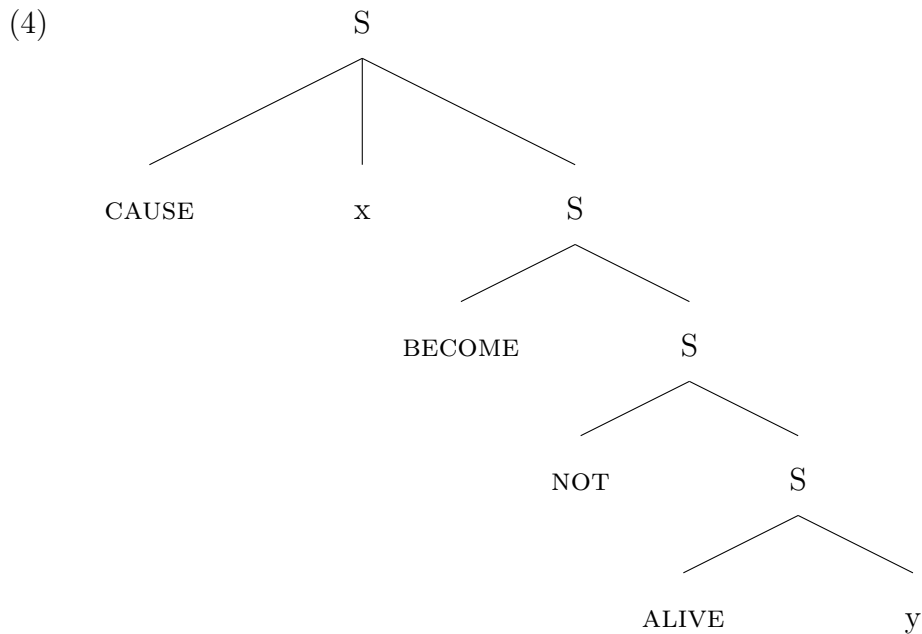
Person A: “Oh you’ve ripped your jeans!”

Person B: “No! Actually they were never ripped! They were made this way.”

other way around, and that the inchoative forms entail the stative forms plus ‘something’, but not the other way around (with certain caveats).⁴

These patterns of entailment are the result of some rule associated with the kind of underlying structures I mentioned above. These systematic alternations motivated decompositional analyses of verbal meanings where minimal meaningful semantic primitive units (the underlying structure in the lexical meaning) would be grouped differently at different points in a derivation and be replaced with lexical items by way of ‘lexical insertion’ (McCawley, 1968). For instance, *kill* was analysed as decomposing into the primitive units CAUSE, BECOME, NOT, and ALIVE as follows:

⁴Some stative variants have meanings that are incompatible with situations where the inverse has never held, for example, while one can have a closed door that has never been opened, a liquid cannot be described as being in a melted state if it were never previously solid. I take these lexical meanings to be separate from the entailments which are structurally generated.



By various transformations, the primitives in the above structure would be grouped differently before lexical insertion occurred. For instance, NOT grouped with ALIVE would be replaced with *dead*, BECOME grouped with NOT would be replaced with *ceased*, BECOME grouped with NOT and ALIVE would be replaced with *die*, and when CAUSE, BECOME, NOT and ALIVE were all grouped together lexical insertion would replace them all with the verb *kill*. The lack of morphological relatedness between *kill*, *die*, *dead*, and *alive* makes it clear that this has to do with underlying semantic structures, which may, but do not have to, have syntactic reflexes.

Although modern compositional theories have little in common with the specific details of McCawley's proposal, the main underlying ideas have

proliferated. Causative verbs are seen as structurally complex with underlying units contributing to the overall interpretation. The underlying unit most commonly associated with a causative meaning (i. e. the unit which separates an interpretation where something just happens from one where something is externally brought about) has remained CAUSE. The decompositional approach has been influential in both syntactic theories and in semantic theories and CAUSE is typically used in the decomposition of the same words in both. In syntactic theories, CAUSE is typically viewed to be a syntactic head that is responsible for introducing some particular type of argument and that correlates with particular grammatical possibilities. In semantic theories, CAUSE is typically used to describe some particular type of relation between events or participants in events (Croft, 1990). In neither subfield is there any clear consensus on what those particulars actually are. This has led to a situation where although it is widely used, CAUSE itself is actually poorly understood. Since CAUSE is not well understood, it is unsurprising that there is no clear consensus on even the types of arguments which it connects.

There has also been a great deal of work on causation within the philosophical and psychological literatures. Many of the theories in these fields can be classified as either dependency theories (e. g. logical dependency, probabilistic dependency) or as production theories (Copley and Wolff, 2014).

Dependency theories that are related to logical dependency focus on the question of whether and how the caused event is ‘dependent’ on the causal element, while statistically-based theories are focussed on whether and to what extent the causal element increases the probability of the thing that is caused. Production based theories are concerned with matters related to force and energy and how the force (physical, mental, or though causal chains) that is applied by causing individuals brings about effects.

In both cases, the focus tends to be on what it means for an element to be said to be the cause of something else (for the former, X is the cause of Y if Y is dependent on X; for the latter, X is the cause of Y if X’s force brought Y about). This means that even though these approaches appear to ask the question of what causation is, what they actually tend to address is to what extent a Cause is really a Cause, rather than the nature of the causal link CAUSE itself (beyond whatever overarching assumption is taken regarding causation being a dependency or a statistical increase in probability). This makes these discussions somewhat tangential to the present undertaking. In the conclusion, however, I will briefly describe some implications that the theory developed here has for these applications (namely, insights into the sorts of things that a Cause can be).

There is also a separate literature within linguistics related to the meaning of verbal and nominal *cause* (e. g. Fodor (1970); McCawley (1978); Neeleman

and Van de Koot (2012); Baglini and Siegal (2021)). The verb *cause* is not a canonical causative verb (it does not participate in the causative/inchoative alternation) and its meaning does not map onto CAUSE. Rather it is a member of a category usually termed periphrastic causative verbs. Like the philosophical literature about causation, much of the focus in this literature is on what it means to cause something, specifically what arguments can be said to be the cause of something. Ultimately, much of this work boils down to a matter of conception (what do we conceive as being the key causal factor in a caused scenario?) rather than a matter of grammar. Here I focus on the latter.

My aim with this thesis is to offer a contribution towards understanding CAUSE. Although this is a big task and I certainly do not expect this thesis to be definitive on the matter, there are two factors which I believe aid in the cause. Firstly, I consider linguistic data that other research on the matter has not and secondly, I am not committed to any particular syntactic theory. I expand on the data I employ in the next section as well as the point about syntactic theory.

1.2 The Present Approach

Theories of linguistic causation have always been developed on the basis of examples like the sentences given in the previous section. These examples represent what I will call ‘eventive causation’ or ‘canonical causation’. That is, in each case considered in the bulk of the existing literature, the causative and inchoative variants of the sentences describe events. Understandably, this has led to theories which seek to, and at times succeed, in capturing the introduction of and relationship between participants and events in events and subevents. Stative causative sentences however have been almost entirely overlooked, though the work that does exist will be briefly discussed in Section 1.3. Since they have not been fully considered, they cannot be captured by existing theories of causation.

1.2.1 A Wider Range of Causative Predicates

In this section I enumerate the wider range of causal structures I have used in developing a more unified theory of CAUSE. I do not claim that the categories I have included below are either definitive or complete. However, in exploring the confusion, they are structures that have been important in my theorizing about causation and the meaning of the semantic predicate CAUSE. The goal is not only to define CAUSE such that it is compatible with each of the below

categories, but also such that it is easy to rule out impossible structures.

The first category is the classic causative-inchoative verbs used in canonical structures.⁵

- (5) ‘Canonical’
- a. John broke the glass.
 - b. Mary closed the door.
 - c. John broke Mary’s heart.
 - d. The sea eroded the beach.

These have already been described in (1) and (2) above. They involve a causative verb and have an Agent or Cause argument in subject position. The meanings involve a change-of-state and a final resulting state. As a quick note on terminology, I have generally tried to be consistent in using the term ‘causative’ for only those verbs which are typically referred to as ‘causative verbs’ in the literature. These are generally defined as verbs which undergo the causative-inchoative alternation, described in (1) and (2) above. Here, and for the next category, I have labeled these canonical causative-inchoatives as ‘canonical’ rather than ‘causative’ to avoid confusion with

⁵I use canonical here to refer to causative-inchoative verbs (as defined by Levin (1993)) when used in conjunction with DP subjects and objects. When a structure involves either a verb that does not meet the criteria for being causative-inchoative, or that does but that has non-DP arguments, I refer to it as non-canonical.

other categories.

The next category is the canonical causative-inchoative verbs but used in non-canonical structures.

- (6) Canonical predicate, non-canonical structure
- a. That John was discovered to have blown up the moon closes the possibility of him becoming Prime Minister.
 - b. John breaks Mary's heart.
 - c. *That Mary is very clumsy broke the glass.
 - d. *That the wind was very strong closed the door.

The sentences in (6) contain the same verbs as in (5), but have different temporal and event structural properties. (6a) has a stative interpretation. In the simple present it does not have a habitual reading and it is not compatible with locative or temporal adverbials (unless they modify only the complement), which are diagnostic criteria for eventhood (Maienborn, 2019). Despite this, there is a clear causal link between John having been discovered to have blown up the moon and the possibility of him becoming prime minister being closed. The possibility is only closed because of the discovery.

The sentence in (6b) is intended to elicit a different interpretation than

the nearly identical one in (5c). The reading of (5c) might be one where John says something like “Mary, I don’t love you anymore, I’m taking our dog and moving to Canada”. Here, John performs an action which has the effect of Mary’s heart becoming broken. The reading relevant for (6b) on the other hand might involve a scenario where Mary is John’s grandmother and John has made terrible, self-destructive life choices. Although he did not do anything to Mary *per se*, and he may or may not even still be making these sorts of choices, even the thought of John, almost as a concept rather than an individual just breaks Mary’s heart.

These sorts of sentences are particularly important because although they are fairly uncommon, they show that any complete theory of causation and of CAUSE needs to be compatible with non-eventive interpretations. Additionally, I have also included two non-grammatical sentences here to illustrate the sorts of sentences that a theory should rule out. Although (6c) and (6d) are interpretable, they are not grammatical sentences of English and thus a good theory should not predict them to be possible.

The next two categories consist of verbs that are generally considered to have a causal meaning but that do not participate in the causative-inchoative alternation. I use the term ‘causal’ to describe these. These sentences are generally well paraphrased by other sentences that use the word *because*.

- (7) Causal predicate (e. g. force-dynamic verbs, periphrastic causatives: typically analysed as causal, do not undergo causative inchoative alternation), canonical structure
- a. God makes my heart sing.
 - b. Mary's mother allowed her to go to the party.
 - c. Jack forced John to leave.
- (8) Causal predicate, non-canonical structure
- a. My kids make me a better person.
 - b. God makes my heart sing.
 - c. The foundation supports the house.
 - d. The doorstep keeps the door open.
 - e. That John let his guard down allowed us to see his true colours.
 - f. That he lacks dedication in spite of his intelligence prevents Jack from ever winning the Nobel prize.

The sentences in (7) and (8) contain verbs that, in the literature, are often classed as 'force-dynamic', 'periphrastic-causative', or simply 'causal'. These verbs are generally described as biclausal verbs, meaning that they take clausal complements, where the main verb encodes CAUSE and the complement clause specifies a result (Wolff et al., 2002). This differs from

‘causative verbs’ which are not biclausal and encode within themselves both CAUSE and the result. Since they encode CAUSE, any theory of CAUSE naturally needs to capture these sentences as well. I have separated the examples in (7) and (8) on the same basis as (5) and (6). Those in the latter group do not involve events, and again illustrate the need for CAUSE to be compatible with structures that do not contain events.

The sentences in (7a) and (8b) refer to two possible interpretations. The interpretation of (8b) is the more natural one, where some idea of God is responsible for a metaphorical feeling. The interpretation in (7a) on the other hand, has to be one where God acts as an Agent and literally makes one’s heart produce a singing sound. This would likely be awkward in public. The example in (8a) is the same as the more natural interpretation of the sentence in (8b). Here, one’s kids do not act as Agents doing anything to make one a better person, they simply are a better person on account of having kids. One difference between these two categories that must be explained is the differing defeasibility patterns with the same verb. For example, while the sentence in (7b) is defeasible, the sentence in (8e) is not (one can say *Mary’s mother allowed her to go to the party, but she didn’t go*, but not *That John let his guard down allowed us to see his true colours, #but we didn’t see them*). This fact should also be compatible with a theory of CAUSE.

The sentences in (9) contain ‘psych verbs’ or psychological predicates.

- (9) ‘Psych verbs’, psychological predicate, canonical structure
- a. John comforted Mary.
 - b. Mary amused John.
 - c. Watching sheep comforted Mary.
 - d. John’s kind words reassured his sister.

These are similar to the canonical causative verbs in most ways. Firstly, they typically have a causal meaning. For example, (9b) means that the cause of John’s amusement is Mary. Secondly, they take the same types of arguments as the canonical causative verbs: namely nominal arguments in monoclausal structures. Lastly, the meanings of the verbs encode the results involved. If John’s kind words reassure his sister as in (9d), then the final result is that his sister is reassured. They differ from canonical causative verbs in that they do not participate in the causative-inchoative alternation (one cannot say *John amused* to mean that John became amused). They are also a non-homogeneous group in that only some subcategories of them can be defeasible (Simon, 2017), and within those subcategories this is only the case with certain types of arguments. This can be seen in the contrast between (9a) and (9b) and between (9a) and (9c). One can follow (9a) but not (9c) up with the continuation *...but she was not comforted*. Neither (9b) nor (9d) can be continued with a comparable negation.

The last category of verbs I introduce here consists of verbs which are not generally considered causal, but that can have causal meanings in certain contexts.

- (10) Atypical predicate, causal structure
- a. John explains why Mary is acting weird.
 - b. Mary's supervisor offered her the opportunity to present at conferences around the world.
 - c. The pile of hay in the corner offered the weary travellers a place to sleep.
 - d. John ate the apple up.
 - e. The sea ate the beach away.

This last category I have included is made up of other verbs that display similar traits and effects as the ones more commonly thought to encode CAUSE. Although they would not generally occur on a list of causative or causal verbs, they can occur in sentences with causative meanings and so a theory of CAUSE should be compatible with them, even though they more prototypically occur in structures that are not thought of as involving CAUSE. The sentence in (10a) for example is ambiguous between the non-causal interpretation where John performs the speech-act of explaining why

Mary is acting weirdly and a causal reading where John is the cause of Mary acting weird (for example, perhaps Mary fancies John and is known to always act weirdly around people that she fancies). These verbs will be discussed in particular in Chapter 3.

1.2.2 What now?

A background assumption I have is that all of the different causal categories I presented in the previous section contain a common semantic primitive like CAUSE. As such, what I need is a theory of CAUSE which is compatible with all of the categories above. In order to develop a theory of causation that can capture the stative causative sentences as well as the canonical eventive predicates, I apply a curated set of pre-existing analyses of eventive causation to the stative cases or otherwise atypical cases in order to determine what works, what does not work, and what must be added in order to achieve a unified theory of causation. A key strategy I employ uses both non-eventive and eventive causative data points to illustrate semantic content that cannot be part of CAUSE in order to factor them out, with the ultimate aim of arriving at the core that CAUSE retains across contexts.

To these ends, I review the literature with a view to identify what 50 years of research have decided are the core properties of causation as encoded in

language. In this way, I can explore the extent to which these core properties can accommodate the facts in my extended data set and establish a number of recurring theoretical ‘building blocks’. In the next chapter, I will be drawing on the more promising elements of these theoretical building blocks with the aim of crafting and refining a unified theory of subverbal linguistic causation that can accommodate my extended dataset, and in doing so will refine and unify the role of CAUSE. In the next section I present the theoretical building blocks that I have identified in the literature.

1.2.3 Some Recurring Theoretical Building Blocks

In this section I will describe some of the recurring theoretical building blocks that are frequently utilised in the analysis of linguistic causation. This is not intended to be exhaustive or definitive, but simply to provide a reference point. When either the literature or I deviate from the below, I will specify as much.

1.2.3.1 Ontology of Eventualities

For a theory of causation, one needs some theory of eventualities. “Eventuality” is the common term for the supercategory containing events and states, with events as things that happen, and states as things that hold of individuals. Since eventualities are the sorts of things that either happen

or that hold in time, different types of eventualities can be categorised on the basis of their temporal properties (Vendler, 1957). These temporal properties have grammatical effects, which means that linguistic diagnostics can be used to determine a predicate's temporal properties.

The most basic distinction between types of eventualities is between states and events. States are static things about the world that hold in time. Some examples of propositions that denote states are *John is tall* or *Mary knows French*. Some diagnostics for statehood include incompatibility with the continuous or progressive aspect (which separates states from activities and accomplishments), as exemplified in (11b), and the presence of duration (which separates states from achievements) (Vendler, 1957) as exemplified in (12). Finally, unlike other aspectual categories, states do not garner habitual readings when used in the simple present tense. For example, (11e) does not mean that Mary habitually knows French, while with the non-stative verb *run* in (11c), the interpretation is that running is something that John does habitually.

- (11) a. John is tall. (state)
b. *John is being tall.
c. John runs. (non-state)
d. John is running.

- e. Mary knows French. (state)
- (12)
- a. Q: For how long did Mary know French? (state)
A: Throughout her entire childhood.
 - b. Q: # At what time did Mary know French?
 - c. Q: # For how long did Mary reach the summit? (non-state)

States can be further sub-categorised. Suggested distinctions between classes of states include stage-level predicates versus individual-level predicates (Carlson, 1977) to differentiate states that hold for a certain period (e.g. living in Edinburgh) from those that hold of an individual across longer scales of time (e.g. the property of having blue eyes), and between Davidsonian versus Kimian states (Maienborn, 2008) which differ in that unlike Davidsonian states, Kimian states do not have a spatial or temporal dimension.

Events, on the other hand, are things that happen. These can also be further classified on the basis of grammatically relevant temporal properties. The properties that distinguish event types are telicity, duration and behaviour in the simple present. Diagnostic tests for these include compatibility with the modifiers *in an hour* (for telicity) and *for an hour* (for duration) respectively. Processes or activities (depending on the terminology) are durative but lack telicity, accomplishments are both

durative and telic, and achievements are telic but not durative.

(13) Processes/Activities

- a. John pushed a cart for an hour/# in an hour.
- b. Mary ran for an hour/# in an hour.

(14) Accomplishments

- a. John built a house.
- b. Mary ran a marathon.

(15) Achievements

- a. John died.
- b. Mary reached the summit.

One way of thinking about these distinctions is that events can either be processes, which do not include an endpoint in their meaning, or they can describe a change-of-state wherein the event naturally ends when the target state is reached. For some events, reaching this target state takes time and a sub-part of the change-of-state is a process. This is the case for predicates like ‘building a house’. The event is completed when the house is finished, but building a house also takes time and is a process. This process is grammatically accessible and can be the target of adverbial modification.

Other predicates describe changes of state that happen instantaneously and do not have durative sub-parts that can be conceptualised.⁶ The distinctions based on telicity and duration can be seen in the table below.

		Durative	
		Yes	No
Telic	Yes	Accomplishment	Achievement
	No	Activity	State

Table 1.1: Aspectual Categories

Causative predicates do not fit into any one of the above categories. Considering only canonical causatives for the moment, this can be seen in (16) below.

- (16) a. John warmed the soup for 5 minutes. (process)
 b. John warmed the soup in 5 minutes. (accomplishment)
 c. Mary broke the plate. (achievement)

For this reason, the temporal features that define events (i. e. duration, telicity, interaction with present tense, etc.) will be utilised to a greater degree than any particular category of event.

The line for distinguishing states from events is blurred (e. g. Maienborn

⁶I simplify the distinctions of Aktionsarten here, and leave semelfactives out. The discussion is intended to be illustrative, but there is potential for finer-grained distinctions, see Vendler (1957); Dowty (1979); Mittwoch (2013).

(2008, 2019)) and distinguishing between the two is not always entirely straightforward. This will come up again and will be discussed further in section 3.5.2.

1.2.3.2 Models of Causative Events

Causative scenarios, considering now full sentences rather than only predicates, have commonly been conceptualised in three different ways (Croft, 1990). None of these will be compatible with the full range of causal sentences I outlined in the previous section, but they nevertheless provide a good starting point to thinking about how events and/or event participants interact in causative structures. The three common models of causative events are i) that events cause events (Davidson, 1967a), ii) that individuals bring about events (Gruber, 1965), and iii) that individuals act on individuals (Talmy, 1972).

Davidson suggests that when it comes to causative sentences such as (17) below, the semantic interpretation should be that one event caused another event.

- (17) a. Jack fell down and broke his crown.
b. A short circuit caused the fire.
c. Brutus killed Caesar.

For Davidson, caused events are made up of two subevents, one which describes the causing element and one that describes the effect. So for (17a) for example:

- (18) There exist events e and e' such that e is a falling down of Jack, e' is a breaking of his crown by Jack, and e caused e' (p. 696)

The same applies for sentences with causative verbs such as (17c). In this example, the interpretation would be that there exists an event e in which Brutus is the Agent of e and Caesar is the acted upon entity in e , and there exists an event e' where Caesar dies, and e causes e' . A second way of conceptualising causal events is from Gruber (1965) who suggests that individual entities bring about (cause) events. The difference between these two approaches is illustrated in the examples below from Croft (1990) for the sentence *The rock broke the window*. The example in (19a) represents a view where events cause events and the example in (19b) represents the view where individuals cause events.

- (19) a. $\text{Rock}(r) \ \& \ \text{Window}(w) \ \& \ \text{Contact}(e_1, r, w) \ \& \ \text{Become-Broken}(e_2, w) \ \& \ \text{Cause}(e_1, e_2)$
 b. $\text{Cause}(r, \text{Become}(\text{Broken}(w)))$

The final way of thinking about causal events is that causation is a ‘side-effect’ of individuals acting on individuals. Talmy (1972) proposes the view that when individuals come into interactions with other individuals things can happen and one of the possible things that can happen is a causative scenario. This is further developed in his theory of force dynamics (Talmy, 1985) where CAUSE is one of a family of force-dynamic relations. Under this view, different types of events, including causation, are the by-product of individuals in the world acting on other individuals. In each event, one individual is the Antagonist (the acting individual) and the other is the Agonist (the acted-on individual). When the Antagonist ‘overpowers’ the Agonist, that leads to the causative situation while if the reverse holds, it leads to the preventative situation, represented as CAUSE and PREVENT respectively. Other relations in the force-dynamic family include HINDER and HELP.

1.2.3.3 Primitives

Events vary significantly in terms of complexity, but as has been discussed above, verbs can be broken down into atomic meaningful units (McCawley, 1968; Lakoff, 1970) much like they can be with respect to aspectual features (Vendler, 1957). Theories of event decomposition seek to identify sets of minimal common meaningful denominators that reoccur across swathes of

verbal meanings. These are referred to as primitives and are typically stylised in ALL CAPS.⁷ Primitives have also been posited in the decomposition of nouns, but I will not be considering that here.

A commonly adopted understanding of primitives comes from Dowty (1979) who gave a model-theoretic semantics to the Generative Semantics primitives (Lakoff, 1970; McCawley, 1968; Ross, 1972). He argues that sublexical primitives should be restricted to those elements that have to do with the structure of events and that the primitives are logical connectives or operators that connect or operate on pieces of the linguistic structure (e. g. modal and tense operators, connectives) rather than extensional predicates. Dowty's theory is a theory of semantics with syntactic consequences. This contrasts with theories such as that proposed in Jackendoff (1990) where the primitives are used to represent the semantic knowledge that one needs to understand sentence meaning rather than purely linguistic elements with syntactic effects. This is to say that the Jackendovian primitives refer to the different conceptual categories needed in order to understand an utterance, including categories such as Thing, Property, Place, Path, or Action.

I will be utilising the former viewpoint (from Dowty) rather than the latter. Dowty suggests that the primitives needed are DO, CAUSE, and

⁷One might instantly see the parallel between this convention and the convention for the spelling of MF DOOM who insists that one “remember ALL CAPS when you spell the man name” (DOOM, 2004), but these are not part of the same system and should not be conflated.

BECOME. Two other often utilised primitives are BE and HAVE, but Dowty does not use these because for him, simple statives and occurrences do not involve any primitives in their decomposition.

The primitives that I will make use of are essentially derivative of Dowty's DO, CAUSE, and BECOME in name and spirit, although the exact details diverge to varying degrees. They are similar in spirit in that I also take these primitives to be logical operators or connectives that take arguments. For Dowty, the arguments these took had to be stative predicates, sentences, or individual terms. CAUSE, for example, Dowty takes to be a logical connective that links two sentences as below:

$$(20) \quad [\phi \text{ CAUSE } \psi]$$

He specifies that "These embedded sentences ϕ and ψ may have various forms, the most common being the case where ϕ is a BECOME sentence or contains an activity predicate, and ψ is a BECOME sentence" (p.91). So a sentence like *John killed Bill* would be given the following structure:

$$(21) \quad [[\text{John does something}] \text{ CAUSE } [\text{BECOME } \neg [\text{Bill is alive}]]]$$

With this approach, Dowty was trying to get away from an analysis like McCawley (1968) where CAUSE is analysed as a relationship between an

individual and a proposition.

I stray from Dowty in that I take the potential arguments of the semantic primitives to be individuals, event descriptions, and state descriptions rather than individuals, sentences and stative predicates.⁸ This seems more ideal because sentences and propositions are abstract grammatical notions. Events are particulars in the world which can causally lead to other events in the world, while the abstract notion of a sentence or proposition lacks that type of causal efficacy (Asher, 1993).

DO is a semantic primitive that separates events that are controlled by individuals from those that are not. For example, (22a) is good while (22b) is bad because only the former describes the sort of thing that one can do.

- (22) a. What John did was eat an apple.
b. # What John did was be tall.

The presence of DO also distinguishes the interpretations of the a) sentences below from the b) sentences (Dowty, 1979, p. 113):

- (23) a. John felt the wind.
b. John felt the fabric.

⁸I use the terms state and event descriptions here in order to stay neutral for the time being about the distinction between stative/eventive (a grammatical notion), and states/events (things in the world).

- (24) a. John tasted blood.
b. John tasted the soup.

In the b) sentences, the presence of a DO operator corresponds to a volitional or intentional interpretation of the verb. For an event to be volitional or intentional the subject must be animate. In other terms, the subject must be an Agent. If the subject of DO is not agentive, the sentence will be semantically anomalous as below:

- (25) a. # What the table did was support the books.
b. # What the river did was run.

The complement of DO is necessarily an event description of some variety because non-events (i. e. states) are not the sort of thing one can volitionally do. This is why the following sentences are impossible:

- (26) a. # What John did was be tall.
b. # What Mary did was know French.

The events that can be arguments of DO can be either simple or complex. If the event is simple, the interpretation is that of an Activity. If the event argument denotes an event with subparts, the interpretation is either an

Achievement or an Accomplishment in Vendlerian terms.

BECOME is a logical operator that corresponds to a change-of-state meaning. It takes as an argument an ordered pair consisting of an undergoer and a stative predicate.

(27) [BECOME (x, state)]

Like DO which necessitates an event argument in that its complement must be an event description, BECOME is eventive by virtue of the fact that changes of state are necessarily events. By definition, states do not change, and if they do change, then that is an event and not a state.

Structurally, the complement argument of DO is an event description while the complement of BECOME is a description of the resulting state that is predicated of an internal argument. For example, the structure of a change-of-state sentence such as *The door opened* would be [BECOME (the door, open)].

Finally, as mentioned above the primitive CAUSE for Dowty is a sublexical connective, taking two propositions and specifying that one is causally related to the other. The arguments that CAUSE takes are sentences (for Dowty; since Parsons (1990) these are treated as subevents which can be modified with e. g. thematic roles, telic information). The causing and the caused ‘sentences’

can both themselves have complexity. In fact, the most common situation according to Dowty is that the causing ‘sentence’ is either an activity sentence (that is, one involving DO) or it is a BECOME sentence, and the caused sentence is typically a BECOME sentence (p.91) as exemplified in (28).

(28) [[John paints] CAUSE [BECOME [a picture exists]]

In the above example, the causing sentence *John paints* is an activity sentence and the sentence that is caused is a BECOME sentence where a painting comes into existence.

Other primitives that are sometimes used are BE and HAVE. These both occur in stative predications and specify the nature of the relationship between the subject argument and the predicate. BE is used in simple stative sentences such as the examples in (29) below.

(29) a. John is tall = BE(j,t)
b. The carrot is orange = BE(tc, o)

HAVE is used in the case of possessor, possessee relationships such as those in (30).

(30) a. Mary owns a book = HAVE(m, b)

- b. Jack gave Mary a book = [Jack CAUSE [HAVE (m,b)]]

I have not made use of either BE or HAVE in anything that follows but nothing in the remainder of this thesis rules them out either. Anywhere that a stative predication occurs could just as well have been represented with either BE or HAVE without materially changing anything.

1.2.3.4 External Arguments

Traditionally, verbs are tasked with selecting for and introducing arguments. However, not all arguments have the same relationship with the verb. Marantz (1984) points out that object arguments have a different and more significant impact on verbal meaning than subject arguments do. That is, while the object argument is able to influence which sense of a verb is relevant, arguments in subject position do not have that power.

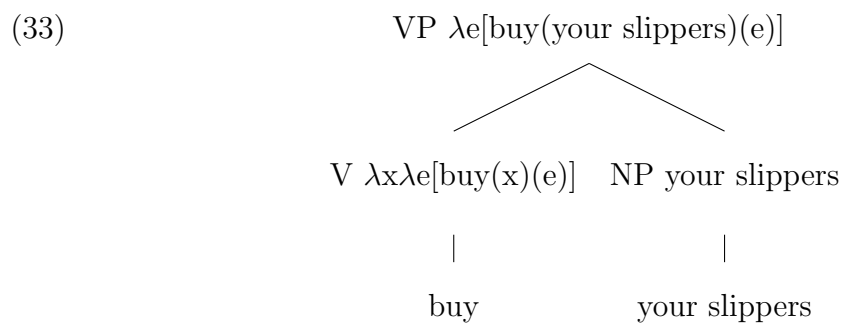
- (31) a. killed John
b. killed a cockroach
c. kill a conversation
d. kill an evening watching TV
e. kill a bottle
- (32) a. Everyone is always killing NP

- b. The drunk refused to kill NP
- c. Silence can certainly kill NP

While the interpretation of the verb *kill* in the examples in (31) necessarily changes based on the argument that the verb combines with, the examples in (32) are all compatible with the same verbal interpretation. This demonstrates a difference in the relationship that a verb has with its object than with the subject of a sentence. Based on this asymmetry, he suggests that the subject argument should not be considered an argument of the verb, but rather should be considered to be an argument of the predicate (that is, the verb plus its object arguments, i. e. the VP). This explains why the subject argument cannot influence the verbal interpretation: by the time the subject argument combines with it, the verb had already combined with the object and had its interpretation disambiguated.

Kratzer (1996) built on the above observation that verb/object combinations can receive idiomatic, non-compositional meanings while subject arguments combined with verbs cannot, arguing that since subjects are not selected for by verbs in the way that objects are, these external arguments must be introduced by an intermediate functional projection. This is because without such a layer there is no way to introduce an Agent into the structure. If an argument combines with the verb through functional

application, and the verb selects only for an object argument, then after functional application takes place between the verb and the object, there is no way to introduce a subject argument. This is illustrated below in (33) taken from Kratzer (1996).



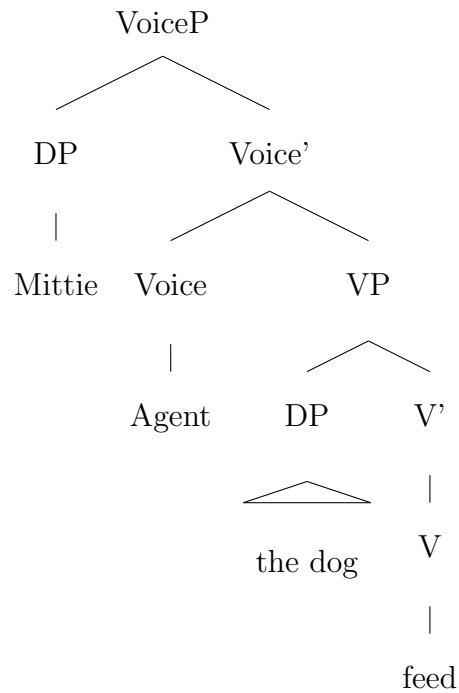
Functional application cannot add information to the structure, but can only combine what is already present. This means that the VP is also unable to select for a subject argument.

To account for Marantz's observation that subject arguments must be introduced differently than object arguments, Kratzer suggests that an intermediary functional head is responsible for introducing subject arguments into the structure. This has the obvious advantage of maintaining the generalisation that heads introduce arguments, which in turn keeps composition consistent. She argues that the head must be a functional one rather than an lexical one on two bases. Firstly, if it were a lexical head it should be present in all environments, which it is not (for example, it is

not present in gerunds but is necessarily present in finite clauses). Secondly, inflectional heads are able to assign structural Case to their arguments, so the head linking the external argument to the VP being inflectional ensures that the VP receives accusative Case from the head.

She terms the inflectional head responsible for this *Voice*. External arguments are structurally base-generated in the specifier of the VoiceP and the complement of VoiceP contains the (subject-less) VP. The inflectional Voice head assigns a Thematic Role to its specifier argument and specifies that its complement must denote a property of an eventuality. The derivation of a structure like that in (34) proceeds as shown in (35) (both reproduced from Kratzer (1996)):

(34)



(35) VoiceP: semantic interpretation

1 $\mathbf{feed}^* = \lambda x_e \lambda e_s [\text{feed}(x)(e)]$

2 $\mathbf{the\ dog}^* = \text{the dog}$

3 $\mathbf{(the\ dog\ feed)^*} = \lambda e_s [\text{feed}(\text{the dog})(e)]$

From (1), (2) by Functional Application

4 $\mathbf{Agent}^* = \lambda x_e \lambda e_s [\text{Agent}(x)(e)]$

5 $\mathbf{Agent\ (the\ dog\ feed)\ }^* = \lambda x_e \lambda e_s [\text{Agent}(x)(e) \ \& \ \text{feed}(\text{the dog})(e)]$

From (3), (4) by Event Identification.

6 $\mathbf{Mittie}^* = \text{Mittie}$

7 $\mathbf{((Agent\ (the\ dog\ feed))Mittie)^*} = \lambda e_s [\text{Agent}(\text{Mittie})(e) \ \& \$

feed(the dog)(e)]

From (5), (6) by Functional Application.

The derivation in the above example is with an Agent argument. In that case, the event arguments in the derivation are restricted to being events. In the case of a stative sentence, the arguments would instead be restricted to being states and the thematic role that is assigned by Voice would be *Holder* rather than Agent, but the derivation would otherwise be comparable (Kratzer, 1996).

I will employ functional heads extensively in my analyses of causal sentences. Having functional heads underlying the introduction and licensing of arguments is vital because there are intricate relationships between caused events and the things that cause them. This will be discussed in detail in Chapter 2.

1.2.3.5 Thematic Roles

Theories of thematic roles aim to make generalisations about the sorts of roles that verbal arguments and other sentential elements can play. These categories are determined on the basis of both syntactic as well as semantic properties. A large range of thematic roles have been suggested, but I will describe only what I believe to be a fairly broadly accepted set of them

here, specifically Agent, Experiencer, Causer, Theme, Patient, Path, Source, and Instrument. Plenty of other thematic roles have been suggested and generally they are named in such a way that gives good insight into what sorts of arguments or phrases they refer to. Because this thesis is focussed on causation and causative sentences, the thematic roles that will be most relevant are Agents and Causers. Agents are relevant because it is fairly common for animate individuals to perform volitional actions to enact an effect. Causers because other times it is non-animates that bring about effects.

Agents are animate arguments that act with volition. In (36) *Mary* is the Agent argument. They occur prototypically in subject position.

(36) Mary broke the plate.

Experiencers in certain ways are similar to Agents in that they have to be animate entities, but they differ in that rather than performing a volitional action, they experience something that happens to them, typically a feeling as in (37) below.

(37) John fears caterpillars.

Causers refer to arguments, typically subject arguments, which are

inanimate, or at least non-agentive, but which are still responsible for bringing about the happening described by the verb. An example of this is *the storm* in the example below.

(38) The storm woke the whole town.

Patient is used to refer to an affected entity which changes its state, e. g. *the plate* in (39a) below. Themes are differentiated from Patients in that they are the undergoers of the action, but they do not change their state. They are usually described as entities that undergo movement, such as *the ball* in (39b). This is known as the localist approach (Jackendoff, 1990). It is not uncommon for Patients and Themes to be lumped together, and referred to by either *Patient* or *Theme*. Here I group them together as Theme, with the reasoning that undergoing some change-of-state is a type of (potentially metaphorical) motion, and there are no cases of Patients vs. Themes displaying relevant different properties.

- (39) a. John broke the plate.
b. The ball rolled down the hill from the top of the hill.

Paths specify direction of motion and typically correspond to prepositional phrases. *Down the hill* in (39b) is an example of this. Sources refer to where

actions originate, e. g. *from the top of the hill* in (39b).

1.3 A Review of (Some) Literature

There are no complete theories designed specifically to capture stative causation, so I am going to borrow from theories of eventive causation by picking some options which seem promising and which can form the basis of my theory of stative causation. This is not intended to be a review of the full canon of literature about CAUSE and linguistic causation. Most of the literature reviewed below is included because I have taken something from it to make use of. There are also a couple things which have been included because they are part of the same theoretical discussion and I feel compelled to justify why I do not make use of these suggestions.

The literature that I make use of stems, for the most part, from the observations and formalisations of Kratzer (1996) with different types of functional heads introducing arguments and placing selectional restrictions on those arguments. Being able to assign the role of argument introduction to different functional heads and to view the traditional VP as distributed across these enables us to look ‘inside’ the verb (in the sense of representing Parson’s subatomic semantics rather than as a syntactic commitment) and say something meaningful about the elements that make up the (distributed)

VP. For this reason, I will be employing a Distributed Morphology inspired representation because it facilitates illustrating and isolating structural elements. In the next sections I first give a brief overview to lexical decompositional approaches and then describe existing work on stative causation followed by the literature that I have drawn most heavily on in developing the theory of causation that I present in the next chapters. Specifically, from the work of Folli and Harley (2005, 2007) I adopt the idea that subverbal functional heads come in different flavours, each with their own functions and selectional restrictions. From Pyllkkänen (2008) I adopt the practice of necessarily separating the functional head responsible for introducing agents from the functional head responsible for introducing causation. From Ramchand (2008) I take the approach that elements in the syntax should correspond with elements in the semantics and, as such, evidence for one is evidence for the other.⁹ Lastly, from the work of Schäfer (2012) I adopt the idea that the ontological category of the arguments plays a role in the structural possibilities.

⁹I do not pursue the syntactic argumentation in this thesis, but the idea has served as a guiding principle nevertheless, not the least in using evidence from syntactic well-formedness to consider how CAUSE works.

1.3.1 Lexical Decomposition

The system I set up in the next chapter is reliant on the idea of lexical decomposition. That is, the idea that verbs have internal structure consisting of shared meaningful units. The idea of lexical decomposition can be hashed out in different ways. One could do this in the lexical semantics like Jackendoff (1990); Dowty (1979); Pustejovsky (1995) and Rappaport Hovav and Levin (1998), or one can do it in the phrase structure like Halle and Marantz (1993); Kratzer (1996); Marantz (1997); Borer (1999); Ramchand (2008) and Harley (2002). For a good overview of the arguments from both sides see Engelberg (2019). The literature that I draw on falls into the latter camp, predominantly within the framework of Distributed Morphology¹⁰ (Halle and Marantz, 1993, 1994) and for that reason, the representations I use are in line with this literature, though without any claim to be entirely faithful to it. I do this mainly for convenience: I wanted the representations that I use to be as closely aligned with the literature that I draw from as possible, both to make it easy to understand if one has familiarity with any of the approaches and to increase comparability. However, I do not have a particular theoretical commitment to Distributed Morphology nor to the idea that decomposition must take place in the syntax and I do not believe

¹⁰Ramchand is a notable exception to this who of course differs in that she argues against certain features of Distributed Morphology, such as the idea that roots are free of information about syntactic category.

that the claims I ultimately make would be different had I taken a different approach.

I will briefly summarise some of the key features of Distributed Morphology here because much of the literature in the next sections comes from within that theoretical framework. In Distributed Morphology the lexicon is essentially reduced to bundles of core meaning contained within roots ($\sqrt{\quad}$), with most of what is traditionally considered to be stored in the lexicon distributed across other modules of grammar. These roots are even underspecified for grammatical category and categorical information is determined on the basis of grammatical context. For example, a root such as $\sqrt{\text{RUN}}$ is not seen as inherently verbal or nominal (and there certainly are not thought to be two versions of RUN, one a verb and one a noun), but rather becomes one or the other based on the context it occurs in. Being embedded under a determiner for instance, creates a nominal context. Specifically, the category is determined on the basis of the nearest c-commanding head or heads. Roots can also be classified on the basis of their behaviour and compatibility in different verbal and nominal contexts, for example on the basis of whether they involve internal changes of state, or whether they necessitate an external causer or initiator. See Marantz (1997) for a good overview of the two points above. In verbal contexts, roots plus any internal arguments they have combined with are embedded under a verbalising v

head. These verbalising *v* heads are considered to be the locus and source of selectional restrictions.

1.3.2 Related literatures

1.3.2.1 Previous Work on Stative Causation

Although no theories have been built to explicitly and fully handle stative causation, some have touched on the idea or on related issues. In this section I will describe this body of literature.

Pylkkänen (2000) identifies two classes of Finnish object experiencer verbs, one stative and one non-stative and suggests that the stative ones are stage-level predicates rather than individual level predicates (which their non-causative, stative, subject-experiencer counterparts are shown to be). She argues that the fact that the stative class has causative morphology (and meaning) in these cases means that contra previous assumptions, these stative predications must have some amount of internal structure (rather than being semantic primitives) but that while the eventive-causative psych verbs have an external argument, the stative ones do not. She concludes that in the stative-causative cases CAUSE gets interpreted as a ‘perception eventuality’ that scopes over the content of and participants in its complement. The key conclusions are that i) CAUSE is compatible with stative predications and

ii) that when CAUSE is present in these statives, the two eventualities that are causally linked also receive stative interpretations. Although this work focuses only on Finnish psych verbs and the details of the proposal differ from my own, these broader conclusions are corroborated in this thesis.

Kratzer (2000) highlights several verbs that have both stative and eventive uses (e.g. *obstruct*) and suggests that the Davidsonian event argument in their makeup is able to range over both events and states. However, there is an assumption in her proposal that events are able to directly cause states which entails an implicit assumption that the function of CAUSE either subsumes or is able to subsume the function of BECOME. The problem with this assumption will be expanded on in the next chapter.

Neeleman and Van de Koot (2012) discuss verbs of maintenance (e.g. *the wall protects the city*) suggesting that in these, rather than one event preceding another, two eventualities must coincide. They argue, however, that because these do not fit their predefined definition of what causation (i.e. CAUSE) involves, these cannot be considered a sub-case of causation at all and must be considered an entirely different relation.

Copley and Harley (2015) discuss verbs of maintaining from a force-theoretic perspective suggesting that in verbs of maintenance, but not in typical stative predications, an additional force is needed to ensure that the specified state endures over time.

Maienborn and Herdtfelder (2017) is the only work that explicitly sets out to deal with stative causation, though they approach the question by focusing on causal *von*-modifiers ('from') in German, rather than more holistically. They suggest that modification with *von* can both lead to readings where the *von*-content is causally related to an event and to readings where the *von*-content is the source of a state citing examples such as the below.

- (40) a. Paul ist müde von der Reise.
Paul is tired from the trip.
- b. Das Gesicht war schwarz von dem Staub.
The face was black from the dust.

However, I do not get the same contrast that they posit to be there in these cases or in other judgements throughout the paper. Further, with the scope of the work limited to *von*-modification in German, the phenomenon of stative causation is only touched upon. However, they do suggest that causal rather than stative uses of *von* require the internal argument to be of the type 'event' and that when an event is not referred to explicitly, an apparently non-event-denoting DP is coerced into being understood as event-denoting, a mechanic I also make use of in the theory I lay out. Ultimately, they suggest that CAUSE can either link events (CAUSE(e1, e2)) or it can relate tropes

(CAUSE(r_1, r_2)). Tropes appear to refer to concrete properties of physical individuals and for the authors, the concept of an event includes processes and Davidsonian states, as well as achievements and accomplishments. This means that their analysis of stative causation is unrelated to the concept of states (which are grouped with other events), but rather involves properties of individuals. This approach to stative causation is too narrow to capture the types of stative causative sentences I consider here.

1.3.3 Literature Used in Theory Development

1.3.3.1 Folli and Harley

As discussed in more detail above, Kratzer (1996) introduced the functional head that she terms *Voice* which introduces external arguments in its specifier and contains the traditional VP, less a subject argument, in its complement. Building on this, Folli and Harley (2005) propose that since the intermediary functional projection that introduces external subjects is responsible for imposing selectional restrictions on its arguments, when different selectional restrictions are placed on external arguments or the shape of the complement it is because of a difference in the nature of the functional projection responsible for introducing them. What this means is that since heads are responsible for placing selectional restrictions on their arguments,

and since predicates which are otherwise similar are compatible with some types of subject argument but not others, then it is the head that must be responsible for this. Further, if all external arguments are introduced by some functional head, and some particular head is shown to be unable to introduce a subset of possible NPs, then when those NPs are present in a structure, some other head must have been present to introduce them. Through this reasoning, they arrive at the need for the little *v* functional head to come in different ‘flavours’. Each different flavour of the little *v* then corresponds with different selectional restrictions that it places on the arguments that it introduces. To exemplify this in a less abstract way, consider the examples in the puzzle about the sea below in (41).

- (41) a. The sea eroded the beach.
b. *The sea ate the beach.
c. The sea ate the beach away.
d. John ate the apple.
e. John ate the apple up.

The examples (41b) and (41d) have the same verb and both have NP external arguments and objects yet the former is not possible while the latter is just fine. Folli and Harley (2005) suggest that this selectional restriction must be

attributed to the head responsible for introducing the external arguments in the structure. Whichever head is compatible with *John* in (41d), prohibits *the sea* in (41b). So *the sea* must be introduced by a different functional head than *John*. The difference between the two heads in terms of the specifier argument is whether or not the external arguments that they introduce can be animate (Folli and Harley, 2005).

The head that is responsible for introducing *the sea*, they claim, also appears to place a different restriction on the object. While the head that introduces *John* is compatible with either a bare NP direct object or ‘resultative syntax’, the head that introduces *the sea* needs ‘resultative syntax’ in the complement (Folli and Harley, 2005).¹¹ The complement, they claim, can have resultative syntax in two ways. The first way is through the addition of a resultative particle like *up* in (41c). The second way is through the decomposition of a verb whose meaning inherently contains a specified result, as in the example with a causative verb in (41a). So resultative syntax can either be inherent in the decomposition of complex predicates, or syntactic by the addition of resultative particles or predicates.

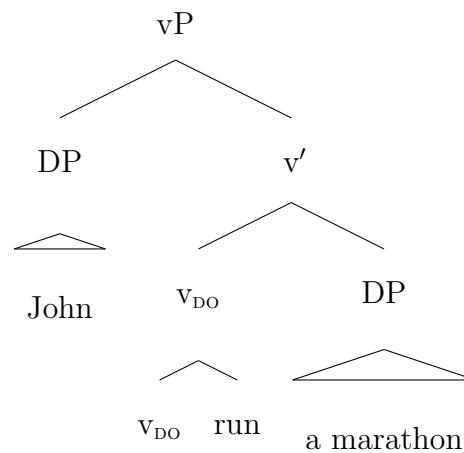
The different flavours suggested in Folli and Harley (2005) for the little *v* head are v_{DO} and v_{CAUSE} . The v_{DO} head introduces animate external arguments

¹¹In these causal structures. Naturally in a sentence such as *The sea swelled* it would not be this same functional head introducing the sea and as such the resultative requirement would not be present.

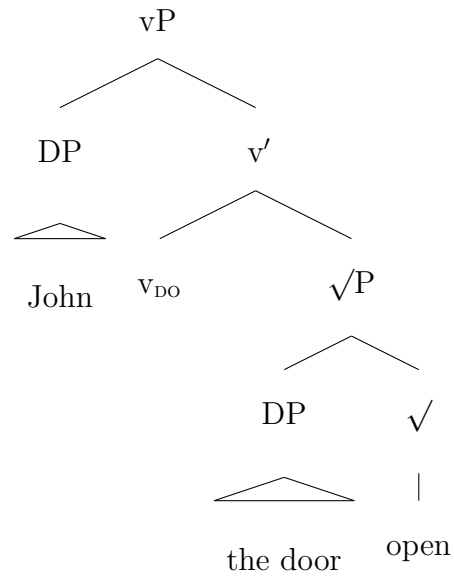
and can have either a bare nominal or resultative syntax in the complement whilst v_{CAUSE} can introduce inanimate external arguments (i. e. Causers) and necessitates resultative syntax in the complement (Folli and Harley, 2005).

This move has the large upshot of being able to attribute selectional restrictions to a syntactic head as well as being explicit enough about the different heads to actually be able to say something meaningful about them. A shortcoming is that v_{DO} seems to be tasked with more work than is justifiable. Since v_{DO} introduces Agents and can either have resultative syntax in its complement or a bare nominal, and v_{CAUSE} introduces non-Agents and must have resultative syntax in its complement, the structures for the sentences *Mary ran a marathon*, *John opened the door*, and *the wind opened the door* would be as follows:

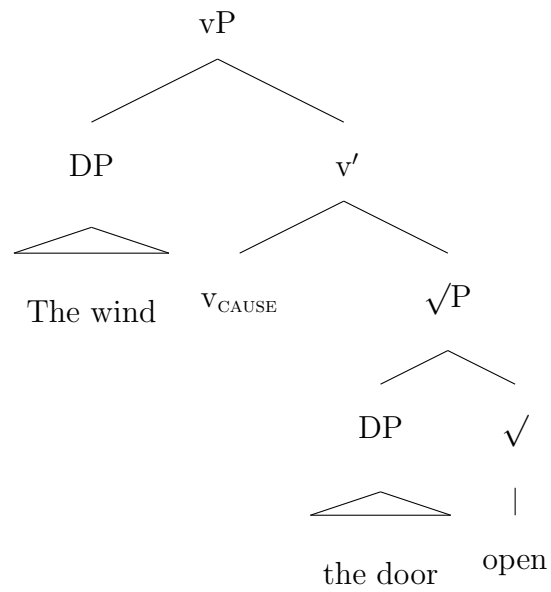
(42) a.



b.



c.



In (42b) and (42c), the only structural difference is that v_{DO} is used to introduce the animate Agent argument *John* while v_{CAUSE} is used for the inanimate Causer argument *the wind*. This is because v_{DO} places the selectional restriction on its specifier argument that it must be animate. In

the example in (42a), v_{DO} has a bare-NP complement, while *run* manner incorporates into the v_{DO} head.

The contribution from Folli and Harley (2005) described above is useful because it provides a clear place to attribute the differences in selectional restrictions on the basis of different functional heads. However it implies that DO is compatible with causative meanings as well as non-causative meanings. This is problematic because it means that the primitive DO would have to be polysemous: sometimes carrying a monoeventive meaning in sentences denoting simple (and Agent initiated) activities and sometimes acting as a connective between subevents in aspectually complex, change-of-state sentences. Put simply: if v_{DO} introduces external arguments in causative structures, what introduces external arguments of simple Agent initiated activity verbs? That is, since one cannot attach a single, stable denotation to v_{DO} , it remains unclear what it does.

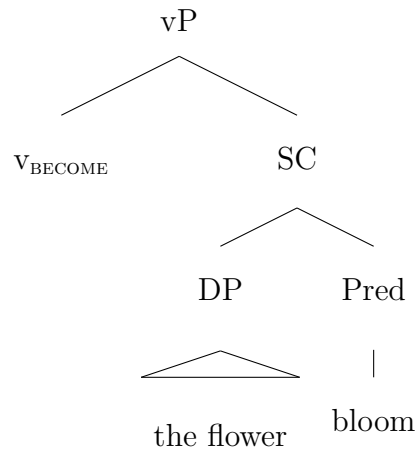
In later work, Folli and Harley (2007) propose that two additional flavours of the v head can occur in some causative structures: v_{BECOME} and v_{BE} . These little- v heads do not introduce external arguments in their specifiers and they can occur as the complement of another v head (in a layered vP structure as originally suggested for VPs by Larson (1988) to account for double object constructions). This enriched approach maintains the position that v_{DO} is responsible for introducing Agents and allows for nominal complements while

v_{CAUSE} introduces inanimate external arguments and requires small clause syntax in its complement:

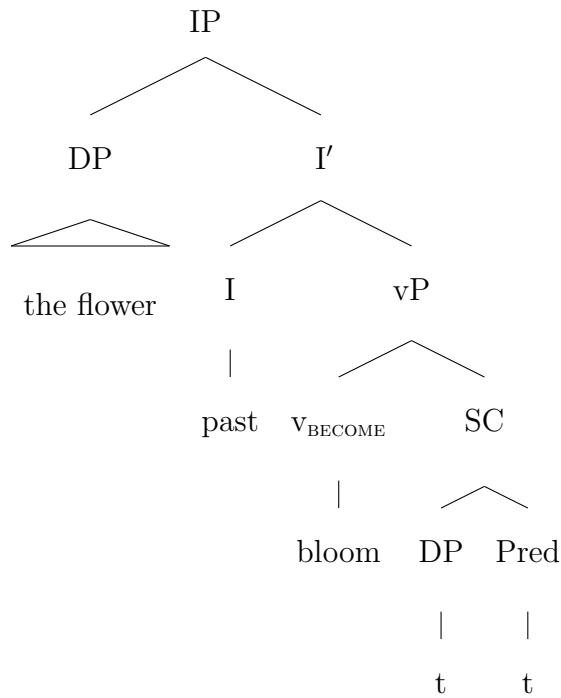
Consequently, when a DP that can only be a causer, not an agent, appears as an external argument of vP, it forces an interpretation on the sentence according to which $v = v_{\text{CAUSE}}$, and this in turn requires the complement of v to be a small clause. (Folli and Harley, 2007, p. 210)

The newly introduced v_{BECOME} and v_{BE} are essentially the ‘v-2’ type v-heads from Marantz (1997) (non-external argument introducing heads) but with more detail and specification. Unlike v_{DO} and v_{CAUSE} , these v-heads do not introduce any external arguments into the structure. v_{BECOME} occurs with change-of-state predicates including unaccusative verbs. As shown in (43), the complement of v_{BECOME} contains resultative syntax, i. e. a predicate applied to an argument. It denotes the final state of the change-of-state event.

(43)



(44)

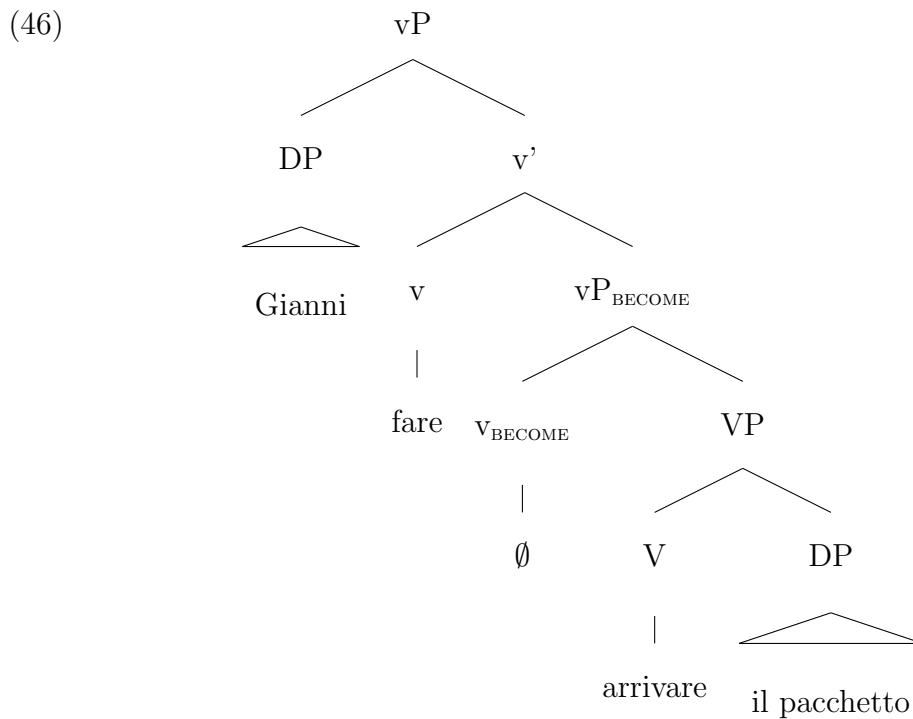


Folli and Harley (2007) suggest that a vP headed by this BECOME head can occur as the complement of v_{DO}. To support this claim, they draw on examples from Italian in which unaccusative verbs are used in Agent initiated sentences such as in the example below:

(45) Gianni ha fatto arrivare il pacchetto.

‘Gianni made the package arrive.’

In this example, *arrive* is unaccusative and so it contains the little v head v_{BECOME} . It also has an Agent argument who for them ‘does’ that the package becomes arrived. This is structurally represented as below (reproduced from (Folli and Harley, 2007, p. 215)).



In the tree in (46) above, the non-labelled little v head is of the v_{DO} flavour as that is what introduces external Agent type arguments. It then embeds

the BECOME subevent in its complement.

The stative BE head they introduce is assumed to be present in stative predicates, which also do not contain external arguments. The *v* head is considered to play a verbalising function and so is needed even in the stative cases.¹² They suggest that, like for v_{BECOME} , in sentences involving Agents controlling a stative scenario, v_{BE} can be embedded in the complement of v_{DO} . An example of such a sentence is the below:

(47) Gianni ha fatto avere una macchina a Maria.

‘Gianni made Maria have a car.’

This approach involving layered vPs is something that I will be adopting here. Allowing a vP to embed or be embedded by another vP has multiple benefits. It allows for granularity. The further that complex events can be broken down into sub-pieces, the more clearly each sub-piece can be understood. It is informative to be able to look at (sub)events in a fine enough granularity so as to be able to isolate CAUSE and other sublexical primitives and the contribution of each from other pieces of the structure.

¹²I do not make use of the v_{BE} head because, as will be discussed in the next chapter, the additional structure it adds does not contribute to a better understanding of CAUSE. However, if one is committed to a theoretical position where some little *v* head is needed in every verbal structure either for consistency or to serve a verbalising function, then adding the extra layer of structural complexity is entirely compatible with what I suggest and stative predications as I represent them can be viewed as a shorthand for a more complex structure involving v_{BE} .

For this reason, one of the big takeaways here in developing a theory of CAUSE and something that I consider to be an underlying theoretical principle will be the idea that complex structures are constructed from more basic layers and that each layer should have a consistent and predictable contribution. The approach taken in Folli and Harley (2005) and Folli and Harley (2007) is not quite there because the role of DO is not yet fully defined, and CAUSE is essentially ‘DO when there is no Agent and the complement is a small clause of some variety’.

1.3.3.2 Pylkkänen

Pylkkänen (2008) offers a similar proposal in that sublexical functional heads are responsible for introducing arguments in verbs’ argument structures. For Pylkkänen, however, a separate functional head termed Voice is responsible for introducing Agentive external arguments rather than one of the flavours of little *v*. She defines Voice as a “Thematic relation between the external argument and the event described by the verb” (p.8).

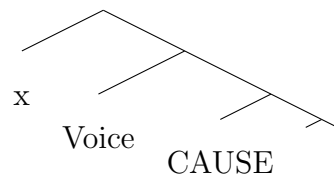
Pylkkänen suggests that “what universally distinguishes causative verbs from their noncausative counterparts is a syntactically implicit event argument ranging over *causing events*” (p.84) and that there exists a functional causative head “which combines with noncausative predicates and introduces a causing event to their semantics” (p.84). This leads to an

analysis of linguistic causation which supports the view that events cause events. Importantly, the locus of this event argument for Pylkkänen is CAUSE itself. The CAUSE head does not introduce any additional structure to contain the implicit argument. This means that not only does this analysis entail the idea that events cause events, it also takes CAUSE to be eventive in itself.

She also argues that one way that languages differ is in whether CAUSE is present alone as a functional projection or whether it is bundled together with the external argument introducing Voice. The options are represented below in (48).

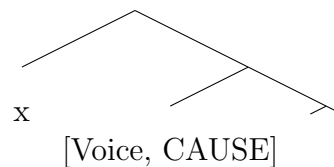
- (48) a. Non-Voice-bundling causative

(e. g. Japanese, Finnish)



- b. Voice-bundling Causative

(e. g. English)



She argues that English is a ‘voice bundling language’ on the basis that unergative roots cannot be causativised in English while in other languages

they can be. I will not be adopting the idea of voice-bundling because it will be theoretically advantageous to me to keep the Agent introduction head entirely separate from the causative head (as will be seen in great detail in the next chapters, a key part of my system relies on each head having their minimal consistent contributions). One piece of evidence for keeping them separate for English is that although voice-bundling would have the upshot of blocking unaccusative causatives, there are plenty of cases in English where CAUSE is present without Voice (which introduces Agents into the structure). An example of this is in any causative sentence with an inanimate subject and cases of stative causation (e. g. *The sea eroded the beach*, *That John blew up the moon closes the possibility of him become Prime Minister*).

In spite of this, the analysis Pykkänen presents offers three compelling results. Firstly, the introduction of the Agent external arguments can be done by a head which is not responsible for causativisation. Secondly, the roles of DO (for Pykkänen Voice) and CAUSE (Cause, for Pykkänen) are isolated in that DO is tasked only with the introduction of Agents while CAUSE is responsible for introducing an additional event argument to the argument structure such that CAUSE links a causing event to the event described in the complement.¹³ Now, in a sentence like *John closed the door*, Voice introduces *John*, while CAUSE introduces an additional causing event that is present

¹³At least when not bundled.

in the structure. Thirdly, the analysis here is explicit about the assumed ontological categories of the arguments these heads introduce. CAUSE, for Pylkkänen introduces an additional causing event to the structure. Since some of the causative sentences that I am trying to develop a theory to cover include cases of stative causation, I do not adopt the analysis that CAUSE always introduces an event, much less that CAUSE itself is eventive. However, as will be discussed in the next chapter, I do find that considering the ontological category of the argument, and not only whether or not an argument is animate, is theoretically beneficial.

To summarise, from Pylkkänen I adopt the idea that Agent arguments are introduced by their own syntactic head separate from any head that relates to causativisation. I also consider implicit event arguments and the idea that events cause events to be part of a larger story wherein ontological category is a relevant factor to the analysis. Although this approach provides these useful conclusions, it still cannot fully explain the nature of CAUSE or the structures it occurs in. Firstly, that the arguments of CAUSE are restricted to being ontologically eventive precludes the existence or analysis of stative causative predicates. If CAUSE itself contributes an event argument to the structure, then stative sentences could never contain CAUSE. Secondly, it does not give sufficient structure for the complement of CAUSE beyond that it can either be a root, a verb, or a phase, all of which are assumed to be

event descriptions.

1.3.3.3 Ramchand

Ramchand (2008) offers quite a different approach to causative structures. She suggests an analysis of causative structures where the components of the syntactic structure reflect exactly the components of the event structure. Her ‘first-phase syntax’ (i. e. subverbal syntax) consists of a number of layered functional heads which each correspond to an element of the event structure. This is useful because if sublexical event structural primitives are assumed to show up in the syntactic structure, then the syntactic structures that they show up in can inform our understanding of the semantic role they play. For example, if a semantic primitive x were to correspond to a syntactic functional head x^i , and that functional head was shown to necessarily introduce Agentive external arguments, then we could know that the primitive x must take the semantic category (here an individual) corresponding to the external Agent as one of its arguments.

The specifics of Ramchand’s proposal are unconventional. She suggests that causative structures involve (maximally) three hierarchically ordered subeventual components, a causing subevent, a process subevent, and a subevent corresponding to a result state. Each of these components correspond to a functional projection: ‘initP’, ‘procP’ and ‘resP’ respectively.

The specifier of each component contains the subject of the subevent denoted by the head. InitP is present only when an event is caused or initiated, resP is present only where there is a result, and procP is involved in every dynamic verb. ProcP is considered a dynamic projection while resP is a stative projection (p. 75).

The analysis of canonical causation presented here is one where a dynamic procP optionally links a stative initP to a stative resP. Under this analysis, activity verbs with intentional initiators also get a causative interpretation. For example in a sentence *John walked*, *John* is the initiator of a walking process subevent, meaning that John caused himself to walk. In canonical cases, verbs like *melt* and verbs like *break* are analysed differently (p. 86). Verbs like *melt* are categorised as [proc] verbs meaning that structurally they need minimally to have a procP. This accounts for the possibility of sentences such as (49) which describes a process but does not necessitate a result.

(49) The butter melted for 5 minutes but wasn't melted yet.

Verbs like *break* on the other hand are categorised as [proc,res] verbs, meaning that their structures necessarily involve a result projection. This is why (50) is impossible.

(50) # The stick broke for 5 minutes but wasn't broken yet.

In these cases, the *init* projection is always optional and can be built on top of the *proc* or *res* projections as needed to indicate transitivity. When present in these cases, the head contains a null element “with the semantics of general causation” (p. 86), whatever that means.

What I see to be the largest takeaway from Ramchand (2008) is the value of viewing elements of the syntactic structure as directly corresponding to elements of the semantic and event structure. This puts us in a position where syntactic potential can be used to inform semantic understanding and vice versa. Further, the structures I use are very similar, but with more standard, Dowty-influenced content.

1.3.3.4 Schäfer

Schäfer (2012) proposes another theory of causative structures. He argues that there are three types of causers that, while different, each obey a resultative restriction on their complements and that the interpretations of these should not depend on subtyped v-heads, but rather that the “the causative semantics (determining the thematic licensing of causers) is read off at the Conceptual-Intentional Interface from the syntactically composed resultative event structure” (p. 130). He notes that just like Folli and Harley,

the approach he suggests is a syntactic one and does not answer the bigger, semantic question of why such a resultative restriction on causers holds at all (p. 138).

He argues that in addition to the canonically discussed external arguments of change-of-state verbs (Agents, Instruments and Causers) another category of argument is needed to account for the data: oblique causers. These occur in a number of Indo-European languages and they are interpreted as being involuntary or unintentional causers of change-of-state events, as in the German example below in (51) (p. 139).

- (51) a. Der Mann zerbrach die Vase (causative)
the.NOM man broke the.ACC vase
'The man broke the vase.'
- b. Die Vase zerbrach (anticausative)
the.NOM vase broke
'The vase broke.'
- c. Dem Mann zerbrach die Vase (oblique causer)
the.DAT man broke the.NOM vase
'The man unintentionally caused the vase to break.'

Oblique causers differ from other causers in that they are subject to different conditions: a 'human restriction' and a 'non-intentionality' restriction. That is, oblique causers must be human and are not compatible with adverbs indicating intentionality such as *on purpose* or *intentionally*. Aside from

the restrictions on what can be an oblique causer, oblique causers also behave differently from canonical NP causers. Although they share with the canonical causers that they select for resultative syntax in the complements, they differ in other ways. Firstly, they do not allow for instrument adjuncts, even when it would be entirely plausible to accidentally cause the event with the instrument.¹⁴

- (52) a. John broke the vase with a hammer. (intentional)
 b. John broke the vase. (unintentional)
 c. # John broke the vase with a hammer. (unintentional)

Secondly, oblique causers display an interpretive ambiguity that canonical causers do not (p. 150):

- (53) als dem Mädchen die Tür (dann doch noch)
 when the.DAT girl the.NOM door (then after all)
 aufging
 open-went
 Reading A: The girl accidentally opened the door. (because she
 pushed it with her elbow while playing with her toys on the
 floor)

Reading B: (The mother told the girl to hold the door so that the

¹⁴This is similar to the *John explains why Mary is acting weird* examples discussed above.

wind could not open it, but her efforts were not enough.) The girl accidentally opened the door / let the door open.

Reading C: (All the children tried but no one could open the tightly closed door, however it happened so that:) The girl managed to open the door.

Schäfer (2012) argues that because “the relation between the oblique causer and the caused event is semantically much less constrained and syntactically much less direct than the relation between canonical causers or agents and the caused event...oblique causers cannot be introduced in the same way as canonical causers” (p.151). He suggests that they are not introduced by either Voice or by little *v* but rather by an additional applicative head. He argues this on the basis of applicative heads being responsible for introducing stative possessive relationships, which, he argues, accounts for the human restriction, the non-intentionality restriction and the no-instrument restriction on oblique causers (p.155) though he concedes that the “proposed literal interpretation of oblique causers is quite metaphorical” (p.158), which seems self-contradictory. The gist of this approach is that an applicative head “expresses a possessive relation between the oblique DP and the change-of-state event” (p.158). This means that his suggestion is that some possessive relationship exists between people who

accidentally do things and the thing that they accidentally do.

Both the instrument restriction and the interpretive ambiguity seem to be attributable to a semantic difference between what Schäfer terms canonical causers and oblique causers. Neither of these restrictions are unique to oblique causers. The examples below—sentences with what Schäfer would consider canonical causers—display the same restriction.

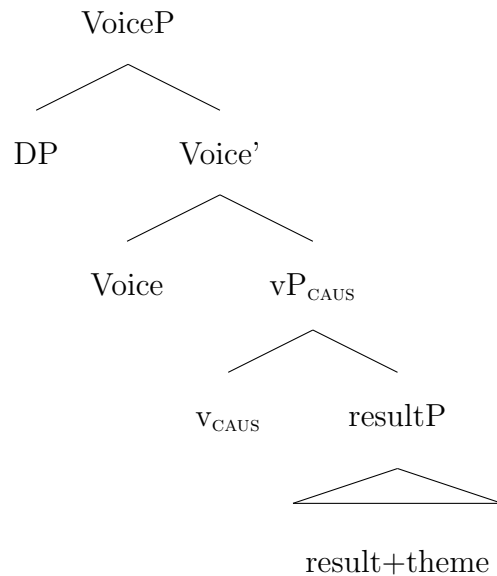
- (54) a. # The hurricane broke the window with its wind.
b. # The storm flooded the city with its rain.

Although the arguments in (54a) and (54b) are canonical Causers, they also cannot occur with instrument adjuncts. This makes sense if one considers the sort of object that they denote: events. While individuals can use instruments, events cannot. As for the interpretive ambiguity, *the storm* leaves the exact cause underspecified, in spite of being a canonical causer. *The storm flooded the city* could refer to a situation where the storm breaks a dam, overflows a river or simply pours rain onto the city. With an agent causer, the causation has to be more direct. Further, considering the examples with John and the hammer from (52), the intentional reading is the only one compatible with an instrument. On the unintentional reading, this can be attributed to *John* not describing an individual, but rather describing

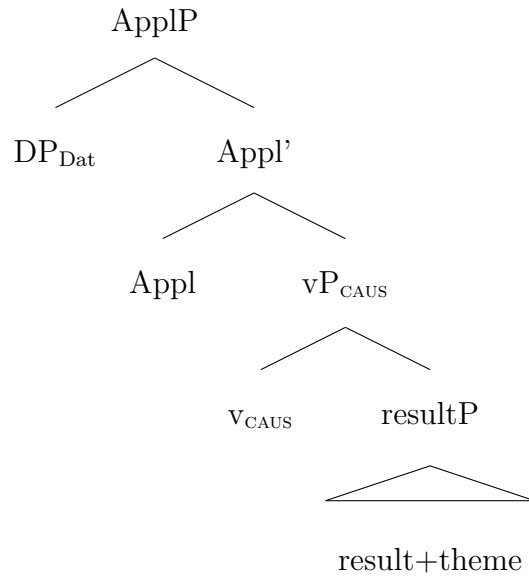
some event. If that is the case, then the incompatibility with an instrument adjunct is expected as, again, events cannot use instruments.

What Schäfer (2012) ultimately suggests is that although the causing arguments (whether it is an external argument, an oblique causer or a PP-causer) are introduced by different structural projections, each of them involves a sublexical v_{CAUS} “which introduces a causative event and selects a resultant state as its complement” (p. 165). The structures he proposes are below in (55) ((55a) is the structure proposed for causative sentences with Agentive external arguments, (55b) is for those with oblique causers, and (55c) is for those with PP-causers):

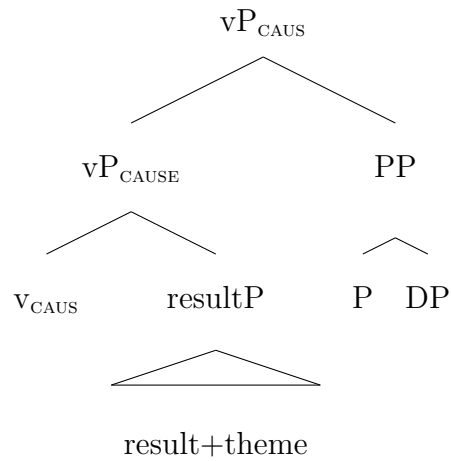
(55) a. Agentive external argument



b. Oblique Causers



c. PP Causers



Although this analysis has the upshot of providing a unifying structural description for linguistic causation across a number of grammatical environments, he argues that v_{CAUS} is eventive and contributes an event argument.

Semantically, v_{CAUS} introduces an event $\langle e \rangle$ and states that $\langle e \rangle$

stands in a causative relation to a state $\langle s \rangle$. Following [Alexiadou et al. (2006)] and Alexiadou and Schäfer (2006), I assume that this is the only semantic contribution that v_{CAUS} is actually making and that the central property of causer-DPs of any kind is it to take up this event $\langle e \rangle$ and to specify it further. Specifically, I propose that prototypical causers are inherently eventive; that is, although causers such as natural forces are syntactically DPs (a property relevant for formal licensing), they involve semantically an event. (Schäfer (2012), p. 166–167)

The approach suggested here shares with the other analyses discussed above the drawback that it would fail to capture cases of stative causation. However, one important point being made here is that although causer DPs describe entities, the semantic role they play is in fact that of an event, functioning only to add a description of the event introduced by v_{CAUS} .

1.3.3.5 Summary of the Takeaways from the Literature

Since no existing theories explicitly handle cases of stative causation, I have drawn elements from various different theories of eventive causation and event structural syntax to form the basis of my approach. I will be employing a Distributed Morphology-esque syntactic structure where the traditional verb phrase is distributed across a layered vP. I have chosen this because

it is a useful way to illustrate and isolate structural elements. From Folli and Harley (2005) and Folli and Harley (2007) I adopt different types of subverbal functional heads which place different selectional restrictions both on the arguments they can combine with in their specifiers and on the complements with which they can combine. I differ from them, however, in that I take the roles of each head to be more minimal and thus will make use of more structural heads in complex cases. Pylkkänen (2008) gives us a useful separation of DO and CAUSE (for her Voice and Cause respectively) in a layered structure which moves us towards a position to say something independently about the roles that each of these primitives/projections play, though I do not make use of her ‘voice-bundling’ hypothesis. The approach offered by Ramchand (2008) corroborates the value of viewing elements of the syntactic structure as directly corresponding to elements of the semantic and event structure. This puts us in a position where syntactic potential can be used to inform semantic understanding and vice versa. From Schäfer (2012) I take the idea that the ontological category of the arguments has an important impact, though, unlike Schäfer, I do not take them to always be events.

1.4 The Path Forward

With these structural features and theoretical assumptions as a starting point, in the next chapter I will build up a theory of CAUSE which is compatible with both eventive and stative causation. I will show that CAUSE is a subverbal operator which is sensitive to the ontological category of its arguments and is subject to a principle I will call ‘ontological harmony’. I will argue that CAUSE and a number of other functional elements are the building blocks of complex event structures. Each functional element is predictable regarding argument selection and is consistent in the function it plays. This in turn means that the effects of combining the smaller elements into a more complex structure is also predicable.

Chapter 3 describes three classes of verbs and considers the interaction between the verb classes, eventivity, and patterns of entailment. I show that many of these verbs seem to come in both a DO-flavour and a BECOME-flavour, meaning that they either require an Agent subject, or they require a change-of-state entailment, but not both. This chapter illustrates that although my system was built to explain stative causation, it provides explanations of other datasets and creates a link from the fairly well understood causative-inchoative alternation to other, less well understood alternations involving verbs that are at least sometimes causal.

Chapter 4 focuses on Malagasy, a language which has a large body of literature surrounding it because it is purported to have ‘non-culminating accomplishments’. This is relevant because the type of alternations described in the Chapter 3 can be seen widely cross-linguistically and on the surface, Malagasy appears to display a related alternation where verbs that imply a result do not actually entail that result. In this chapter I argue that what is actually happening is that non-culmination is the default in Malagasy and that the neutral non-marked forms should be seen as being the DO-flavour. This means that they should not be viewed as degenerate accomplishments, but simply verbs that describe actions.

Chapter 5 contains the conclusion, which does exactly what one expects a conclusion to do. There will be no surprises in this chapter.

Chapter 2

Causation is Non-Eventive

2.1 Linguistic Causation

Although they are considered basic, the canonical examples of linguistically expressed causation involve complex event structures.

- (1) a. John broke the glass.
- b. Mary closed the door.

On their standard interpretations, both of the above examples involve at least: i) an Agent argument who performs an action, ii) an argument that undergoes a change-of-state (a Theme), and iii) the resulting state that the change-of-state terminates in. Minimally, they involve two participants (the

Agent and the Theme) and at least two subevents (three, if you believe that states count as subevents): the ‘doing’ subevent controlled by the Agent, a change-of-state subevent referring to the Theme’s change from its initial state to its the final state and, if states are considered ‘subevents’, the resulting state that the theme ends up in. Finally, they involve a subeventual causal link connecting the subevent in which the Agent acts to the change-of-state subevent which terminates in a resulting state. This is a great deal of complexity. By complexity what I mean is the total number of participants and events that make up the predicate argument structure local to the causal link between the subject and predicate.

The fact that sentences like those above involve both a causing subevent and a resulting state can be seen by the fact that both are candidates for modification as shown in (2).

(2) Mary almost closed the door.

The above is ambiguous between a reading where the causing event does not happen (i. e. Mary was going to do the ‘door closing action’ but did not) and one where although the action is initiated, it is terminated before the final result state is obtained. The modifications below target these different subevents.

- (3) a. Mary closed the door gently.
b. Mary closed the door completely.

In the first of these, *gently* modifies the manner in which Mary performed the closing action. In the latter, *completely* modifies the state of closed-ness that the door ended up in.

Not all linguistic causation involves the same degree of complexity, however. I will introduce this briefly here before discussing it in more detail later in this chapter, but the key idea is that the event structure of the sentences in (4) is similar to the event structure of the sentences above, albeit lacking an Agent participant.

- (4) a. The wind closed the door.
b. The rain wetted-out the Gore-Tex.
c. The explosion ruptured Jack's eardrums.

These examples still involve a change-of-state subevent and a resulting state subevent, but rather than involving an Agent who acts in a causing subevent, they involve only the causing subevent itself, denoted by the DPs *the wind*, *the rain*, and *the explosion*.¹ One way that this reduced complexity can be seen is in the fact that these examples are not ambiguous with *almost*.

¹Event-denoting DPs are discussed in detail in Chapter 3.

This is because these involve only the causing events themselves and not the action of doing them. The examples in (1) still have this event as part of their semantic structure, but it is not mapped to any word present in the sentence.

Sentences like the examples in (4) have the same number of subevents as the examples in (1), but they are less complex as they involve fewer participants. They still involve the causing event, the change-of-state event, and the resulting state, but in these the only entity type participant is the object of the sentence. The subject of the sentence contains a nominal referring to the causing event. Some DPs are particularly easy to construe as being event descriptions, particularly those such as *the explosion* which are derived from verbs (Chomsky, 1970). Other nominals which are easily conceptualised as events are those that describe natural phenomena, such as *the storm* or *the wind*. One diagnostic for whether something describes an event is modification with *happened*. With the examples above this works somewhat better for *the storm* than *the wind*: *The storm happened at 3 am this morning*. However, wind has other properties which we easily associate with events such as, physical force, ongoing change, movement, and the potential to, by virtue of its own nature, impact the environment. There will be further discussion of this question of ‘what sorts of things a DP can describe’ in sections 3.3.2 and 3.3.3, where I discuss how perceptual properties

that make it event-like allow *the wind* to behave like a definite description of an event.

The causing DPs in these cases are highly restricted by plausibility. While the causing subevent an Agent can control is left underspecified, in these examples, the DPs have to be event descriptions that inherently are able to lead to the result described in the latter parts of the sentence. Since these causing events do not involve Agents, they cannot be modified with agent-oriented manner adverbials. *The rain* for example, cannot *deliberately*, *inconsiderately*, or *intentionally* cause the Gore-Tex to wet out. So, even though the number of events is the same as in causative sentences that involve Agents, the overall complexity is reduced.

Existing analyses of linguistic causation have been able to account for the first two types by positing CAUSE as a primitive that links either Agents (individuals) to change-of-state events or events to change-of-state events (albeit with very little consensus on the details). Cases like the examples in (5), however, have been neither considered nor accounted for.

- (5) a. The facts precluded that possibility.
- b. The situation breaks Mary's heart.

The sentences above are stative. They describe a causal relationship between

one state and another state. They do not involve Agents or either a change-of-state or an event which brings about that change-of-state. This makes these less complex (structurally) than the previous two types of sentences (Agent controlled causation and event Cause respectively). The more participants and events, the higher the complexity. This ties in with one of the basic assumptions I alluded to in the previous chapter, namely that structural complexity is going to mirror the complexity of the situations being described. This is because I take the contributions of different functional heads to be as unitary and consistent as possible. So when I say that the examples in (5) are less complex, what I mean is that there are fewer individuals and sub-events, rather than that the causation relation itself is any different or less complex. Since individuals and subevents are the sorts of things that functional heads are needed to introduce, fewer of them will correspond to fewer necessary functional heads. This will be discussed in greater detail throughout the remainder of the chapter.

The aim of this chapter is to outline a theory about linguistic causation that is able to account for the new data involving stative causation as well as for the sorts of data that are typically considered in linguistic investigations of causation. The crux of the proposal is that causal meaning in all decompositions of verbs is associated with a semantic primitive CAUSE and a functional head v_{CAUSE} and that this semantic primitive/functional head is

non-eventive. Viewing CAUSE and v_{CAUSE} as non-eventive allows for an analysis where sentences such as *That John was discovered to have blown up the moon closed off the possibility of him becoming prime minister* and the canonical, eventive causation involve the same sublexical causal element. This non-eventive causal primitive can then embed and be embedded by other sublexical primitives in order to have complex and non-stative event structures built up around it.

2.2 Constructing Complex Events out of Primitives

Given that the canonical examples of causation are highly complex events (which we know on the basis of a variety of diagnostics including adverbial modification and compatibility with alternations), these cases must involve the most elements, followed by inanimate subjects, followed by stative causal sentences. There are two options for how to approach the analysis of these. The first is to posit that there are three different sublexical causal elements, e. g. CAUSE-1, CAUSE-2 and CAUSE-3 each with different selectional properties and meanings.

A better option is to infer that there exists just one shared meaning element CAUSE which is present in each of the above cases, as well as any

other cases where causal meaning is subverbally specified. An upshot of this is that rather than looking at a range of examples which we know involve CAUSE and trying to figure out what they have in common, we can start by looking at sentences of varying complexity and eliminating factors that are present only in the more complex cases. We can then attribute those factors to something other than the shared meaning element CAUSE. That is, if only the more complex events involve a certain element while stative causation does not, then that element must be attributed to something other than CAUSE because if it were attributable to CAUSE, then the least complex cases would necessarily involve it as well.

2.2.1 Introducing Agents

The first element that we can factor out in this way is the introduction of Agent arguments into the event structure. Agents, simply, are those arguments to which we can assign animacy, volition and control over the event. Typically, Agents are people or animals, though occasionally they are institutions or anthropomorphised entities. They are always expressed by nominal structures, which is unsurprising given that nominals are the sort of thing that describe individuals, including those with animacy.

Ross (1972) proposes that “every verb of action is embedded in the object complement of a two-place predicate whose subject is identical to the subject of the action verb, and whose phonological realization in English is *do*” (p. 70) using examples such as those in (6):

- (6) a. Jack did a report on marshmallows.
b. *This article does a report on marshmallows.
c. This article reports on marshmallows.

As only Agents are compatible with the English verb *do*, he extrapolates to posit a sublexical verbal element DO which is present in the derivations of all sentences involving Agents, and that in some cases must be eliminated from the final product of the derivation via some rule. This is theory embedded and bound up in the Generative Semantics notion that semantics has to be isomorphic-with or represented-in the syntax. Given my theoretical assumptions about the relationship between syntax and (sub-)lexical semantics, this presumption is also embedded in this thesis.

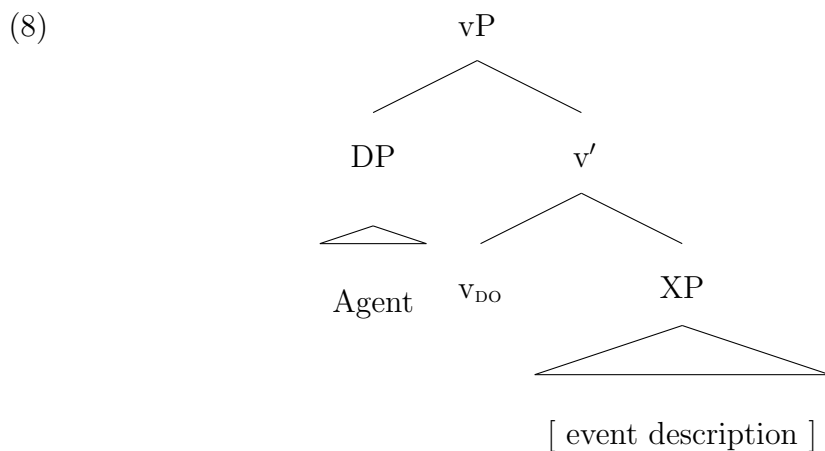
Following Ross (1972), Dowty (1979), Folli and Harley (2007), and many others, I consider this element to be a primitive DO which corresponds to a subverbal functional head v_{DO} in the syntax. This is an eventive subverbal element which syntactically takes Agentive subjects in its specifier and event

descriptions in its complement. Semantically, the primitive DO differentiates Agentive events from non-Agentive events. For instance, the examples below differ in terms of whether the sentential subject *John* is considered to be an Agent or not and, as such, they differ in whether they involve the primitive DO. In the first example below, feeling the wind is something that happens to John and that he is the experiencer of, rather than something that he does by volition.

- (7) a. John felt the wind.
b. John DO felt the fabric.

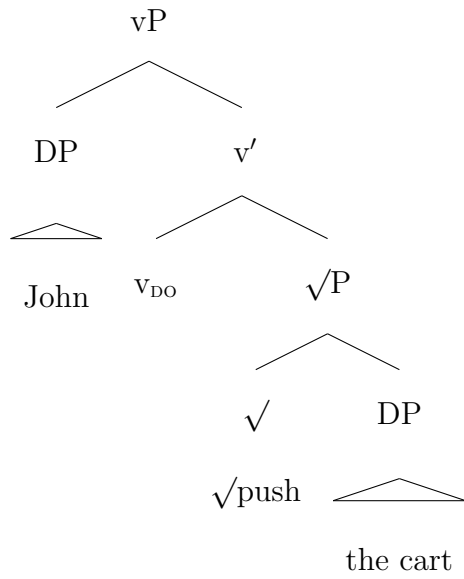
Given that DO introduces Agents, I assume the converse, namely that when there is an Agent there is a DO.² Only the first, most complex type of causative sentence involves Agents and as such the introduction of Agents must be attributed to something other than CAUSE. So in the canonical, complex causative sentences such as *John broke the glass*, the Agentive sentential subject must have been introduced by DO, as shown in the structure below. I omit the internal structure of the specific caused event in the structure for now, as this will be the topic of the next sections.

²This follows given my assumptions about uniformity at the syntax-semantics interface.

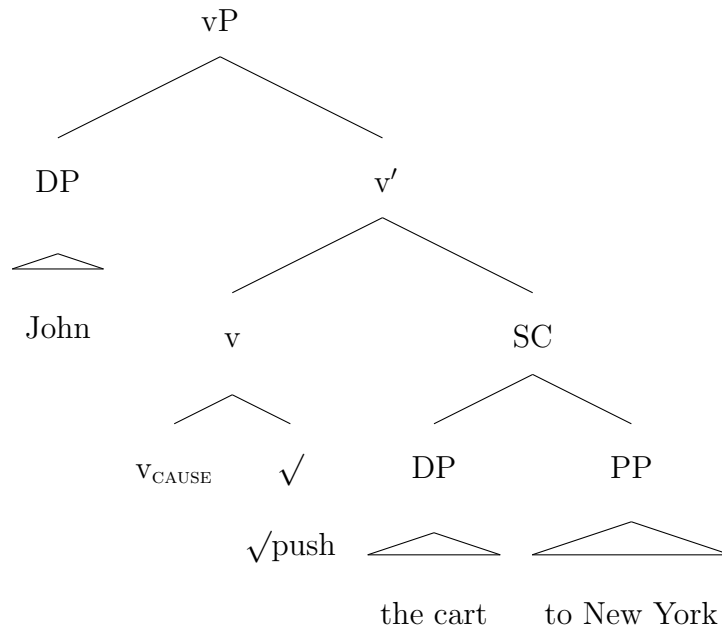


The little *v* head in this structure projects a specifier which it selectionally restricts for Agents, as well as a complement which must contain an event description. It must contain an event description because states are not the sort of thing that can be ‘done’. In a simple activity predicate such as *John pushed the cart*, *John* is introduced in *v_{DO}*’s specifier. The complement of *v_{DO}* contains the predicate which consists of the verbal root and its complement. Sometimes, the root is not generated in the complement but rather modifies the *v* head directly via manner incorporation. An example of when this would be the case is when the complement is already saturated with a result. The details of this are not relevant here, but the alternatives are represented below for illustration. For more detail see Harley (2005).

(9) Root generated in complement



(10) Root Manner Incorporation



In an Agent controlled causative structure, the part of the structure that has to do with causation, a change-of-state and a resulting state are contained

somewhere in the event description in the complement of v_{DO} . Unlike e. g. Folli and Harley (2005), I do not consider the complement of v_{DO} itself to directly be able to contain the result of the ‘doing’, but this will be discussed in more detail below.

Since only the first type of causal sentence involves an Agent, the others involve inanimates (which cannot be Agents) or CPs (which cannot describe Agents), only the first type will have a v_{DO} projection as part of its structure. Since neither of the other causal cases involve the introduction of an Agent, the introduction of the agent in these cases cannot be attributed to CAUSE.

2.2.2 Introducing Changes of State

In causative sentences that are Agent initiated as well as in those with inanimate subjects, many of the events described involve changes-of-state. In fact, unless either i) the subject describes a state, or ii) the verb falls under the description of initiated action verbs from Halliday (1967) (henceforth *induced action*) they all involve changes-of-state, but these categories will be discussed in further detail below.

Changes-of-state can be present in sentences of varying complexity and structure.

- (11) a. The glass broke.

- b. John broke the glass.
- c. The wind closed the door.

The sentences in (11) all describe events in which a state goes from not holding to holding. That is, these changes of state all involve a transition from a proposition P being true, to the negation of it being true, like so:

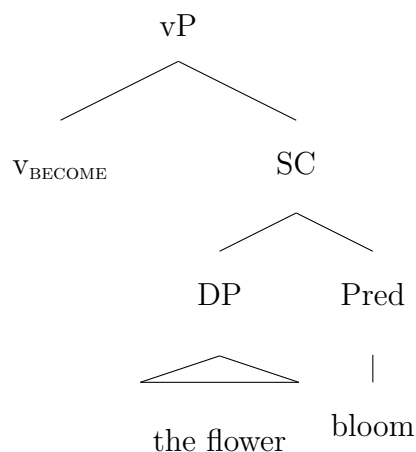
(12) Change-of-state

$$P \rightarrow \neg P$$

These change-of-state subevents are attributed to the operator BECOME (e.g. McCawley (1968); Dowty (1979)). This idea can be traced back to Von Wright (1963) and a theory of tense logic where changes of state correspond to an operator over propositions. Importantly, change-of-state meanings as described above do not include anything about any external argument, that is, BECOME takes only one argument. Correspondingly, as a functional syntactic head, v_{BECOME} is not associated with a specifier position. The operator BECOME is for changes of state broadly, including those that are internally caused such as the example in (13) below. There, the functional head v_{BECOME} corresponds to the presence of the semantic primitive BECOME.³

³Because the details of how to represent roots and root phrases in Distributed Morphology is not my concern, I will generally represent the complement of v_{BECOME} simply as a small clause.

(13) Internally caused change-of-state

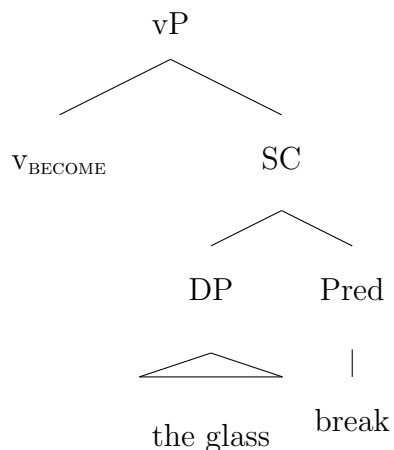


Unlike CAUSE, the element BECOME necessitates there to be an event. Undergoing a change from one state of being to another state of being is an event. The operator BECOME takes as an argument a description of the resulting state, and entails it to hold. One cannot say the following for instance:

- (14) a. The flower bloomed, # but it wasn't bloomed.
 b. John broke the glass, # but it wasn't broken.

The functional head v_{BECOME} has no specifier and takes a description of the resulting state in its complement, typically in the form of a predicate applied to an internal argument. So, even though an Agent external argument is involved in a sentence like *John broke the glass*, the change-of-state subpart of the event cannot introduce that element and consists only of the below.

(15) Change-of-state



There are two pieces of evidence that the BECOME element can be factored out of the meaning of CAUSE and should be maintained as its own separate layer even in causative structures. Firstly, the evidence from internally caused changes-of-state and from inchoative structures demonstrates that BECOME is able to exist independently and in fact must in these contexts. Since it can occur independently it must exist. If it exists, then the question becomes how it would be in some structures involving changes-of-state but not in others. For example, if *The flowers bloomed* involves BECOME as an operator over a proposition, I cannot see a good reason to think it would not be present in an Agent controlled corresponding sentence such as *The gardener made the flowers bloom*. The only way that I could see for that to be the case would be if another structural element always subsumed the contribution of *become* and thus made it redundant every time that

other element was present in the structure. This is not the case, because (bringing us to the second piece of evidence), the fact that not all causal sentences, including those involving prototypical causative predicates, involve any change-of-state meaning supports factoring BECOME out of the meaning of CAUSE. Sentences involving CAUSE but no change-of-state include the examples of stative causation that I have described above. Since changes-of-state are events, and stative causative cases cannot include events, CAUSE needs to be compatible with structures that do not involve events. Changes-of-state are also not present in verbs of induced action.

So not all becoming involves causation and not all causation involves becoming. As such, BECOME cannot be subsumed by the meaning of CAUSE and must exist as its own independent layer in the structure. The alternative would be to consider CAUSE ambiguous, sometimes involving becoming and sometimes not. This is undesirable because something that is truly a primitive, as CAUSE is assumed to be, should not be further reducible to independently useful parts (such as BECOME).

2.2.2.1 Degree Achievement Complements

Degree-achievement verbs (Dowty, 1979) such as *melt*, *cool*, and *widen* are causative and occur in causative structures. There is some question as to the nature of the complement in these cases, because, as can be seen below, they

do not entail a specific telic endpoint and they appear to be cancellable.

- (16) a. John warmed the soup in/for five minutes.
b. Mary melted the ice for 5 minutes, but it wasn't completely melted.

These could be treated in two ways. Firstly, one could think that *warming* and *melting* are just processes and that what is caused in these cases is a process and not a change-of-state at all (e.g Hay et al. (1999)). However, the fact that modification with *in five minutes* is able to target some final state makes this seem oversimplified.

A second option, and the one that I adopt, is to think that these do involve a change-of-state and that this change-of-state should be associated with a BECOME subevent. The complement of *become* contains a stative predication applied to the internal argument, but nothing says that this stative predication necessarily needs to pick out the furthest point along some spectrum (e.g. Kennedy and Levin (2008)). *John warmed the soup*, for example, can be thought of as meaning that something that *John* does causes the soup to become warm, as is defined relative to the temperature it was before he did anything to it. Treating some change of the state of the complement as entailed is supported by the fact that the degree-achievement

causatives are infelicitous if the the internal object does not undergo any change-of-state at all.

- (17) John warmed the soup for five minutes # but the temperature didn't change at all.

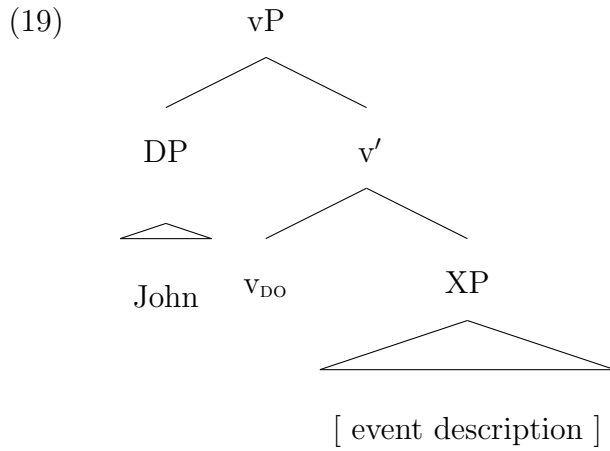
For this reason, I consider causative sentences with degree achievement predicates to involve change-of-state subevents and therefore BECOME, even if they do not involve one clearly specified telic endpoint.

2.2.3 What is left for CAUSE?

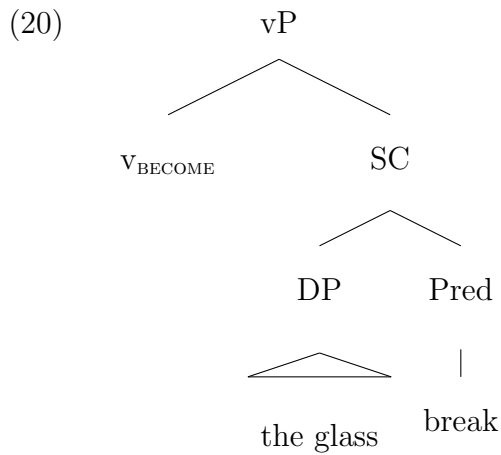
Having filtered out the introduction of Agents as well as change-of-state subevents and attributed them to other structural elements, the question is: What remains for CAUSE? Consider a canonical causative sentence again such as (1) above, repeated in (18).

- (18) John broke the glass.

Since the external argument *John* here is an Agent, we know that it is introduced by a v_{DO} functional projection which contains an event description in its complement, as represented in (19).



Since the sentence describes a change-of-state where a glass goes from unbroken to broken, the structure also involves a corresponding v_{BECOME} projection, which corresponds to a semantic primitive meaning that there is a change-of-state. This would be as below:



With the above, we have two things: firstly, that John *did* ‘something’, represented in (19), and secondly, that the glass *became* broken, as is represented

in (20). Before I put the two together, note that two further things are still needed: firstly we need a way to introduce non-Agent causal elements into the structures, and secondly, we need a way of linking the elements above in (19) and (20). This is where CAUSE and v_{CAUSE} come in.

To start with a slightly less complex, but still eventive case we can start by using (21) as a reference point.

(21) The wind closed the door.

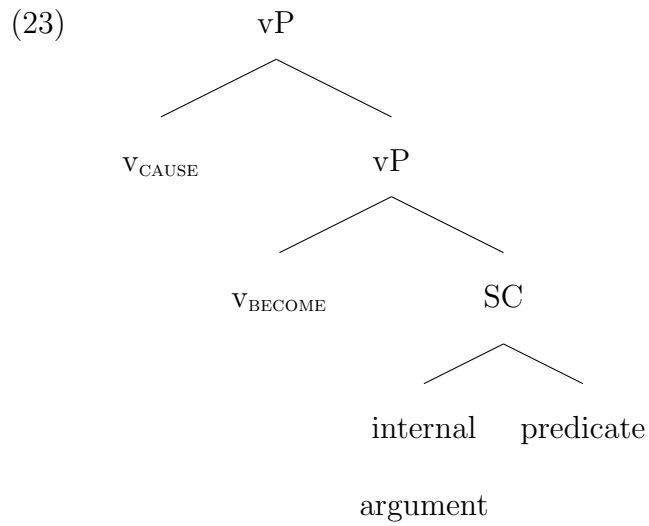
In sentences like this one, v_{CAUSE} connects the eventive causal argument *the wind* to the eventive v_{BECOME} element in the predicate and introduces the causal meaning element into the structure, which articulates the relationship between the causing event and the change-of-state. Considering first the complement of v_{CAUSE} : for this case, the canonical examples, as well as in many other cases with non-Agent subjects (but, importantly, not in every case), v_{CAUSE} heads a functional projection which embeds a change-of-state event in its complement as in (22).

(22)

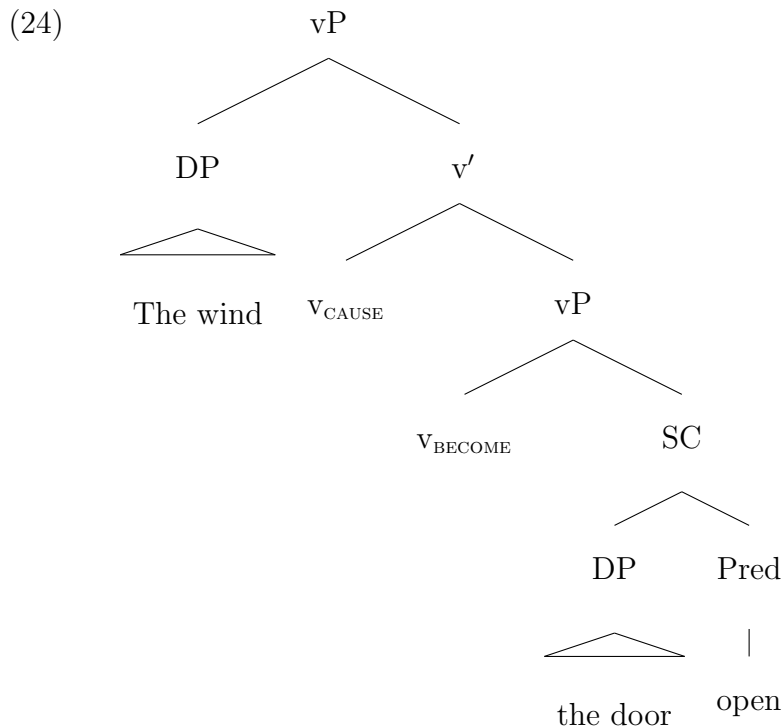
$$\begin{array}{c}
 vP \\
 \wedge \\
 v_{\text{CAUSE}} \quad [\text{COS event}]
 \end{array}$$

Under the approach that I am proposing, a change-of-state subevent means

that there is a v_{BECOME} projection present in the structure, so the above subtree can be clarified like so for these cases:



For the cases without Agents then (such as in *The wind opened the door*), the inanimate external argument would simply be introduced in the specifier position of v_{CAUSE} as below:



However, as noted by Folli and Harley (2005), there is a selectional restriction placed on what sorts of inanimate external arguments the causative head can introduce. Only inanimate DPs that can describe events are possible in this type of structure:

- (25)
- a. The hurricane destroyed the city.
 - b. The sea eroded the beach.
 - c. # The lake eroded the beach.

While both hurricanes and the sea can be easily conceived of as describing events, lakes cannot be, which leads to (25c) sounding strange. This will be

discussed further in the next chapter, but some evidence that DPs such as the sea or the hurricane make better event descriptions comes from compatibility with adjectival predicates which imply change as in (26a) and verbs which imply motion as in (26b).

- (26) a. The sea/# lake was violent.
b. The sea/# lake lashed against the rocks.

This is not a grammar-inherent restriction: to the extent that the lake can be violent, it can also erode the beach, nor, is is about size of body of water: rivers can wash against the shore, erode beaches, etc. , but I will leave further discussion of this point for the next chapter. For now it is sufficient to note that not all nominals (not even all individual-denoting nominals) can participate equally naturally in motion events, and ability to participate in motion events correlates in some sense with ability to be a Causer of the change-of-state in these eventive examples. Essentially the idea is that there is a metonymic extension of certain nominal expressions, such that they can satisfy the eventuality-as-specifier-argument-of-CAUSE criterion, in the same way as more obvious event-denoting nouns. So in a sentence like *The wind closed the door*, the role of CAUSE is to link one event description to another event description (namely the change-of-state event) with the specification

that the former *caused* the latter.⁴

One might wonder why Agents introduced in the specifier of DO and causing events (Causers) in the specifier of CAUSE cannot both be realised at the same time.

(30) *God the fire destroyed the building.

The reason that an Agent and a Causer cannot be realised simultaneously is simply that they would have to compete for nominative Case assignment.

Nominative Case is checked by Inflection (I). Since the Agent argument

⁴Instruments may look as though they are in violation of this generalisation:

(27) The key opened the door.

However, Instruments should not be analysed as being direct arguments of CAUSE. Instead, there are two options: either the Instrument modifies and originates with the DO projection (evidence has shown that the presence of an Instrument is only possible with an Agent, implicit or realised, e. g. Reinhart (2002)), or the Instrument modifies the implicit causing subevent introduced in the specifier of CAUSE. This latter option should be dispreferred because otherwise one would expect to be able to say the following.

(28) #The storm closed the door with its wind.

Other times, nominals can be Instruments in one structure, while denoting causing events (Causers) in another.

(29) a. John broke the window with the ball.
b. The ball broke the window.

As causative structures involving Instrument arguments do not alter my analysis, I leave them aside here.

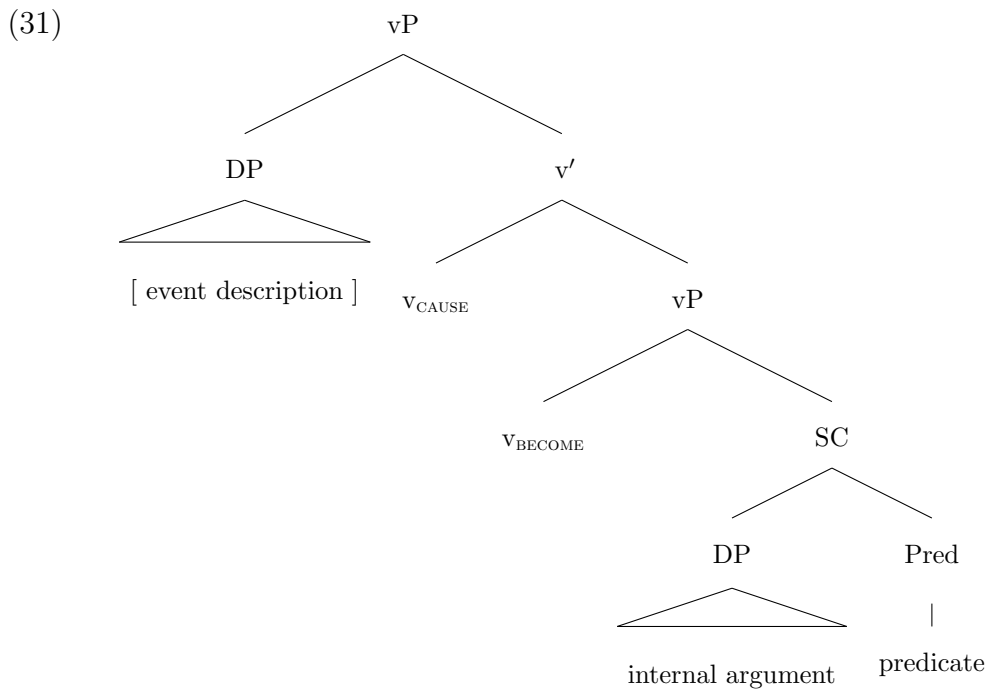
and the Causer argument cannot both move into the SpecIP, they cannot both check Case on I. Since Agents are higher on the thematic hierarchy (Grimshaw, 1990; Reinhart, 2002, for example) than Causers, only the Agent can get that nominative Case from I. When an argument cannot get Case, it cannot be realised. Accusative Case is already taken by the internal object and the only potential Case assigner left is I (which can only assign its Case to one argument), leaving the Causer argument without Case and thus unable to be realised.

2.2.4 Combining the Pieces

Since CAUSE is located in a functional head, it is simplest to assume that this head is also present in the causal cases with Agent arguments which involve both DO and BECOME (where we know that both of these are dissociated from CAUSE itself). The question then is what happens in the specifier of CAUSE. I propose that in these eventive cases, the causing subevent remains implicit in the structure. In a sentence like *John closed the door*, John does ‘something’ and that ‘something’ must be an action (i. e. an event) which is causally connected to the change-of-state event in the complement. In other words, ‘John DO [e_1 CAUSE e_2]’. Where e_1 might be John pushing the door, pulling the door, pressing a button etc. (some underspecified event) and e_2

is a vP_{BECOME} . Both subevents are potential targets for modification and so are structurally present. Essentially, something happening caused the door to close and John is the controller of that, i. e. John initiates an event that consists of a subevent causing another subevent. Since the only selectional restriction that DO places on its complement is that it must be an event, it can embed this change-of-state event.

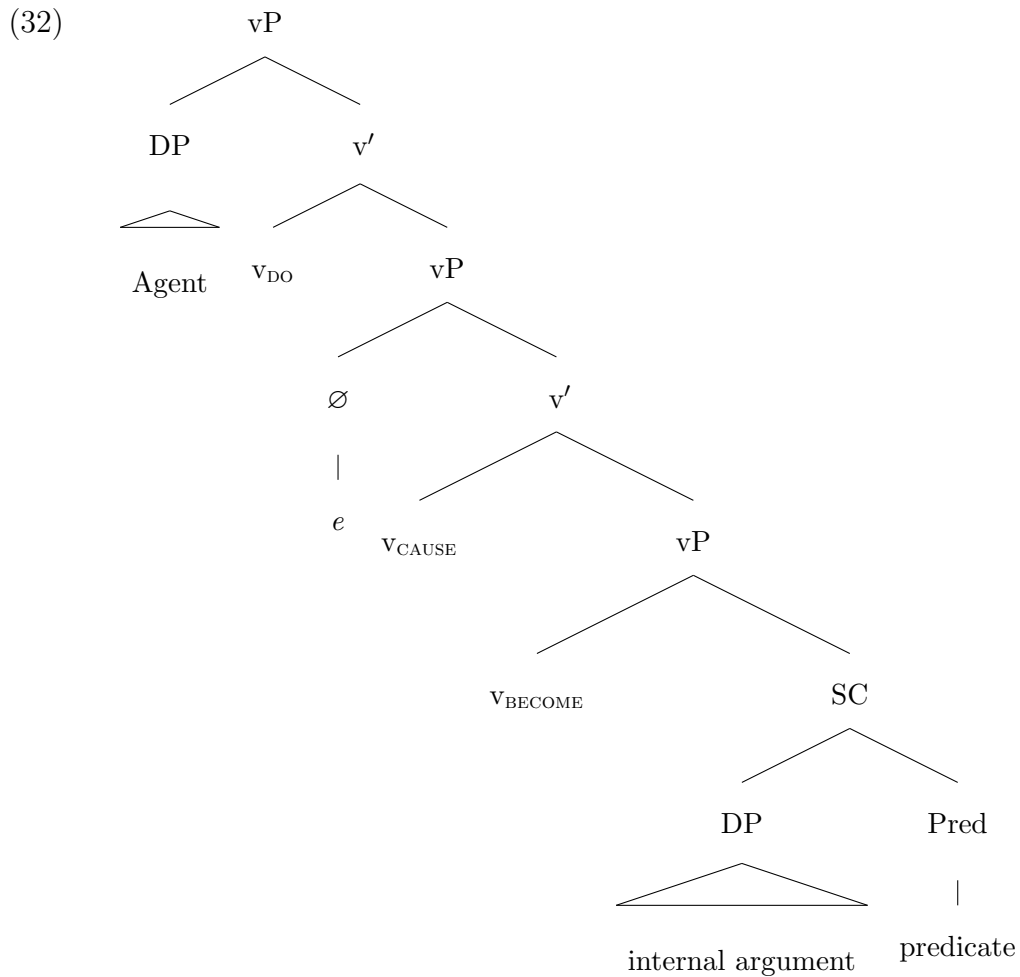
Without an Agent the structure would be as in (31):



Here, the lowest vP , which is headed by v_{BECOME} , is ontologically an event where the BECOME head indicates a change-of-state and the final state of that change-of-state is described in the complement of the v_{BECOME} head.

That BECOME head is embedded under v_{CAUSE} , which restricts the argument that occurs in its specifier to being an event description, i. e. something that is ontologically an event. The overall aspectual interpretation of a structure like this one is necessarily eventive because one event causing a change-of-state which culminates in a description of a new state cannot be the make-up of a state. Events plus events do not equal states.

When there is an Agent participant in a sentence, the structure is as above but with Agency built on top of it, as below:



Here, the bottom of the structure is exactly as above, v_{CAUSE} embeds an event denoting v_{BECOME} which introduces a change-of-state event. That there is an Agent means that v_{DO} is present to introduce that Agent in its specifier. v_{DO} then necessarily takes an event description as its complement. In order for the complement of v_{DO} to describe an event, whatever it embeds must be eventive. As described above, a structure headed by CAUSE is eventive when it connects a causing event to a caused event (here, a change-of-state). This

structure is what is embedded under v_{DO} above. To summarise the key points so far, CAUSE really is just an operator, and it does not have an aspectuality of its own. Its aspectuality is derived from that of its arguments. This means that ‘state CAUSE event’ and ‘event CAUSE state’ will be incoherent because an eventuality cannot be both state and event.

When there is an Agent argument present in these canonical causative structures, the specifier of CAUSE (which would contain a thematic Causer) will be unrealised phonetically, but the position will nevertheless contribute an implicit event argument to the overall event structure.

As a first pass, the above structures suggest an analysis of CAUSE where CAUSE is an operator that links events to events. However, that would be an incomplete picture because it clearly would be unable to apply to the examples of stative causation such as in (33) below, modified from (6) in Chapter 1.

- (33) a. That John (inspired by Alexander Abian) was discovered to have blown up the moon closes off the possibility of him becoming Prime Minister.
- b. That John has made such self-destructive life choices breaks Mary’s heart.

In both of the above cases, there is a clear causal link between the content of the sentential subject and the content of the predicate. However, unlike the cases above, these are not aspectually eventive.

Neither of the sentential subjects in (33) are Agents (which is unsurprising given the fact that CPs are not the sort of thing which denote individuals) which means that neither case will involve the primitive DO semantically or the functional projection element v_{DO} . Further, neither of these examples involve a change-of-state subevent in their meanings. (33a) is not best paraphrased by (34a) but by (34b):

- (34) That John was discovered to have blown up the moon closes off the possibility of him becoming Prime Minister.
- a. \neq That John was discovered to have blown up the moon causes the possibility of him becoming Prime Minister to **become** closed
 - b. \approx That John was discovered to have blown up the moon causes the possibility of him becoming Prime Minister to **be** closed

Rather than describing a change-of-state subevent, the predicates in these cases describe states of affairs or facts about the world. There are lots of ways to be a non-event: there are states, facts, propositions, states-of-affairs

and so on. For the sake of consistency, I will use ‘state’ as a cover term for everything that is not an event, even though I know that doing so conflates a lot of things that are not actually states, like facts, propositions, etc.. For my wider analysis the only relevant difference is between events and nonevents, so this is not a problem. The states described are counterfactually causally dependent on the content of the sentential subjects, but are not describing aspectual events. What this means is that in these cases, there is no BECOME subevent and there is no syntactic v_{BECOME} layer present structurally.

Further, neither of the sentential subjects denote events. This can be seen by the incompatibility with temporal and spatial modification (Maienborn, 2019). Rather, they too describe states. In (33b) for example, it is not one thing in particular, or one specific self-destructive choice John made which caused Mary’s heart to go from unbroken to broken, it is just the fact that John made some bad choices which breaks Mary’s heart. In other words, ‘that the state of the world is such that John has made bad choices’ is what causes Mary’s heart to be in the state of being broken. The difference in interpretation between the eventive and non-eventive variants of these sentences is that in the former the causal element is ‘the fact that this event happened’ while in the latter the causal element is ‘the fact that this state holds’.

What we have in these non-eventive cases is the following. The overall

interpretation of these sentences is stative. The sentential subjects/specifiers do not involve an Agent, so there is no DO. The predicates/complements do not involve a change-of-state, so there is no BECOME. There is a definite causal meaning, and yet there are no events in the structures.

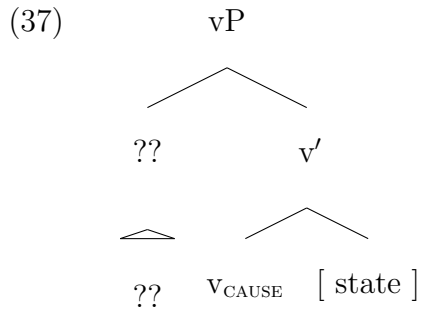
Other sentences with similar properties include the following (from Talmy (1985)):

- (35) a. The foundation supports the house.
b. The doorstep keeps the door open.

The first thing we know about all of these non-eventive cases is that the complement of the CAUSE denotes a state. The content of the complements from some of the examples above would be the following.

- (36) a. The possibility of John becoming prime Minister is closed.
b. Mary's heart is broken.
c. The house is supported.
d. The door is open.

They can be schematically represented like so:



The question then is what sort of thing the causal arguments are in these sorts of cases. I suggest that they denote states (in the ‘broadly non-eventive’ sense I mentioned above).

In the sentences in (33), the that-clauses in the specifiers also denote states. In these cases v_{CAUSE} links state descriptions to state descriptions and the overall interpretation is stative. I suggest that the same holds of other potential argument types, since if some DPs (e. g. *the sea*, *the storm*, *the hurricane*) can denote events, then there seems to be no reason that others could not be ontologically state descriptions. Stative gerunds are one example of this, as can be seen below.

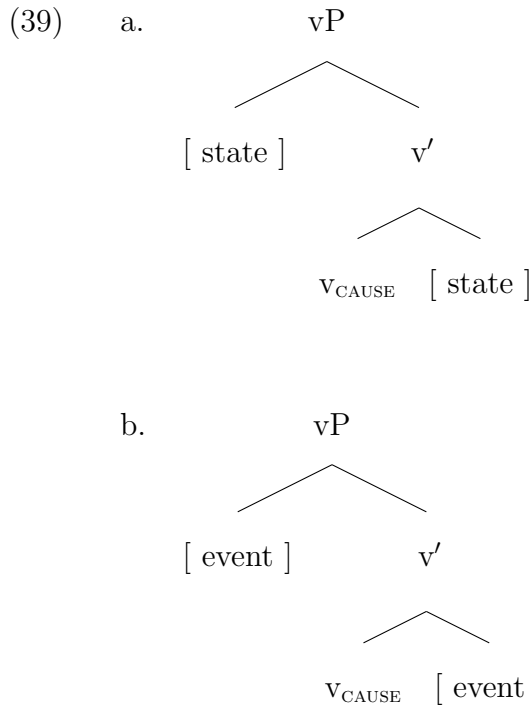
- (38) Him having racist opinions closes off his chance of being a human rights lawyer.

Like with CP subjects, these sentences are stative and v_{CAUSE} links state descriptions to state descriptions. Many nominals can denote things of

different ontological categories in different contexts. What may refer to an individual in one context, could in theory refer to an event or a state in another context. I will discuss this further in Chapter 3 and will leave it aside for now. For the time being it is enough to accept that neither the specifier nor the complement of v_{CAUSE} contains an event when the overall interpretation is non-eventive. In the eventive cases, v_{CAUSE} links event descriptions to event descriptions and the overall interpretation is eventive. CAUSE itself must be non-eventive and the overall aspectual properties of a causative sentence must be determined by the aspectual properties of the arguments. This is because of the fact that if CAUSE were eventive, then you could not have causative sentences without an eventive interpretation. So, CAUSE is an operator that links eventualities to eventualities of the same ontological category: that is, it is subject to a principle I will call ontological harmony.

2.3 Ontological Harmony

The primitive CAUSE is subject to ontological harmony. This means that the ontological category of the arguments CAUSE links in any given instance must be the same. The simplest representation of the possibilities are as below:



If the arguments are both stative, the overall interpretation is stative. If they are both eventive, the overall interpretation is eventive.

Events can either be processes or changes-of-state (either durative or instantaneous). The traditional Aktionsarten categories for the options are processes and accomplishments/achievements respectively (Vendler, 1957). In canonical causative sentences such as *John broke the glass* or *Mary closed the door*, the complement is a change-of-state event corresponding to a v_{BECOME} functional projection. Conversely, in verbs of induced action such as *walk (the dog)* or *jump (the horse)*, the complement would be an embedded v_{DO} , which is necessarily eventive and describes an action (which happens

to be a traditional process/activity in these cases). Either is fine as both are eventive. The specifier position will either be phonetically filled by a something that denotes an event, or it will be phonetically null but will still be the locus of an implicit event argument in the structure. This is the case in canonical sentences with Agents. CAUSE can link any of these subtypes of ontological event to any other subtype of event. CAUSE can only link a state to another state. The possibilities are represented in Table 2.1 (COS is used to stand for change-of-state for space related reasons).

\downarrow CAUSE \rightarrow	COS	Process	State
COS	✓	✓	X
Process	✓	✓	X
State	X	X	✓

Table 2.1: Ontological harmony

This principle makes intuitive sense when thinking about a naïve physics of how causation works in the world. States are non-changing and consistent. Something staying the same, intuitively, does not cause anything to happen or to change: states do not cause events. If something happens, that cannot lead to a state holding without some intermediary transition phase from it not holding to it holding. That transition phase would be a change-of-

state, which would by definition be an event. So, events do not cause states. Though, of course, events can cause other events which themselves terminate in states. This is to say that CAUSE is unambiguous and atemporal (it is just a relation that holds between linguistic objects). Because CAUSE is atemporal, any temporality that a causal structure has is acquired on the basis of the arguments in specifier and complement position, not from the causative head itself.

The principle of ontological harmony also explains the following:

- (40) a. # That the storm was raging outside closed the door.
b. # That Mary was very clumsy broke the glass.

Even though both of the sentences in (40) are perfectly interpretable, they are nevertheless not good sentences. By ontological harmony, this is because a CP such as *That Mary was very clumsy* is ontologically a state and the predicate of the sentence cannot in this case lend itself to a non-eventive interpretation. So the sentence fails because CAUSE is given arguments from different ontological categories.

Although ontological harmony is a generalisation, there are some apparent counter examples. The first is cases where a description of a property of an individual is in the subject position, as in the example in (41a), and the

second is cases of causation by omission, as is the case in the example in (41b) below.

- (41) a. Mary's clumsiness broke the glass.
b. John not watering/ John's failure to water his plants for a month killed them.

I will discuss these cases in more detail in the next chapter where I will be in a better position to support the stance I take on these: that the subject argument is used as a starting point in a search for an associated event that is a plausible Causer and that the easier it is to do this, the more acceptable the sentence will sound.

2.3.1 Eventive Configurations

In this section I will detail the full structures of several eventive configurations lexical causatives occur with, with particular focus on how each respects ontological harmony in its own way. I will leave discussion of periphrastic causatives and resultatives for the next chapter.⁵

⁵In the next chapter, periphrastic causatives fall into the category I term biclausal quasi-causals, and resultatives fall into the broader category of causativised activity verbs.

2.3.1.1 With an Agent

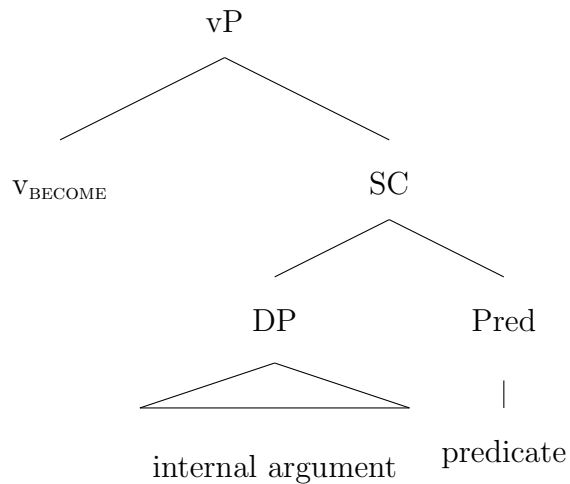
The first eventive configuration is that which is associated with the ‘canonical causative sentences’ such as *Mary closed the door*. I will call this the ‘DO CAUSE BECOME’ configuration. In this configuration, the Agent argument is introduced by v_{DO} . The complement of v_{DO} always needs to contain an event description. When the complement of v_{DO} is a causative structure, that causative structure must itself be that event description. In order for a causative structure to be eventive, v_{CAUSE} must have eventive arguments. The specifier will always be null for the reasons described at the end of Section 2.2.3 but will be the locus of an event argument which is introduced in order to satisfy ontological harmony.

The complement in these sorts of cases corresponds to a change-of-state subevent. This change-of-state subevent is contained within a functional projection headed by v_{BECOME} . The v_{BECOME} head is the locus of an additional event argument and its complement describes the final state of the change-of-state. Since the head is eventive, the $v\text{P}_{\text{BECOME}}$ projection is eventive by feature percolation. The BECOME subevent is embedded as the complement of CAUSE. As no realised Cause argument is present in the sentence, CAUSE introduces an implicit event argument in its specifier position, which gets existentially closed higher up in the derivation, by analogy with middles and

passives (Chomsky, 1993).⁶

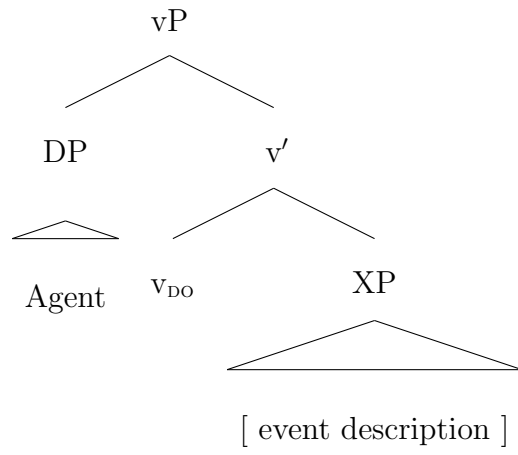
Since both the specifier (the implicit event argument) and the vP_{BECOME} layer are eventive, the overall interpretation of the vP that CAUSE heads is eventive. As such, it can be embedded within the complement of v_{DO} . The pieces and their combinations are represented below.

(42) Change-of state subevent:

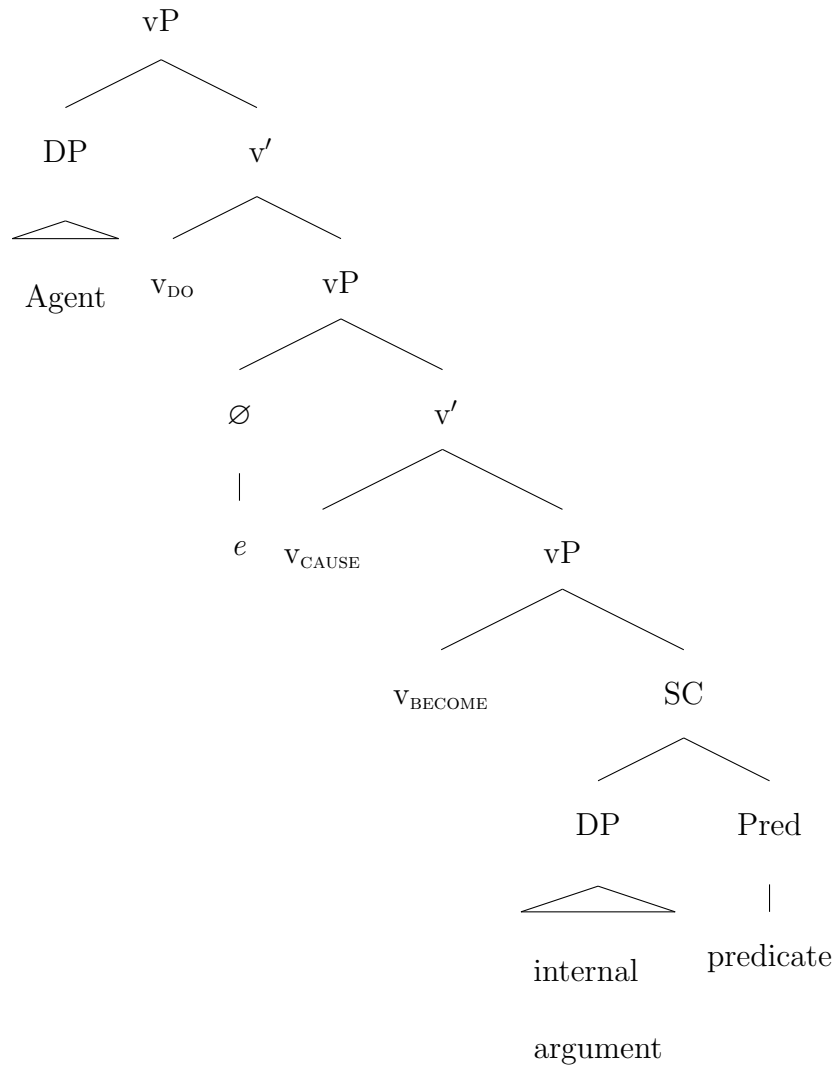


(43) Introduction of Agents

⁶Notably, this is the only configuration where an implicit event argument is introduced. In every other case, either the position is filled with a realised event, or the configuration is stative and no extra event is needed to satisfy ontological harmony.



(44) Linked by v_{CAUSE}

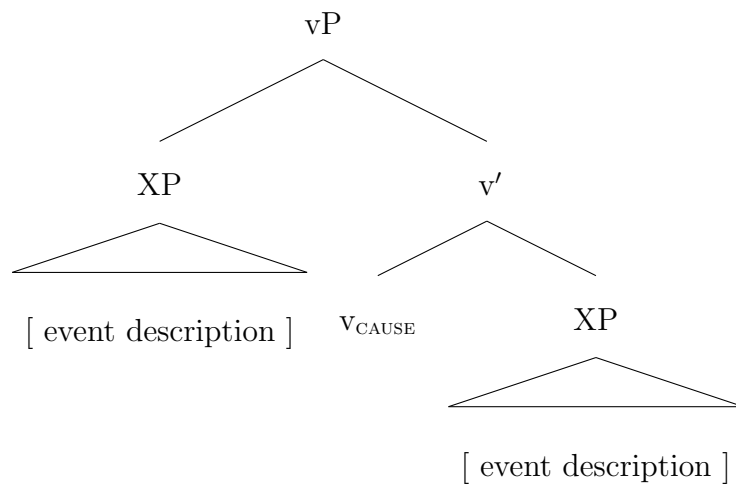


2.3.1.2 With Eventive Subjects

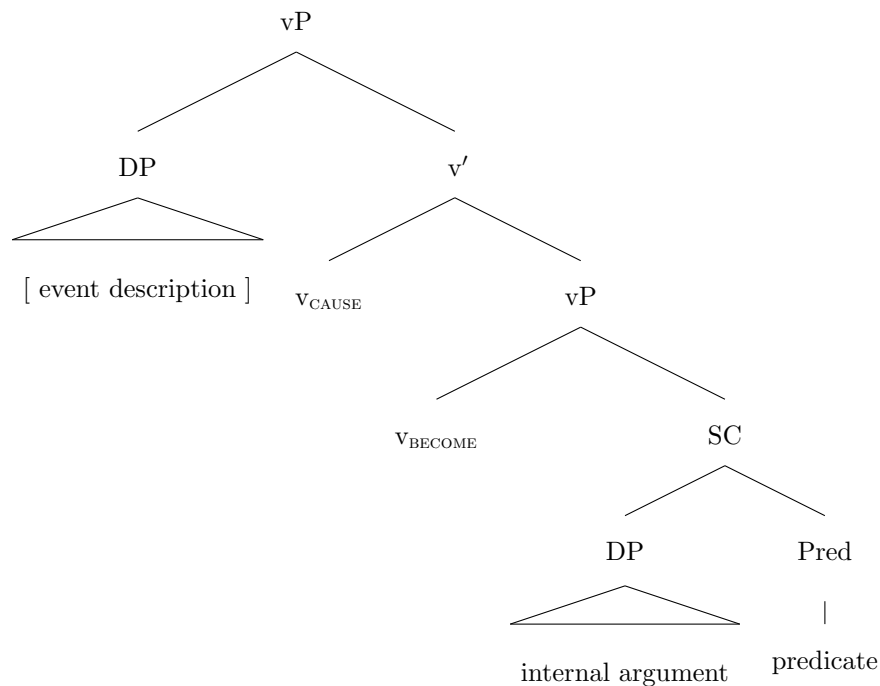
The second eventive configuration is what I will call the [event] CAUSE [event] configuration. This is the configuration associated with sentences such as *The wind closed the door*. In these structures, the specifier of v_{CAUSE} contains an event description. The complement embeds a change-of-state

subevent, that is, a v_{BECOME} (other complements are possible, but will be covered in the sections below). The eventive vP_{BECOME} in the complement plus the event description present in the specifier of v_{CAUSE} mean that the structure respects ontological harmony. The pieces of the structure are represented below.

(45) CAUSE with eventive arguments



(46) Event linked to COS event



As a reminder, the eventive BECOME vP is headed by a v_{BECOME} head which does not introduce a specifier position and embeds a result in the complement. Results in the complement can take a number of different forms. Some verbs already specify their result in their meaning and in these cases, the complement contains this ‘root meaning’ of the verb which acts as a predicate applied to the internal argument. Causative verbs are an example of this. A causative verb like *open* for example has the ‘root meaning’ of something related to openness. In some contexts this becomes verbal, in others the root can become adjectival. This ‘root meaning’ is contained in what I label ‘predicate’ here for consistency. In these structures, it describes the final state.

Other verbs do not inherently specify any result but can still be used in resultative structures when an additional predicate is added that specifies a result. An example of this is in (47a) where nothing about *blew* specifies an end result, but the addition of the predicate *dry* adds a result into the structure. In this sort of case, the complement of v_{BECOME} contains a small clause containing a description of a result rather than a predicative structure formed on the basis of some root meaning of the verb. What is important is that there is a result for v_{BECOME} to embed. This v_{BECOME} then is eventive, as is the content contained in the specifier of v_{CAUSE} .

- (47) a. The wind blew the cliffs dry.
 b. *The wind blew the cliffs.

Sentences like these will be discussed further in Chapter 3.

One example of how this could break down from the other side is in cases where the specifier v_{CAUSE} does not contain an event description.

- (48) *That Mary is very clumsy broke the glass.

Even though the sentence above is perfectly interpretable, it is degraded because the content contained in the specifier is unable to be construed as denoting an event. It can only denote a state. The complement in this

example, however, can only denote an event. This is a violation of ontological harmony and thus the sentence fails.

2.3.1.3 Induced Action

The Induced Action configuration refers to sentences with verbs that are used to mean one Agent induces action controlled by another Agent. Below are some examples of this.

- (49) a. John walked the dog.
b. Mary jumped the horse.

Since these sentences contain Agents in subject position, these Agents need to be introduced by v_{DO} . This means that the complement needs to be eventive as one can only *do* an event. The meaning of the sentences overall is causative, as can be seen clearly from participation in the causative-inchoative alternation), so the structures will involve CAUSE. In order to be eventive overall (which it must be in order to be embedded by DO), v_{CAUSE} will need an event argument in its specifier as well as an event description in its complement. In these, the content of the complement does not describe a change-of-state, so there is no v_{BECOME} . Rather, they contain the information *the dog walked* and *the horse jumped* respectively. These are both

agentive activity predicates, and so are each individually associated with a v_{DO} projection. Since v_{DO} structures meet the criteria of being eventive, they can be embedded by v_{CAUSE} and fulfill the ontological harmony requirement. This configuration could also be called the ‘DO CAUSE DO’ configuration.

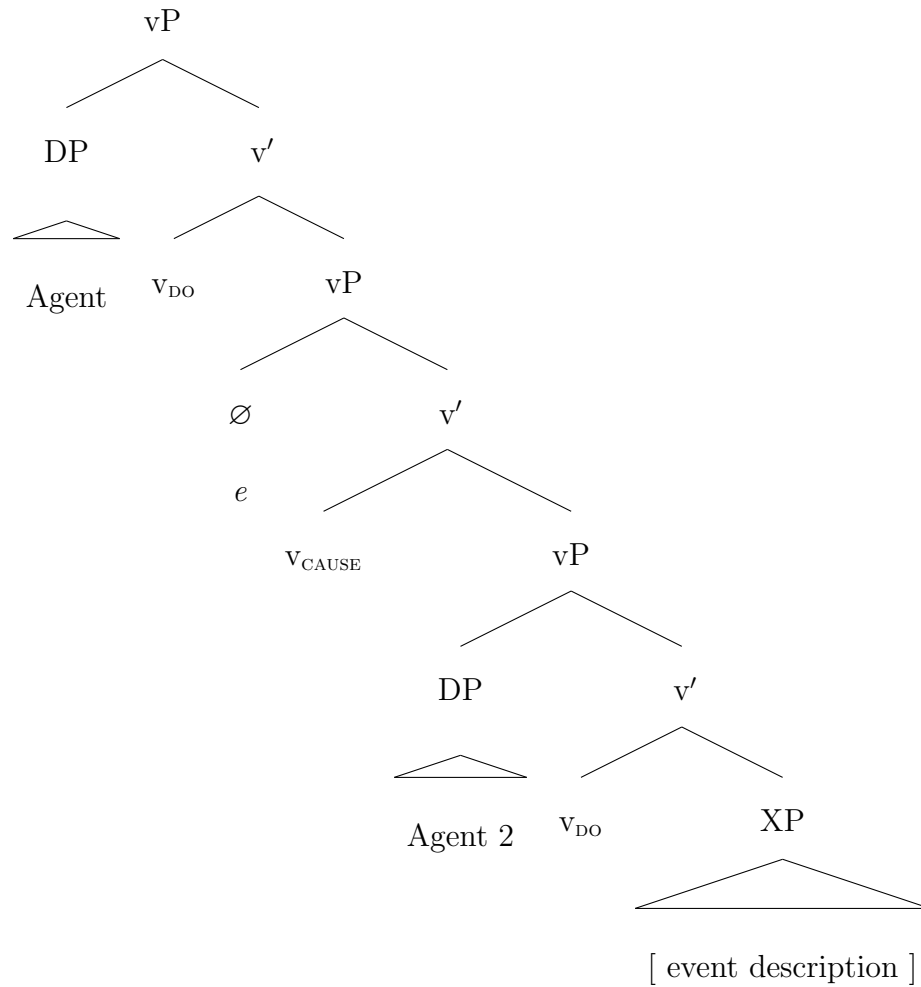
As in the cases above, this structure can also be present in sentences where the verb does not specify any specific result and where the information about the result needs to be appended within the complement.

- (50) a. Jack made John leave.
b. Mary had Jack leave.

In these cases, the light verbs do not contain enough information to specify a result, but the information in the complement is able to fill in. Like the examples in (49), the structures contain two v_{DO} projections, one which embeds v_{CAUSE} in its complement, and one which is embedded within the complement of v_{CAUSE} .

An example of the structure associated with induced action configurations is represented below.

- (51) Induced Action



2.3.1.4 Interim Summary

The different structural configurations for eventive causation that I have described above may not be the only possible eventive configurations. However, I do believe that these sum up the most common and often discussed structural possibilities. Additionally, I also expect that other

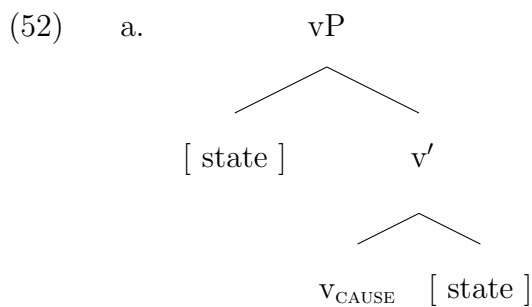
configurations would not be so dissimilar from these that the elements in them would not translate to other eventive causatives structures. The structures differ from each other based on differences in the participants, differences in number of events, and differences in the nature of the events that the sentences describe. However, in each of the structures, the actual contribution of CAUSE (and of v_{CAUSE}) remains consistent. Like the contribution of CAUSE, the contributions of the other structural elements also remain consistent across different structures. The interpretive differences between them come down to which other elements are present or not in the structure and what they contribute to the structure and to the meaning.

2.3.2 Stative Configurations

Stative configurations are less varied than the eventive configurations. This system has only one structure for stative causation but has lots for eventive causation, so the stative cases are simpler within the terms of this theory. All that is required for these is that both of the arguments that v_{CAUSE} takes are ontologically state descriptions, or at least that they are non-eventive, as non-eventives will be stative by default. In these cases the only little- v head is v_{CAUSE} (as the presence of either v_{DO} or v_{BECOME} would necessarily be correlated with an event) and the arguments it takes must both be state

descriptions.

State descriptions can take various different syntactic forms. In the specifier position they will generally be CPs or stative gerunds, but may be of other syntactic categories without particular restriction. In the complement position, state descriptions can take the form of at least root phrases and small clauses. The structure that is associated with the stative configuration is represented below. While the syntactic categories of the arguments may differ, the configuration itself does not.



2.4 The Rules About CAUSE

To summarise, the rules about CAUSE are as follows.

1. CAUSE is non-eventive. It does not in itself contribute an event to the event structure.
2. CAUSE links eventualities. Eventualities can be either states or events.

If CAUSE links α to β , then α and β denote eventualities.

3. CAUSE is subject to the principle of ontological harmony. This means that events (whether processes or changes of state) can CAUSE events (processes or changes of state) and that states can CAUSE states. States cannot CAUSE events. Events cannot CAUSE states (though they can CAUSE events which themselves may terminate in states).
4. The aspectual properties of the vP_{CAUSE} are determined by the aspectual properties of the arguments in the specifier and the complement. If both are events, the overall structure necessarily denotes an event. If both are states, the overall interpretation necessarily is stative.
5. If vP_{CAUSE} is embedded by v_{DO} , vP_{CAUSE} necessarily must be an event description. This means that, by ontological harmony, both arguments of v_{CAUSE} must, ontologically, be events in order for the overall aspectual interpretation of the vP_{CAUSE} to be eventive.
6. If vP_{CAUSE} embeds an event, the specifier must also contain an event. That event can either be realised as an event denoting DP or CP, or it can be phonetically null (as is the case in the majority of cases with Agents), but still structurally contribute an event.

Rules 1, 2, and 3 make up the basis of this theoretical contribution.

These conclusions were arrived at by considering a broader range of causative structures than are often considered. With a broader range of linguistic data, it was possible to filter out and isolate the contributions of different elements that are often involved in causative sentences. For example, Agents and changes of state, which both can be attributed to elements in the structure other than CAUSE, namely DO and BECOME respectively. Filtering out the ‘noise’ and attributing it elsewhere allowed for the question ‘what is the same about the role that CAUSE plays across the prototypical cases and the non-prototypical cases?’. The answer to which is that it links eventualities in both cases, though with the additional rule that those eventualities that it links must be of the same ontological category as each other.

Rule 4 is a natural consequence of rule 1. Since CAUSE itself does not play an active part in determining the aspectual properties of the whole, those aspectual properties must come from the arguments it connects. Rules 5 and 6 are natural consequences of ontological harmony. Rule 5 can be seen to be useful in cases with causative periphrastic/ light verbs in preventing sentences like *John had the foundation support the house* while allowing sentences like *John had the fire destroy the city*. Rule 6 is entirely derivable from the principle of ontological harmony.

2.5 Conclusion

The causative structure that is the most simple is not the one that is most prototypical. Interestingly, in most of the literature on linguistic causation, the canonical examples of causative structures typically are the ones that involve the most structural complexity. This is the case sentences such as *John broke the glass*, which involve not only causation but also agentivity and a change-of-state subevent. The way to form a theory of causation which captures the full range of data is to establish what is common in causative structures across a range of causation types. In this chapter, I have excluded the introduction of i) Agents, ii) changes of state, and iii) eventivity from the meaning of CAUSE and reallocated those tasks elsewhere in the structure, suggesting that a layered structure is necessary to capture complex verbal meanings.

Chapter 3

The Puzzle About the Sea: Defeasibility Variations, Eventhood, and Verb Classes

3.1 Introduction

The approach I have laid out in Chapter 2 predicts that, disregarding processes such as *the river flowed* for now, there are only two ways for a verb to be eventive in my system. It needs to have DO, or it needs to have BECOME. Complex structures may of course have both, but at least one of them needs to be present. The class of causative verbs (i. e. the verbs that participate in the causative-inchoative alternation) discussed in the previous chapter, as part of the definition of their category membership, have to have BECOME but

may or may not have DO.¹ We have seen two classes of these causative verbs, the canonical ones (e. g. *break or close*) and those related to induced action, where CAUSE links one event to another without BECOME. However, many other verbs exhibit some causal proprieties, at least some of the time, without meeting the requirements for membership in the class of causative verbs. For example, they may fail to participate in the causative-inchoative alternation. According to my system and given my assumptions about uniformity at the syntax-semantics interface, assuming that they are not simple processes, they must have either DO or BECOME.

In this chapter, I will show that many of these verbs seem to come in both a DO-flavour and a BECOME-flavour. This means that they either require an Agent subject, or they require a change-of-state entailment, but not both. Although the system that I outlined in the previous chapter was designed to explain stative causation, it has the advantage of also explaining other datasets and phenomena. Furthermore, it creates a link from the fairly well understood causative-inchoative alternation to other, less well-understood alternations involving verbs that are at least sometimes causal.

It is worth mentioning here that in this chapter I am developing a theory of word classes. I have discussed two in the previous chapter and will describe

¹Compatibility with the inchoative and stative variants are a defining feature of the class of causative verbs, their meanings (when eventive) entail a change-of-state. This means that when they are eventive, they must have BECOME.

three more here. However it is important to state that I am not talking about aspectual classes. I have found that there is no clear correspondence between causal meaning or types of causal structures and aspectual category. For avoidance of confusion: when I say *states*, unless I indicate otherwise, I refer to the standard notion of states. I will use *process* to refer to things that are non-agentive, atelic and durative (e.g. *the river flowed*). If an event involves an Agent actor, I will call it an *action*, regardless of telicity or duration. So *jumping*, *walking*, and *walking into a wall* can all be actions if they are performed with intent by an Agent actor. The most important distinction I make is between processes and actions, which are generally lumped together under the aspectual category of Activity, assuming there is no telicity. Generally, I will talk about actions when an event has no result, but complex events may of course have the action of an Agent as a subevent. For clarity I will try to avoid using the word *activity* at all, as its meaning is too deeply entrenched with the aspectual category sense.

3.2 *Provoke*-Class Psych Verbs

The clearest example of a class of verbs that can come in both a DO-flavour and a BECOME-flavour are the *provoke*-class psych verbs. Psych verbs are a subcategory of verbs that describe something about an individual's

psychological state. Examples of these include *fear*, *amuse*, *comfort* and *provoke*. They are similar to causative verbs in many ways, but differ in that they do not undergo the causative alternation. For example, a sentence like *John amused Mary* seems much like a causative sentence in that it seems to mean something along the lines of ‘John DO something (to) CAUSE Mary BECOME amused’ and yet it is not possible for ‘Mary amused’ to mean that Mary became amused (if it means anything, it would have to mean that Mary was the one doing the amusing).

Most of the psych verbs seem to entail a result, but Simon (2017) identifies a subset where the implied result is defeasible without being contradictory. These are termed ‘*provoke*-class’ psych verbs. The verbs identified as belonging to this category are represented below.

(1) *Provoke*-class psych verbs

assure, comfort, console, encourage, flatter, insult, provoke, reassure,
taunt

They contrast with the *amuse*-class psych verbs such as:

(2) *Amuse*-class psych verbs

amuse, afflict, astonish, dishearten, enthrall, offend, sadden, soothe,
unnerve

While *amuse*-class psych verbs cannot be negated without leading to contradiction, the *provoke*-class verbs can be.

- (3) a. John comforted Mary, but she wasn't comforted.
b. John amused Mary, # but she wasn't amused.

However, not every context in which the *provoke*-class psych verbs occur allows for defeasibility of the complement (examples taken from Simon (2017, p. 6)).

- (4) a. Even though he was yelling at her, his angry words reassured her of his love for her, # but she wasn't reassured.
b. Whenever she's upset, Christine goes into her backyard and watches the sheep, which comforts her # but she is not comforted.

Simon (2017) posits that what licences defeasibility in the *provoke*-class psych verbs is a combination of agentivity and intent. So (4a) he claims is impossible due to a lack of intent, and (4b) is barred due to a lack of Agentivity. I believe that actually only the lack of Agentivity is relevant in both of these cases. In (4a), the actual subject argument of the verb is his angry words, which is not an Agent.

For consistency, the puzzle here can be formulated and the examples rephrased to rule out confounding factors:

- (5) a. John reassured Mary but she was not reassured.
- b. John comforted Mary for 20 minutes, but she was not comforted.
- c. John amused Mary # but she was not amused.
- d. John's angry words reassured Mary of his love for her, # but she was not reassured.
- e. Watching sheep comforted Mary, # but she was not comforted.

When the subject argument of the *provoke*-class psych verb is an Agent, the events described are actions undertaken by the Agentive subject. As such, they are defeasible because actions do not entail results. The verbs in this class have a predicable, structured polysemy. They can be used in different contexts to either describe an action, or the expected or intended result of that action. *Reassure*, for example, can either describe an action where one behaves in a reassuring way, e. g. telling someone not to worry, as in (6a), or it can describe a feeling of newfound certainty in response to something in the world as in (6b) and (5d).

- (6) a. John reassured Mary that he wouldn't be late again but she did not believe him and was not reassured.

- b. The politician felt reassured by their party's position in the polls.

When the subject is an Agent, the subverbal head introducing that argument into the structure is DO. These verbs are compatible with meanings where DO is all that is needed in the structure. That is to say that one can *do* the actions of provoking, comforting or reassuring without actually having the effect of making another individual feel provoked, comforted or reassured. These cases are the DO-flavour that this class of verbs can come in. This does not mean that when these verbs occur with an Agent that a result is not implied or even assumed when no other context is given, it just means that the expected result is not lexically entailed in the meaning when an Agentive subject is present.

Conversely, when the subject of these verbs is not the sort of thing that can be an Agent, the content of their complement cannot be negated without leading to contradiction.

- (7) John's improving health comforted Mary, #but she was not comforted.

So in these cases the result is entailed. As the resulting state goes from not holding to holding, BECOME is present in the structure. As discussed in

Chapter 2, since v_{BECOME} has no specifier position, v_{CAUSE} is present in these structures to link the subject argument to the change-of-state event in the complement. This is the BECOME-flavour. This can also be thought of as going in the opposite direction: when the subject is not the sort of thing that can be an Agent (and the sentence is eventive but not a simple process), the head introducing the argument can only be CAUSE. The presence of CAUSE entails a result, leading to infeasibility in the cases where an Agentive subject is lacking. On either view, the psych-verbs that appear to have non-entailed results actually just have multiple senses: one sense where the structure is that of a simple action and lacks telicity and therefore a result (the DO-flavour), and another sense where the structures are telic and have results (the BECOME-flavour).

The *provoke*-class category of psych-verbs is a clear example of verbs that are (at least on some uses) causal but that do not participate in the causative-inchoative alternation. Here, I have suggested that this class of verbs exemplify a recurring pattern in which verbs that are somehow causal but that are not causative-inchoative come two flavours. These flavours are a DO-flavour, where they must occur with an Agentive subject and do not lexically entail a result, and in a BECOME-flavour where they do not have an Agent subject argument but they must have an entailed result in their structures. In the rest of this chapter I will build further on this premise,

having laid out the *provoke*-class psych verbs as a prime exemplar of the phenomenon.

3.3 The Puzzle About the Sea

The puzzle/dataset that I discuss here has been discussed frequently in the literature and I have mentioned it already in Chapters 1 and 2. Here, I will work through the examples in more detail and suggest that the same pattern discussed in the previous section is at play here, although it represents a different class of words because a morphological addition is required with these that is not required with the *provoke*-class psych verbs.

- (8)
- a. The sea eroded the beach.
 - b. *The sea ate the beach.
 - c. The sea ate the beach away.
 - d. John ate the apple.
 - e. John ate the apple up.
 - f. ?The lake eroded the beach.

In the sentences above, the key questions are the following. Firstly, why is (8a) good while (8b) is bad? Secondly, why is (8b) bad but (8c) good, while (8d) and (8e) are both good? Additionally, why is (8b) bad while (8d) is

good? Finally, why is (8f) not as good as (8a)?

To answer these questions, I will do two things in this section. Firstly, I will show that *eat* and other verbs like it come in a DO-flavour and in a BECOME-flavour and that the latter of these is associated with an obligatory extra morpheme (in English) which supports the resultative meaning. I will call these verbs ‘causativised activity verbs’. Secondly, I will show that DPs such as *the sea* can, and in many cases do, refer to events.

3.3.1 The Flavours of *Eat*

To highlight the different flavours of *eat*, we can consider the examples below:

- (9)
- a. John ate the soup, but he didn’t finish it.
 - b. John ate the soup up # but he didn’t finish it.
 - c. *The sea ate the beach.
 - d. The sea ate the beach away.

What can be seen here is that when *eat* occurs with an Agentive subject as in the first two cases, the sentence is good with or without the presence of a particle. This is not the case when the subject of the sentence is not an Agent. Then, the particle is required for the sentence to be well formed.

Eat is not a causative verb. It does not participate in the causative-

inchoative alternation or the subject-instrument alternation. As such, in its normal usage *eat* simply describes an action. As stated previously, actions do not entail results and nothing in the structure of a simple action contributes a change-of-state meaning. This means that these are defeasible, as is the case in (9a) where John is an Agent who performs an action which is an eating soup action. Depending on the object in the sentence one may infer, if no additional context to the contrary is provided, that the object was completely eaten, but this is not an entailment of the structure. So, the sentence in (9a) exemplifies the DO-flavour of *eat* which requires an Agent who performs an action but does not require a result to obtain.

The example in (9b) is different. Here, the addition of the particle *up* contributes telicity by specifying an endpoint to the eating event. That is to say that *eating* here no longer describes a simple action, but rather an action that involves a specified final state, or a result. This is the BECOME-flavour of *eat*. In this case, the particle adds a specified end point and means that the object must BECOME at that final state. This form entails the change-of-state and result. Because of this, the sentence cannot be negated without leading to a contradictory meaning. Here, the BECOME-flavour coincides with an Agent subject, but this is not a requirement that the BECOME-flavour places on the structural configuration.

An example of this with a non-Agentive subject is the sentence in (9d)

(*The sea ate the beach away*). Here, the particle *away* specifies the result of the event. This should be seen as describing a result even though there may still be beach left: the addition of *away* creates a degree achievement, which should be treated as changes of state with results, as discussed in 2.2.2.1. The subject of the sentence does not need to be an Agent (which, lacking all properties of Agents, the sea is not). Non-agentive subjects, however, are not compatible with the DO-flavour of *eat*, as can be seen in (9c) (The sea ate the beach). Without a particle, *eat* is basically an action verb. Actions can be undertaken by Agents but not by inanimate entities such as the sea.

So, the impossibility of *The sea ate the beach*, (9c), comes down to the fact that *eat* is not a causative verb. This means that it does not decompose into a causative structure (causative structures entail results) and there is no v_{CAUSE} to introduce a causing, non-eventive DP into the structure. Since there is no change-of-state, there is no BECOME. This means that the only option is for the event to be associated with DO. However, since *the sea* cannot be an Agent, it cannot occur in the specifier of v_{DO} , which renders the sentence impossible. This is remedied in (9d) however, where the addition of *away* forms a resultative structure (i. e. The predicate *away* is applied to the internal argument *the sea*). The resultative structure provides the result that CAUSE needs by introducing BECOME into the structure which in turn can be embedded by CAUSE, which, as we know, is compatible with non-Agentive

specifiers.

This is why example (8a) (*The sea eroded the beach*) from the previous section works but (8b) (*The sea ate the beach*) does not. *Erode* is a causative verb which means that it is inherently compatible with fully complex causative structures and it participates in the causative-inchoative alternation. Verbs that are compatible with fully complex causative structures contain a causal element in their meaning and they structurally decompose to involve (at least) a causing factor and a resulting state. The sentence in (8a) describes an event in which the sea causes the beach to become in a state of erosion. The change-of-state event from not-eroded to eroded is correlated with a BECOME predicate which terminates in a state (i. e. the state of being eroded). This eventive BECOME element is linked by CAUSE to the DP *the sea* in its specifier.

So far so good. The questions left unanswered here are the following. Firstly, we know that in the DO-flavour of *eat*, the complement (of DO) is an action and that the subject, its specifier, must be an Agent. Additionally, we know that in the BECOME-flavour, the complement must contain a result and a specified change-of-state and that this corresponds structurally with the presence of BECOME and CAUSE. Two things have not yet been fully clarified. Firstly, the question of what sort of thing the subject argument actually is, and secondly, the question of why *The sea ate the beach away* is

‘better’ in some way than *The lake ate the beach away*. In the next section I will support my conclusion which is that *the sea* is an event and I will draw on this conclusion to explain the other unanswered question.

3.3.2 A Note on Ontological Category Membership

There is good reason to think that some DPs refer to and describe events. And there is good reason to think that *the sea* is one of these. In fact, in the system I lay out, *the sea* must be able to denote an event because in cases such as *The sea ate the beach away* discussed in the previous section where the structures involve CAUSE and BECOME, the BECOME part of the structure is necessarily eventive which means, that in order to respect ontological harmony, the subject argument must describe an event too. In this section and the next, I will discuss matters related to ontological category membership and event denoting DPs to bolster this conclusion with stronger independent support.

To summarise what has been argued thus far, in the last chapter I presented an analysis of linguistic causation where CAUSE is treated as a non-eventive, sub-verbal primitive. That is, I consider CAUSE in event structures to be atemporal. This means that causative structures are not necessarily going to be eventive as there is nothing inherent in the causal element itself to

contribute an event. This differs from most linguistic accounts of causation which either explicitly or implicitly assume that CAUSE is eventive and corresponds to a subevent in the broader event structure. I considered causal sentences involving varying degrees of complexity, from the least complex (10a) to the most complex (10c).

- (10) a. That John was discovered to have blown up the moon closes off the possibility of him becoming Prime minister.
- b. The rainstorm flooded the village.
- c. John broke the glass.

Although examples like the one in (10c) are probably the most common and are certainly the most widely discussed in the linguistic literature on causation, they are structurally the most complex due to the fact that they involve the highest total number of subevents and participants, as described in Chapter 2. The sentence in (10a) is structurally very simple: two arguments which are ontologically state descriptions are causally linked by CAUSE, which totals to three elements that are involved. The sentence in (10b) has additional complexity because its meaning involves an additional change-of-state event where the village goes from not being flooded to being flooded. In this case, there are four elements involved in the structure: i)

the storm, ii) the change-of-state event, iii) the result of the change-of-state event (that the city is flooded) and, iv) CAUSE which connects i) to ii) and iii). The sentence in (10c) involves yet another layer of complexity on top of that. John is an Agent argument which is introduced into the structure by the primitive DO in an additional structural layer built on top of that in (10b). Although the specifier of CAUSE in (10c) is phonetically unrealised, the structure still contains the position.

- (11) a. [⟨ state ⟩] CAUSE [⟨ state ⟩]
 b. [⟨ event ⟩] CAUSE [BECOME [x ⟨ state ⟩]]
 c. [⟨ Agent ⟩] DO [[⟨ event ⟩] CAUSE [BECOME [x ⟨ state ⟩]]]

The structures in (11b) and (11c) are the most common realisations of the broader patterns represented below in (12). When the caused event is not made up of a change-of-state subevent corresponding to BECOME, the caused subevent is most likely to be an action/activity (as is the case with verbs of induced action, e. g. *John walked the dog* = John DO something that CAUSE the dog DO walk).

- (12) a. [⟨ event ⟩] CAUSE [⟨ event ⟩]
 b. [⟨ Agent ⟩] DO [[⟨ event ⟩] CAUSE [⟨ event ⟩]]

As I describe in Chapter 2, rather than positing multiple different causative primitives, I posit that there is just one semantic primitive CAUSE which has a sufficiently limited semantic contribution so as to be compatible with all three structures. That is to say that the primitive CAUSE is underspecified rather than polysemous. There are not different senses of CAUSE in different contexts, the different meanings come from the other arguments and/or structural elements.

The semantic contribution that I attributed to CAUSE is essentially two-fold. The first is a simple causal link between two elements where the former is entailed to have led to (caused) the latter. The second semantic contribution that I attribute to CAUSE is a principle that I have termed ontological harmony. CAUSE is not particular about the ontological category of its arguments so long as in any particular case the categories of the arguments are the same as each other. So if one argument describes a state, the other must also be a state description, and if one is an event description, the other must be too. This restriction rules out interpretable, yet impossible sentences such as the below.

- (13) a. *That the wind was very strong closed the door.
b. *That Mary is very clumsy broke the glass.²

²*Mary's clumsiness broke the glass* is degraded for the same reason: the subject argument is non-eventive.

- c. * [That Mary is very clumsy ⟨ state ⟩] CAUSE [BECOME [the glass broken ⟨ state ⟩] ⟨ event ⟩]

When both arguments are event descriptions, the subtype of the event does not make a difference, either argument can be either an action, a process or a change-of-state event, without restriction. Most commonly however, the second argument is a change-of-state event involving the eventive subverbal primitive BECOME. BECOME, unlike CAUSE, is intrinsically eventive given that it is associated with changes-of-state. Structurally, BECOME does not take a specifier and its complement contains a description of the final state after the change occurs (the result state).

With this out of the way, we are in a position to, in the next section, look at how DPs in the right contexts refer to events. This will bring us back to the original question of ‘What sort of thing is *the sea*?’.

3.3.3 Event Denoting DPs and Coercion

When not referring to properties, DPs frequently refer to individuals. Usually this works well because sentences are often either about individuals (predicative sentences) or they are about how individuals participate in events. So how can individuals participate in events? If the individual is animate and acts with volition (though not necessarily intention) they could be the

Agent of an event. If they are animate but lack volition, perhaps they are an experiencer of the event, a non-Agentive Causer, or potentially a patient/theme. If they lack animacy entirely, in the way that tables or plates might, then things can either be done to them or happen to them, making them themes or patients.

In other cases however, DPs refer to events. These can be modified with a temporal adverbial or continuation referencing the event in time (a distinctive feature of events is that they occur in time). An example of this is the DP *the explosion*.

- (14) a. The explosion shattered the window (at two o'clock).
b. The explosion happened at two o'clock.

In this case *the explosion* is the event which is causally linked to the change-of-state event in which the windows go from not being shattered to a final state of being shattered. We know that DPs like this are events because they are compatible with the word *happen*. A property of *happen* is that it does not allow any flexibility in the ontological category of its subject argument. This means that it needs an event as its argument and has no idea what to do if you try to give it an individual besides to force an interpretation of that individual to being something describing an event. DPs like *the explosion*

do not need coercion to be the subject of *happen* because they are already eventive. Other properties these ‘inherently’ eventive DPs share is that they tend to be deverbal and they are able to maintain their argument structures and aspectual properties as nominals.

However there are other DPs that lack these properties. They are not deverbal, they have physical forms, they can be touched and broken and moved. Some of these can be coerced into referring to some event when in the subject position of a verb like *happen*. Animate entities are an example of this.

(15) Q: (On seeing a huge mess when walking into a room) What happened here?

A: John happened.

This would not mean that John the entity came into existence or anything similar, but rather that John had been there and had done something to create such a mess.

DPs that can refer to events vary in how ‘well’ they work with *happen*, but despite this, they still behave in event-like ways in particular contexts.

An example of this is a DP such as *the bomb*.

(16) a. The bomb shattered the window.

b. ?The bomb happened at two o'clock.³

Even though the DP *the bomb* cannot be temporally situated in lieu of contextual information, it seems that world-knowledge of bombs and the sorts of things they involve makes it easy to conceptualise the DP *the bomb* as referring to an event of the bomb's explosion. The sentence in (16a), unless explicitly stated otherwise, is going to be interpreted as describing an event where the window shatters because a bomb exploded, and not, for instance, because somebody threw an unlit, unexploded, bomb through the window, thereby causing it to shatter. This inference based on world knowledge works exactly the opposite in an example such as the one below.

(17) The brick shattered the window.

In this case, the cause of the shattering is assumed to be the brick colliding with the glass, and not, for example, the brick exploding. For both of these cases however, world knowledge permits the DP to be interpreted as a plausible individual participant in an implicit causing event. The inference will be much less available for other DPs however, as exemplified below.

³Although this example sounds degraded to me, an internet search for the string *the bomb happened* turns up roughly 6000 matching hits. The examples from the first page are generally from quotes in news articles. So I suppose that for some the example is not really too bad.

(18) # The feather shattered the window.

This sentence sounds bad because it is extremely difficult to conceptualise any way for a feather to be involved as a participant in an event that causes a window to shatter.

The DPs that can be interpreted as event descriptions most easily are those that have something in their lexical meaning which makes this possible. That is, the ability of non strictly-eventive nouns to refer to events is dependant on their qualia structure in the sense of Pustejovsky (2002). The qualia of a lexical item specify that item's Constitutive role (which refers to an item's parts or make up), its Formal role (how the item fits into broader taxonomies), its Telic role (referring to an item's function or what it is used for) and its Agentive role (related to how an item is created) (p. 418). Considering the different elements of what all lexical items can mean allows us to attribute meaning variations to something other than exploding numbers of different senses for verbs. An example of this is the below.

- (19) a. The reader started the book.
b. The author started the book.

The sentence in (19a) most naturally means that the reader started to *read* the book. This meaning is available on the basis of books Telic Quale which

relates to the function or purpose of the lexical item (i. e. books are for reading). Sentence (19b), on the other hand, most likely means that the author began to *write* the book, a meaning made possible on the basis of the Agentive Quale of books (i. e. a fact about what it means to be a *book* is that it is written by an author). Rather than assigning *start* two extra senses, one which means *write* and one which means *read* the difference can be attributed to different qualia of the lexical item being accessed.

Different qualia structures will allow nouns to refer to events for different reasons. For some, such as bricks which break windows, it will be due to the fact that they have a material extension. This material extension means that an object can interact with other things in the world with material extensions, sometimes in destructive ways. So one can take this material extension and conceptualise it as participating in an event. For nouns like *bomb*, there is an event associated with their qualia. For yet other nouns, such as *the sea*, it is its Natural Telic (T_N) structure which allows it to refer to an event. The ease with which a noun can be afforded an eventive interpretation is highly context dependent. Some property of an individual's physical extension or their telic properties must be able to bring about the relevant occurrence. This means that a brick will be a better or more plausible participant than a feather would be in an implicit event where the the object's material extension collides with another's which then causes the latter to break.

Each of the subject DPs in the sentences above where a non-inherently event-like DP denotes an individual participant in an implicit event could be replaced by a more blatant event description.

- (20) a. The bomb broke the window.
→ The bomb exploding broke the window
- b. The brick broke the window
→ The brick hitting it broke the window

The use of the DP in the place of more detailed event descriptions is metonymy in the same way that one may use *the crown* to refer to the royal family, or a country name to refer to that country's sports team. Whether a DP can plausibly be used to refer to an event it is a participant in or is related to, depends on whether any of the noun's qualia can be construed as being part of the event or describing an event.

So there are two ways for a nominal to describe an event. It can either be inherently eventive like *the explosion* or it can refer to a participant in an implicit event like the subject in *The brick broke the window*. *The sea* can be thought of as being in either category. In sentences like *The sea eroded the beach* or *The sea ate the beach away*, one might say that it is not that the sea is a participant in some causing event. Rather, it is the sea's inherent

properties that allow it to be construed as eventive. Specifically, the sea is conceived of as being in constant motion and/or flux. This is in the same way that storms can be eventive because they have power and motion. The only reason that the literature is more able to classify *the storm* as an event than *the sea* is because of the previously mentioned compatibility with *happened*.

- (21) a. The storm happened at 15:00.
b. *The sea happened at 15:00.

However, one could think of this as being just one diagnostic for eventhood and that passing it confirms eventhood while failing it does not disprove eventhood. Alternatively, one could chose to see the sea as a participant in a larger event, such as an event of the sea's material extension colliding repeatedly and with force into the land causing the land's erosion. Here it is the nature of the sea's material extension (big, heavy, water) encoded in its Constitutive quale in combination with its (Natural) Telic quale which encodes movement and flux in the same way that rivers encode in their Telic quale that they flow (Pustejovsky and Jezek, 2016). Either way of seeing *the sea* as an event is fine.

The puts us in position to address the final question brought up at the beginning of section 3.3. Why are (22a) and (22c) below better than (22b)

and (22d)?

- (22) a. The sea ate the beach away.
b. ?The lake ate the beach away.
c. The sea eroded the beach.
d. ?The lake eroded the beach.

The difference between these sentences comes down to which of *the sea* and *the lake* are more easily construed as referring to an event. In both cases the complement of the verb denotes an event. There is some debate about whether these sorts of sentences involve changes of state or not. This is the same question as with verbs like *cool* and *melt*: one can cool soup for five minutes and find that after those five minutes are up, the soup still cannot be classed as ‘cool’. In Chapter 2 I argued that these should be considered to involve changes-of-state (see 2.2.2.1 for more detail), just slower, more durative ones than others. I argued this in part on the basis of the fact that it seems infelicitous to say that one cooled something if its temperature does not change at all. It still has to mean that the object became in a cooler state relative to its initial state. However, here this is not important. What does matter is that whether the complement is seen to be a process or a change-of-state, in either case it is eventive. This means that in order to maintain the

ontological harmony that CAUSE requires, the subject argument also needs to be able to refer to an event or to an Agent. Neither *the sea* nor *the lake* can be Agentive, so they must be eventive. If *the lake* sounds worse in these contexts than *the sea* does, then it is because it is harder to construe lakes as being eventive. As discussed above regarding what makes the sea a ‘good’ event, this ability for the lake to be (or fail to be) an event will come down to either something about its inherent properties, or to something about features of its qualia structure which either do, or fail to allow lakes to be seen as participants in events. Specifically, it may be that we do not associate lakes with waves and tides and movement like we do the sea, so it is less plausible as an event on the basis of its inherent properties. Alternatively, it may be a side-effect of a lack of motion within its (natural) Telic quale. In short, *the lake* sounds worse than *the sea* in these cases because it is harder for it to respect the principle of ontological harmony that CAUSE requires of its arguments.

3.3.4 Another Look at Ontological Harmony

We are now in a better position to understand the apparent counter examples to ontological harmony referenced in the last chapter. As a reminder, it might seem as though the examples below are in violation of the principle.

- (23) a. Mary's clumsiness broke the glass.
b. John not watering/John's failure to water the plants killed them.

Considering sentences like the one in (23a): although *Mary's clumsiness* is not grammatically eventive, it is able to be interpreted as referring to a specific event associated with clumsiness. For example, (23a) could be uttered in a situation where Mary is bad at throwing but still tries to toss something to her brother but misses and hits a lamp instead, leading her parents to chide her by saying '*Mary! You really need to be more careful, look, now your clumsiness has broken a lamp*'. Here, there is a clear and specifically identifiable event which can be associated with Mary's clumsiness. This is to say that the subject argument is used as a starting point for identifying a specific associated event which is the Cause. When this is not possible, a sentence will sound degraded, as can be seen in (24).

- (24) a. John's lack of attention span burnt the food.
b. John's short attention span burnt the food.

Because the above can only easily refer to an inherent property and it is not easy to resolve the subject argument to an event in the context, coercion is not possible and the sentence is degraded.

Cases involving causation by omission such as (23b), and the further examples in (25) below are an interesting case.

- (25)
- a. John not watering/ John's failure to water his plants for a month killed them.
 - b. The teacher not showing up excited the students and worried the staff.
 - c. Homer's failure to press the right button melted the nuclear reactor.
 - d. # John's (inherent/innate) lack of attention span burnt the food.

For analysing these we have two options. The first is to assume, as is commonly done, that a lack of something happening really does mean that there is no event. If one takes this view, then what has been found is a categorical limit to ontological harmony. It would not be unexpected for a principle to have limits and to be applicable in some categories of cases but not in others. Causation by omission then would be beyond the boundary of ontological harmony and one could maintain the position that when something does not happen there is not an event.

An alternative, however, would be to think that in fact, sometimes,

something not happening is an event in itself, at least in terms of human conceptualisation. I take the stance that this is the case and that this is what accounts for the difference between the acceptable sentences in (25a)-(25c) and the degraded example in (25d). Although expressions like *John not watering the plants* or *the teacher not showing up* describe situations where in some way nothing happened, they are still able to appear in the subject position of sentences with causal verbs. In these particular cases, *failure* implies that something was supposed to or expected to happen. When things deviate from expectations, it is not a stretch to think that we conceptualise that as an event. For students, (25b) is probably more of an event or unusual happening in their day than if the teacher did show up. The below dialogue for example is only possible with comedic pedantry.

(26) Parent: What happened at school today?

Child: The teacher didn't show up.

Parent: I asked what happened, not what didn't happen.

Further evidence that these 'non-happenings' might be events comes from continuations involving *happened* which temporally situates events in time. Genuine non-events are incompatible with *happened* (further discussion of this diagnostic can be found in the previous section).

- (27) a. John didn't water the plants. That's been happening a lot recently.
- b. John has a short attention span. # That's been happening a lot recently.

Here, the content in (27a) can be accessed by a *happen*-continuation while the content of (27b) cannot. I suggest that this is because the former describes something eventive while the latter does not. I take the same to be the case when these sorts of clauses appear in the subject position of sentences involving causative verbs. When the subject argument really is stative and can only refer to states in the world, continuations with *happened* are not possible and sentences are degraded when these occur in the subject position, as can be seen in (25d). When the sentences are acceptable, on the other hand, this is because the subject describes an event of something not happening or failing to occur.

3.3.5 Summary

To summarise what has been said so far, these causativised activity verbs (the second class of verbs discussed in this chapter) follow the same overall pattern as the *provoke*-class psych verbs. Specifically, they also come in two variants: an action variant and a change-of-state variant. While for the *provoke*-class

psych verbs this alternation comes down solely to the ontological category of the subject argument, for these verbs, change-of-state meanings require the addition of a morphological particle or modifier to contribute the final result. When these verbs occur without the particle, they can only refer to actions and their subjects must be animate. When they occur with a particle, they have change-of-state meanings and can have either Agentive or eventive subjects. This category of verbs also includes verbs that can only occur with animate subjects but that change from describing actions to describing changes of state depending on the particle. An example of this is *kick*. An Agent could ‘kick a pole’ as a simple action, or they could ‘kick a pole over’ as a caused change-of-state event. However, part of the meaning of *kick* involves impact between a moving foot and some object, so on the basis of only animates having feet, only animates can *kick*. Some more examples of verbs in this class are below.

- (28)
- a. John threw the ball.
 - b. The turbulence threw John out of his seat.
 - c. *The turbulence threw John.
 - d. Mary hammered the metal.
 - e. Mary hammered the metal flat.
 - f. John ran.

- g. John ran his shoes threadbare.
- h. Mary pushed the boulder.
- i. Mary pushed the boulder over.

This class cuts across two classes of verbs commonly discussed: ‘simple activities’ and resultatives. When the ‘simple activities’ participate in this alternation, it tends to be via the addition of a resultative particle (e. g. *up*, *away*, *over*), When resultatives participate, it tends to be via the addition of a modifying predicate, as is the case with *hammer the metal flat* and *run his shoes threadbare* in the examples above.

3.4 Biclausal Quasi-Causals

In this section I am going to discuss a third set of verbs which, again, participates in a similar alternation between coming in a DO-flavour and not, but with an additional twist, namely that they only permit stative causal meanings and event CAUSE event configurations. This means that they do not allow BECOME. So for these verbs, rather than having a DO-flavour and a BECOME-flavour, they have a DO-flavour and a CAUSE-flavour. For complete lack of confusion (ironically) I will call these verbs ‘biclausal quasi-causals’. The verbs in this category are unified on the basis that i) they participate in

the action/causation alternation and ii) they are biclausal. Some examples of verbs in this category are *allow*, *offer*, *keep*, *explain*, *show* and *teach*.⁴ One might notice the similarities in this definition to periphrastic causative verbs as defined in e. g. Wolff et al. (2002) as well as some overlap in membership. The difference is that those are defined on the basis of whether they entail their complements rather than by whether they alternate between entailing and not entailing their complements. Essentially, my point is that these verbs do not always involve causation, and for that reason I want to avoid the term periphrastic causatives, even if it may seem apt. Likewise, even though verbs in this category are often brought up in discussions of force-dynamics, I am not talking about forces here and so to avoid confusion I will also not call them force-dynamic.

To make this point, I will start by presenting some examples of the verbs with different types of arguments. The important factor to note is that in some cases the content of the complements is defeasible and in others it is not. When the implied/intended effect of the actions are defeasible, the presumed effect or intended result of the action is not entailed to obtain, as can be seen by the fact that this result can be cancelled without leading to contradiction (Martin and Schäfer, 2012). After presenting some sets of

⁴*Explain* and *teach* of course are not always biclausal, but the relevant uses here are those where they are.

examples to illustrate the class, I will work through them in turn.

(29) *Teach*

- a. Mary taught John chemistry, but he didn't learn it.
- b. The mistake taught the travellers to be more careful, # but they didn't learn it.

(30) *Offer*

- a. John offered Mary a glass of water but she refused, so she didn't have a glass of water.
- b. The pile of hay in the corner offered the weary travellers a place to sleep but they didn't use it, # so they didn't have a place to sleep.
- c. John's supervisor offered him the opportunity to present at conferences around the world. (Ambiguous: both readings possible)

(31) *Explain*

- a. John [agent] explained why Mary was acting weird, but I didn't understand.
- b. John ['s presence] explained why Mary was acting weird, # but I didn't understand.

c. The storm explained the flood.

(32) *Allow*

a. Mary's mother allowed her to go to the party, but she didn't go to the party.

b. That John finally let his guard down allowed us to see his true colours, # but we didn't see them.

c. That the library is open late into the evening allows students the ability to work at odd hours, although they never do.

(33) *Show*

a. John showed Mary the picture but she didn't see it.

b. My experience with the American healthcare system showed me the importance of state-run healthcare # but I do not see the importance of state-run healthcare.

(34) *Let*

a. Mary let the students take books home with them, but none of them ever actually did.

b. The hole in the sink let the water flow through, # but no water ever actually did.

In each of the (a) sentences in the examples above, there is an Agentive subject argument. In these sentences, the presumed effect or intended result of their action is not entailed to obtain, as can be seen by the fact that this result can be cancelled without leading to contradiction.

It may seem unnatural to think of verbs such as *allow* as not involving results when it is clear that the act of allowing something does change something about the world. If a teacher allows something, for example, the world changes in such a way that the students actually go from being banned from something to being allowed it. However, this is only pragmatic. *Allow* can be seen as the description of a performative speech-act. These have real effects in the world, but this is separate from their structural make up and these two things should not be confused.

Structures that involve causation and/or changes of state (i. e. structures that contain CAUSE and/or BECOME) necessarily entail a result of some form. In every case, if X CAUSE Y, then Y. Likewise, regardless of causation, if BECOME X then X. So, the fact that the (a) examples in each of the the above can be continued with something that contradicts the presumed/intended result means that these structures contain neither CAUSE nor BECOME. This means that they contain only DO, which we know that they have because the subjects are Agents and DO is what introduces Agents into structures.

In the sentence in (30a) (*John offered Mary a glass of water*) for example,

the subject argument, *John*, is an Agent and the implied or intended result in the complement is not entailed to obtain, as can be seen from the fact that negating that implied result in a continuation does not lead to a contradiction. In this case, the defeasibility is possible because *offer* simply refers to a speech act performed by the Agent *John* as so:

(35) John DO [offer Mary a glass of water < event_{activity} >]

Since DO only needs some event which can be Agentively controlled and *offering* is an action that an Agent can perform, no result state is contained within the structure and thus no contradiction is present in (30a).

In (30b) (*The pile of hay in the corner offered the weary travellers a place to sleep*) on the other hand, the content of the complement cannot be negated in the continuation without leading to a contradiction. This means that in (30b) the content contained within the complement is entailed to hold, which makes it a result of the offering in this sentence. The reason for this is that in this sentence, *offer* cannot refer to the speech-act of offering because the argument in the subject position (the inanimate pile of hay) is not the sort of thing that can perform speech-acts. So rather than being introduced in the specifier of DO, *the pile of hay in the corner* must be the specifier of some other argument introducing element, specifically CAUSE. With CAUSE

there will be a result in the complement, either directly as a state or event description, or embedded within a BECOME change-of-state subevent. In either formation, there will be a result which is entailed to hold, which leads to the indefeasibility of (30b) and the other sentences where the content of the complement cannot be negated.⁵

When there are entailed results, there has to be CAUSE linking the Cause to the description of the result. We know that there are a number of different causal configurations, repeated here as a reminder: states can CAUSE states, events can CAUSE change-of-state events that involve BECOME, or events can CAUSE other, non change-of-state events. I will show here that for the biclausal quasi-causals only the first and last of these is possible.

Most of the indefeasible examples above are of the [state] CAUSE [state] configuration. The sentence *That the library is open late into the evening allows students the ability to work at odd hours* in example (32c) is a good example of this. Here, where both the subject and the complement describe states. In this sentence, *that the library is open late into the evening* describes a state in the world. This is akin to an individual level predicate such as ‘to be tall’. The complement also describes a state: the ability to work at odd hours is predicated of the students. The reason that the students have this ability is because the library is open late into the evening. That is, the

⁵This is to say that anything a state offers you is an offer you cannot refuse.

library's generous opening hours cause the result that the students are in the state of having the ability to work long hours. This result says nothing about whether the students do or do not actually use the library at these hours.⁶ Since the resulting state here is dependant on the first state obtaining, the two are linked with CAUSE and the structure respects ontological harmony. This is the [state] CAUSE [state] possibility.

We can look at another example. The sentence *John's supervisor offered him the opportunity to present at conferences around the world* in (30c) is ambiguous between the DO-flavour and the CAUSE-flavour. If John's supervisor is an Agent in the example (e.g. he tells John that he cannot be bothered to do so much travelling to present his research at conferences and asks John if he would like to go in his place), then one can, without contradiction, continue with "but after he refused, his supervisor offered the opportunity to someone else, so he no longer had the opportunity". The other reading would be one where, for instance, John's supervisor is so well known within his field that simply by association with him, John can easily walk into and present at conferences around the world. In that case, whether John chooses to do so or not, he still has the opportunity to do so. As above, this is stative causation. The result state is the state of John having the

⁶Although it appears that this sentence might be compatible with negation, attempts to do so can only target whether the students actually go to the library, not whether they have the ability to do so, which is the actual state in the complement.

opportunity. The Cause of this state is the fact that his supervisor is who he is. This effect is described in Martin and Schäfer (2012).

The ambiguous sentence with *explain* works the same way. On one reading of *John explained why Mary was acting weird* John is a Agent speaker who says something to the effect of “The reason why Mary is acting weird is because...”. On another reading, the reason that Mary is acting weird was because of John (e. g. Mary fancies John and always acts weird around people that she fancies). When verbs that can be speech-acts are given the sort of arguments that cannot speak, they have to relate to the meaning of the verb in some other way. CAUSE is able to introduce these non-Agent arguments in its specifier, though sometimes at the cost of lost semantic content. In the second reading of *John explained why Mary was acting weird* in (31b) for example, *explain* seems not to mean much besides CAUSE: *John explained Mary’s acting weird* seems to mean rather the same as *John caused Mary’s acting weird*. Here there is nothing wrong with considering both arguments of *explain* to be states. In the specifier: the state of John being there; in the complement: Mary being in the state of acting weird.

The examples with *show* again work the same. An Agent can perform the action of showing, but this does not entail that anyone else ends up *seeing*, while non-Agent states can be causally linked to situations where an individual is in the state of seeing something.

There are two examples in the above which might (at first) appear to work differently. We can consider them now.

- (36) a. The storm explained the flood.
b. The hole in the sink let the water flow through, # but no water ever actually did.

The example in (36a) might look as though both the storm and the flood describe events. So in this example CAUSE would link an event to an event. The system I lay out here would permit this, but since the overall interpretation of this sentence is non-eventive, a simpler conclusion is that in fact, in this case, both arguments refer to states. So rather than both describing events, both describe facts about the world: the fact of the storm explains the fact that there is a flood. That is, here, *the flood* is a result nominal (Grimshaw, 1990). This means that it describes the water on the ground rather than the process of water becoming on the ground. So, although both of the nominals can be used to refer to events, here they both refer to states and the structure works as expected when there is no Agent: specifically, state CAUSE state. Some more examples that work in the same way are below.

- (37) a. The foundation supports the house.

- b. The doorstep keeps the door open.
- c. The fan keeps the air moving.

In the first two of the examples above it is clear that the complements both describe states which are causally connected to the subjects.⁷ These subjects are also naturally interpreted as meaning something like *that the foundation exists* or *that that the doorstep is there*. I suggest that the last example works the same and means that the fact that the fan is in the state of blowing causes the air to be in a state of movement. I discuss the blurry line between states and non-agentive processes in greater detail below in section 3.5.2.

So in the sentence in (36b), the fact that there is a hole in the bucket (a state) causes one of two other states, depending on the interpretation one prefers. Either the hole causes the water to be in a flowing state, or the hole causes water to be in a state of ‘let’ (able) to flow. In either case, the structure does not involve a change-of-state subevent.

3.4.1 Summary

The biclausal quasi-causals undergo a similar alternation to the *provoke*-class psych verbs and the causativised activity verbs discussed in the previous

⁷One might question whether this involves a causative structure at all or whether it is simply stative. I have included it because of how it contrasts with similar sentences which are clearly non-causative such as *The wall surrounds the window*.

sections. However, the other two classes are necessarily eventive and alternate between either coming in a DO-flavour where the event described is an action without an entailed result, or in a BECOME-flavour where an Agent is not required (when the *provoke*-class psych verbs come in the latter flavour they cannot have an Agent, the causativised activity verbs permit both Agents and changes-of-state in their structures because it is a particle rather than the category of the subject argument that controls the reading). With the biclausal quasi-causals, the alternation is between a DO-flavour and a CAUSE-flavour. In fact a unifying feature of these verbs is that they do not permit *become* in their structural makeup.

Although this might sound like a surprising conclusion, there is additional evidence to think that it is right. Although not all verbs that participate in the middle alternation involve changes-of-state, all transitive verbs that do involve changes-of-state can be ‘middled’ (Gisborne, 2020). None of the verbs in this category participate in the middle alternation, even when they occur in non-biclausal forms.

(38) Biclausal quasi-clausals do not middle

- a. # The importance of state-subsidised healthcare shows easily.
- b. # Mary allows easily.
- c. # Water flowing lets easily.

d. # Mary acting weird explains easily.

(39) Other verbs that seem similar do middle

a. Mary persuaded John to leave

→ John persuades easily.

The fact that *persuade* participates in the middle alternation tracks with the fact that it structurally entails a change-of-state. This can be further confirmed by the impossibility of negating the content of its complement event when the subject argument is an Agent which contrasts with the verbs in this category as well as the other categories discussed in this chapter.

(40) a. Mary persuaded John to leave # but he wasn't convinced

b. John comforted Mary, but she wasn't comforted

How these verbs differ from the other categories of verbs in this chapter is that while all of them have a DO-flavour variant where the event describes is an action which must be undertaken by an Agent, this category is incompatible with structures involving changes-of-state. Rather, when their meaning is causal, CAUSE can only link states to states and cannot link an event to a change-of-state event.

3.5 Conclusion

3.5.1 Chapter Summary

In this chapter I have described three categories of verb that alternate between causal and non-causal variants. The first category is the *provoke*-class psych verbs. These alternate on the basis of the ontological category of the subject argument. When the subject is an Agent the overall event is an action undertaken by the Agent. In this DO-variant, there is no entailment that the implied/intended effect of the action actualises. When there is no Agent subject, the structures involve BECOME and the content of the complement is entailed.

The causativised activity verbs also alternate between a DO-variant and a BECOME-variant, but with these it is not only the subject argument that is responsible for the distinction. For these verbs, the BECOME-variant relies on the presence of a resultative particle (or other resultative secondary predication). When this is present, the structures must involve BECOME and the results are entailed. If this particle/secondary predication is not present, then the subject argument must be an Agent because in order for the event to be something other than a change-of-state (which without the particle/secondary predication it cannot be), it must be an action which in turn must be undertaken by an Agent.

Lastly, the category of biclausal quasi-causals also come in a non-causal version and a causal version. Like the *provoke*-class psych verbs, they are non-causal when the subject argument is an Agent. Here, these verbs describe actions, specifically speech-act like actions. When the subject argument is not an Agent, the content of the complement is required to hold. Unlike the other categories in this chapter, however, in these cases there cannot be a change-of-state, and the complement cannot refer to a change-of-state subevent. Rather, for these, the causal link is a stative one.

There are other categories of verbs which are related to the concepts of causation, entailment and variation in interpretation. One example of this is verbs of creation. However, since this is a tangential discussion, I have not included it here, though see Appendix A for several pages of musing on the matter. Future and further research may illuminate this category more completely.

3.5.2 A Broader Implication

At the beginning of this chapter, I stated that, disregarding processes, there are two ways to be an event in my system. The first is by being an Agent controlled action, which are associated with DO. The second is by being a change-of-state, which are associated with BECOME. I have not said anything

about simple processes, which is part of what I will do here.

Underlying what I have said in this chapter, as well as the system itself, are two theoretical outcomes. The first conclusion of my system that I have not yet discussed explicitly is that it suggests viewing simple, non-agentive processes as being Davidsonian states, further blurring the line between states and non-agentive processes.⁸ This was touched on briefly towards the end of section 3.4. The second outcome is, in part, a consequence of the first outcome. Specifically, the facts about the blurred state/event distinction suggest entirely abandoning the project of establishing a correlation between Aktionsarten and the Dowtyesque primitives DO, CAUSE, and BECOME. To begin with, let us consider the first outcome. For illustration, consider the following sentences:

- (41) a. John rustled the trees.
b. The wind rustled the trees.
c. John flew the flag.
d. The river ran.

Flags flying, trees rustling, and rivers running all involve movement, which has led to these typically being aspectually classified as processes/activities.

⁸The event/state distinction is already blurred; Davidsonian states, for example, meet all the criteria for eventhood yet are still considered states (Maienborn, 2008, 2019). All I do here is suggest putting everything in the blurry part in the same category.

However, I suggest that many of these cases should simply be classified as belonging to the same category as states. For example, the sentence in (41d) meets various diagnostics for statehood, such as not being able to be the complement to perception verbs and not having a habitual interpretation in the simple present. *The river runs* does not tell you about something that the river does, but rather about an inherent property of rivers.

Rustle and *fly* are causative verbs, as can be seen by their participation in the causative-inchoative alternation. This means that the structures contain CAUSE. In (41a) and (41c) the subject argument is an Agent and in (41b) it is an event. This means that in order to maintain ontological harmony, the complement of CAUSE must be an event as well. In each of these, the result of the action or event described by the subject is that the internal argument goes from not doing something to doing it. This is structurally associated with a BECOME layer.

BECOME takes an internal argument and a predicate applied to it in its complement. In the examples here this means that it takes *rustle* and applies it to *the trees* and *fly* and applies to *the flag*. I take these predications to be stative, with the interpretations being that *John (did something which) caused the trees to be in the state of rustling* and *John (did something which) caused the flag to be in the state of flying*. So, flowing, rustling and flying can be viewed as being state descriptions predicated of the internal arguments.

Rivers can be in states of flowing and flying is one of the states a flag can be in. This is akin to attributing a stative but not eternal predicate to an individual, for example *John is in year 8* or *Mary lives in Edinburgh* (i. e. stage-level predicates). Just like one can say both *The river flows* and *The river is flowing* one can say *Mary lives in Edinburgh* or *Mary is living in Edinburgh*. All this means is that the states hold presently even if they may not hold at every point in time. It does not mean that they are not states. Viewing non-agentive processes in this way, of course, requires an expansion of the category of things we consider stative to include non-agentive processes.

If we accept this, then we are led to the second outcome, namely that there can be no correspondence between Aktionsarten and the primitives DO, CAUSE, and BECOME. In these examples, while I suggest that the complement of BECOME should be seen as stative, it is also clear that there is nothing telic about flags in the state of flying or trees in the state of rustling, as can be seen by the fact that modification with *in an hour* is impossible.

- (42) a. The trees rustled # in an hour.
 b. The flag flew # in an hour.

Since these are what the complement of BECOME contains, even the change-of-state primitive BECOME cannot be associated with telicity. As a reminder,

I have already described that DO cannot be associated with either telicity or duration either. This is on the basis that the events an Agent can DO range from semelfactives like knocking, processes like running (durative, atelic), accomplishments like walking to the shop (durative, telic), and so on. CAUSE, as I have discussed at great length, can not be seen to be associated with any classification on the basis of Aktionsarten. What this means is that these primitives and sublexical aspect are not reducible to or definable in relation to each other. They must be maintained as separate systems.

Chapter 4

All Accomplishments Culminate

4.1 Introduction

In the previous chapter I described alternations between DO-flavours and BECOME/CAUSE-flavours of verbs in English. The three categories of verbs I discussed displayed different but related alternations. The *provoke*-class psych verbs alternate between their DO-flavour and their BECOME-flavour on the basis of their subject argument (if it is animate, then they are in the DO-flavour, if it is inanimate then they are in the BECOME-flavour). Causativised activity verbs were seen to also alternate between DO and BECOME-flavours, but on the basis of resultative particles or predicates rather than on the basis of their subject arguments. Lastly, the biclausal quasi-causals behave partly

like the *provoke*-class psych verbs in that they again alternate on the basis of their subject argument, but for this class the alternation is between the DO-flavour when the subject argument is animate and the CAUSE-flavour when it is not, rather than the BECOME-flavour.

These patterns of alternations are not unique to English. In fact, alternations related to the ontological category of the subject argument appear to hold up across languages (Martin, 2016; Martin and Schäfer, 2012).

(1) Korean

- a. nna-nun changmwun-ul kkay-ess-una, changmwun-i an
 I-TOP window-ACC break-PERF-but window-NOM NEG
 kkayci-ess-ta.
 broken-PERF-DEC
 ‘I broke a/the window, but the window did not break’
- b. Kangpwung-i yulichang-ul kkay-ess-una # yulichang-i
 strong.wind-NOM window-ACC break-PERF-BUT window-NOM
 an kkay-ci-ess-ta.
 NEG break-INCHO-PERF-DEC
 ‘A strong wind broke the window # but the window did not
 break.’

(2) Abui (Papuan)

- a. Na ha-kaai haba
 1.SG.AGT 3.UND.PAT-make.fall.PERF but
 da-kai naha.
 3.AGT.PAT-make.fall.IMP not
 ‘I tripped him but he didn’t trip.’

- b. Wii ha-foka ha-kaai, # haba
 stone be.big 3UND.PAT-make.fall.PERF but
 da-kai naha.
 3AGT.PAT-make.fall.IMP not
 ‘The large stone made it fall, but it didn’t fall.’

(3) French

- a. Ils l’ont réparé mais cela ne fonctionne toujours pas.
 They it.have repaired but this NEG works still NEG
 ‘They repaired it but it still doesn’t work.’
- b. Le choc l’a réparé # mais cela ne fonctionne
 The shock it.have repaired but this NEG works
 toujours pas.
 still NEG
 ‘The shock repaired it but it still doesn’t work.’

(4) German

- a. Hans schmeichelte Maria, aber sie fühlte sich überhaupt nicht
 geschmeichelt.
 ‘John flattered Mary, but she felt absolutely not flattered.’
- b. Dass sie als Erste ausgewählt wurde, schmeichelte Maria, # aber
 sie fühlte sich überhaupt nicht geschmeichelt.
 ‘That she was chosen first flattered Mary, # but she felt
 absolutely not flattered.’

In each of the (a) sentences above, the subject argument is animate and the presumed intended result of their action is not entailed to hold, which is to say that each of these exemplifies the DO-flavour of these verbs. The (b) examples are not defeasible. In these, the non-animate subject forces a result entailment. The cognitive conceptualisation behind this difference is outside of the scope of this thesis, but Martin (2015), citing the observation from

Truswell (2011) reformulated in (5) below, suggests that “this difference is essentially due to a difference in the conceptualization of the beginning of agentive vs. nonagentive causation events. Agentive causation events have clear left boundaries even when not efficacious yet, because they start as soon as the agent’s intention is put into action...On the other hand, nonagentive causation events typically start once the encoded result starts” (p. 258).

- (5) a. A: (Observing the sea advancing towards a fragile-looking sandcastle, but not yet touching it): What is the sea doing?
B: # It’s destroying that sandcastle.
- b. A: (Observing Ana advancing towards a fragile-looking sandcastle, but not yet touching it): What is Ana doing?
B: She’s destroying that sandcastle.

Malagasy appears to display a similar phenomenon to the languages mentioned above where culmination appears to be associated with a particular verb form but not others. However, it is not exactly the same and this will be the topic of the present chapter. Although it appears that the forms which do not entail culmination could be analysed as exemplifying the DO-flavour of verbs and the other form as being the BECOME-flavour, I will provide evidence that in fact, only the former forms of verbs are relevant for the sorts of alternations that I have been discussing and for the theory presented in this thesis, and that the latter form exemplifies some other phenomenon.¹ The ones that are defeasible have been termed

¹Though I will also be pointing out that the latter creates an additional context

non-culminating accomplishments in the literature, but in this chapter I argue that they are not accomplishments, but rather are the DO-flavour with agentive subjects, and may only be possible with degree-achievement like predicates with non-agentive subjects. The system I set up in this thesis provides a language for this.

There are two main points to this chapter and reasons for it being here. The first of these relates to the idea of non-culminating accomplishments generally. There has been an assumption that an unusual phenomenon that needs explanation is the fact that certain verbs that are expected to entail culmination do not in Malagasy (among other languages that I do not discuss here). The Vendlerian classes should be seen as being meta-theoretical properties of predicates, not real categories that verbs themselves fall into. The only reason “non-culminating accomplishments” have been a question at all is that people have believed in accomplishments as a class rather than as a description of predicates with particular properties (i. e. duration, telicity). In this thesis I have already discussed that in English and across other languages, verbs can come in DO-flavours where culmination is not entailed. In this chapter I suggest that the forms in Malagasy that do not culminate are of this DO-variety and thus should not be expected to entail culmination.

The second point is that there is a marked prefix in Malagasy which (generally) forces a culminating reading. Given the types of alternations I discussed in the last chapter, one might expect that I argue that the non-

where causal structures must be stative, further bolstering the idea that CAUSE cannot be eventive.

marked cases exemplify the DO-form of verbs while the marked cases (which entail culmination) exemplify a CAUSE or BECOME variant. I do not make this argument however because of evidence (which I will present in section 4.3.1) that this prefix attaches high in the structure, outside of the lexical level that my framework and the system I have described in the previous chapters is relevant to.

Although this chapter looks at Malagasy, Tagalog has been shown to display the same effects and alternations, so the analysis should extend to Tagalog as well (Travis, 2005).² I have chosen to focus only on Malagasy here for three reasons. Firstly, Malagasy is frequently discussed in relation to non-culminating accomplishments (a phenomenon which I argue does not exist). Secondly, the fact that there is a large body of literature is vital because, having not partaken in fieldwork of my own, I am reliant on a breadth of descriptions and examples from the existing literature. Lastly because the terminologies used in the Malagasy and Tagalog literatures are different, focusing on only one prevents confusion based on dissimilar terminologies. I do however draw on evidence from Tagalog, but only where absolutely necessary.

The structure of this chapter will be as follows. I will first provide some background to Malagasy, specifically as concerning some of the facts and literature related to these purported non-culminating accomplishments. I will then discuss the non-culminating form of these verbs and argue that they exemplify they DO-flavour for verbs. Next, I will provide three pieces of evidence that the culminating forms are an unrelated phenomenon that needs

²In fact, the relevant prefixes are cognates of each other in the different languages.

to be described independently rather than in contrast to the non-culminating form.

4.2 The Actor Topic Form Malagasy

4.2.1 Brief Background to Malagasy Grammar

Malagasy is a VOS (verb-object-subject word order) language with a rich morphological system where affixes attach to roots and perform functions such as verbalising, marking the subject argument's semantic role, and providing information about tense (Travis, 2006).

In Malagasy there are basically three types of voices - Actor Topic (AT), Theme Topic (TT) and Circumstantial Topic (CT). An example of the paradigm is given below. The root *sasa* 'wash' appears in three different forms *-manasa* when the Agent is the subject as in [(6)], *sasana* when the Theme is the subject as in [(7)], and *anasana* when the Instrumental is the subject as in [(8)]. (Travis, 2006)

- (6) Manasa ny lamba amin'ny savony ny lehilahy.
PRES.AT.wash DET clothes with' DET soap DET man
'The man washes the clothes with the soap.'
- (7) Sasan'ny lehilahy amin 'ny savony ny lamba.
TT.wash' DET man with' DET soap DET clothes
'The clothes are washed with the soap by the man.'

- (8) Anasan'ny lehilahy ny lamba ny savony.
 CT.wash'DET man DET clothes DET soap
 Literally: 'The soap is washed-with the clothes by the man.'

Neither the AT forms nor the TT forms entail culmination of the events described. In the examples below for instance, either is compatible with a continuation that cancels the implicature that the tree actually is cut at the end of the event (Paul et al., 2020).

- (9) Nanapaka ity hazo ity i Sahondra.
 PST-AT-cut DEM tree DEM DET Sahondra
 'Sahondra cut this tree.'

- (10) Notapahin'i Sahondra ity hazo ity.
 PST-TT-cut.DET Sahondra DEM tree DEM
 'This tree was cut by Sahondra.'

Each voice in Malagasy can be realised by a number of different forms, for example, the active voice (corresponding to the Actor Topic form) can be marked by any of the prefixes *mi-*, *man-*, *ma-*, and *maha-* (Paul et al., 2020) along with their past/future tense forms. In addition to being a voice marker, the last of these prefixes *Maha-* (*Naha-* in the past tense, henceforth both are unified as the 'AHA form') is a marked prefix that is associated with culmination where no culmination is entailed in the unmarked AT forms Keenan and Manorohanta (2001). Through the rest of the chapter all of the examples I use are in active forms (and as such I refer to the unmarked ones as the Actor Topic (AT) form as is standard in the literature) but this does not mean that the same facts about culmination do not apply to the Theme

Topic (TT) form.

4.2.2 Non-Culmination in Malagasy

Accomplishment predicates are separated from other aspectual categories by virtue of having both duration and telicity, i. e. some natural endpoint which is lexically encoded by the meaning of the predicate. Having duration (rather than occurring instantaneously) separates them from achievements, wherein the time of initiation is materially indistinguishable to the time of culmination, and having telicity separates them from activity predicates, where no endpoint is entailed by the meaning of the predicate. A grammatical effect of the fact that accomplishments entail an endpoint in their meaning is that continuations which attempt to challenge or contradict that endpoint are impossible and lead to contradictions, as can be seen in (11) below.

- (11) a. Mary destroyed the building # but the building was not destroyed.
b. John gathered the students # but they were not gathered.

The continuations target and (attempt to) negate the underlying result states encoded in the meanings of the predicates. For example, the end result of ‘gathering the students’ would be that the students are in a resultant gathered state. These negations fail because these resulting states are entailments of the predicates, so cancelling them leads to a contradiction.

As noted, it has been observed that Malagasy allows predicates involving these sorts of verbs to be cancelled in neutral Actor Topic forms (marked

AT) but not in marked forms (marked AHA) without leading to contradictory meanings.³

- (12) Nandrava ny tranony Rabao fa tsy voaravany.
 PST-AT-destroy DET house-3 Rabao COMP NEG VOA-destroy-3
 ‘Rabao destroyed her house, but it didn’t get destroyed.’

In the example above from Paul et al. (2020), without the cancellation, the implication would be that the house did get destroyed, but with the additional context, this implication is cancelled without leading to contradiction.

- (13) a. namory ny ankizy ny mpampianatra
 PST-cause-meet DET children DET teacher
 ‘The teacher gathered the children together.’
 b. . . . nefa tsy nanana fotoana izy
 . . . but NEG PST-have time 3P
 ‘. . . but s/he didn’t have time.’ (Travis, 2019)

Just as in the above example, even though when used on its own, the part of the sentence in (13a) implies that the teacher did in fact gather the students, negating that implicature in a continuation does not make the sentence contradictory.

Verbs used in the AT form permit the content of their complements to be negated. The negation can target either the entire event (e. g. despite trying, Rabao could not even get one brick loose from the house) or only a subpart

³The marked AHA prefix is one of several that corresponds to the active voice in Malagasy, other active prefixes do not have the same relevant effect that AHA does, so they are not classically distinguished in the literature on culmination. I am consistent in this chapter about marking the neutral forms AT and the marked form as AHA.

of it (e.g. she managed to dismantle some parts of the house, but some other part still remains standing) (Paul et al., 2020). The former is known as a ‘failed attempt’ reading and the latter as a ‘partial success’ reading (Tatevosov, 2008). This is the non-marked form for verbs in Malagasy.

This form contrasts with another form: when the same roots are used with the AHA form of the active prefix, this becomes impossible, and attempts to negate the contents of the complements lead to contradictory meanings.

- (14) Naharava ny tranony Rabe # fa tsy voaravany
 pst-AHA-destroy DET house-3 Rabe # COMP NEG VOA-destroy-3
 mihitsy.
 at.all
 ‘Rabe was able to destroy his house but it didn’t get destroyed at
 all.’

This form is incompatible with either the failed attempt or the partial success readings. *Naha-* is the past tense of *maha-*, a prefix which means ‘to be able to’ (Malagasy speaker⁴, p.c.). The AHA form of verbs are marked and their use over the unmarked form correlates with one of an ability reading or an accidental reading. This form will be discussed in more detail in the next section.

Tagalog, another Austronesian language, displays the same sort of effects.⁵ Verbs can be used in two different forms, the Neutral form (N) and the Ability and Involuntary Action (AIA) form (Dell, 1983).

⁴They chose to remain anonymous.

⁵I use a Tagalog example here over a Malagasy one because I am reliant on examples from the literature and I was unable to find a Malagasy example in the literature which was as complete in terms of exemplifying the negation of both the neutral and the marked form.

(15) ITINULAK ni Ben ang bato, pero hindi niya NAITULAK,
 N-PF-push GEN Ben NOM rock, but not GEN-he AIA-PF-push,
 dahil napakabigat niyon.
 because very-heavy GEN-that
 ‘Ben pushed the rock, but he could not make it move, because it was
 very heavy’ (Dell, 1983)

(16) NAITULAK ni Ben ang bato.
 AIA-PF-push GEN Ben NOM rock
 (a) ‘Ben managed to move the rock by pushing it.’
 (b) ‘Ben accidentally moved the rock by pushing it.’

(Dell, 1983)

In the Neutral form in (15), *ITINULAK ni Ben ang bato* just means that Ben did some action with the intention of making the rock move (Sato, 2020). Without any other context, the implication is normally that the rock actually did move, but this is not entailed in the meaning of the sentence. This means that the implied result can be cancelled without leading to contradictory meanings. The AIA form on the other hand, is compatible with two different meanings, one being that Ben managed to push the rock (intentionally) and the other that through some non-intentional action (e. g. tripping against it) the rock moved because of Ben. In either interpretation, the rock necessarily must have moved as a result of the pushing and continuing the sentence with an attempted cancellation would be contradictory.

The Neutral form and the AIA form can be thought of as involving two meaning components, the maneuver (the action by the Agent) and the result (Dell, 1983). The Neutral form entails only that the maneuver takes place,

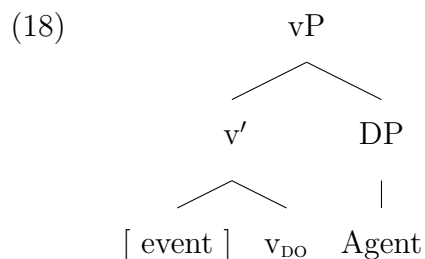
while the AIA form entails only that the result takes place. In the positive (i. e. non-negative) AIA form where some result is entailed, some other action (intentional or not) must also have occurred. This is a fact about the world rather than about syntax: without some causing factor (be it an Agent, a natural force, an event, or otherwise), things do not happen. In sentences with Agent subjects and change-of-state transitive verbs, if the Agent is not a participant in the change-of-state event, the sentence will be infelicitous. In the negative form however, it can be seen that the relevant meaning component in the AIA form is only the result.

- (17) a. hindi ITINULAK ni Ben ang bato.
 NEG N-PF-push GEN Ben NOM rock
 ‘Ben didn’t push the rock.’
- b. hindi NAITULAK ni Ben ang bato.
 NEG AIA-PF-push GEN Ben NOM rock
 ‘Ben didn’t (manage to) push the rock.’ (Dell, 1983)

The negation of the neutral form in (17a) again targets only the action and negates that Ben performed the action of applying force to the rock. The negation of the AIA form on the other hand targets only the result. It is underspecified for whether Ben did or did not perform a pushing action. (17b) is compatible with both a situation where Ben pushed the rock but it did not move and with one where he never even touched the rock at all (Dell, 1983).

The non-marked neutral/AT forms of verbs describe only the action of an Agent and do not entail a change-of-state or result, even when the root of the verb implies one with no other context. As such, they have been considered

to be non-culminating accomplishments because of the fact that the verbal root does correspond with results in other contexts. However, since the event structure is compatible with the DO variant of verbs it should rather be associated with the type of structure in (18) below where v_{DO} introduces an Agent argument in its specifier and contains an event description in its complement where the event described is simply an action undertaken by the Agent subject in the sentence.



The tree above for example might be a representation of the sentence in (14). Although with no other context provided *Nandrava ny tranony Rabe* implies that the house gets destroyed, since this is not an entailment, as can be seen from the fact that no contradiction is garnered by continuations which would negate this implied result, there is no change-of-state subevent present in the structure. So for this sentence, the structure given in (18) is sufficient. The implied result does not get structurally represented.

It might at first seem odd to treat the predicate in this sentence as a simple action/activity predicate. However, I suggest that this is no different than a predicate like *push the rock*. In both English and, as Dell (1983) describes, in Tagalog's Neutral form, there is no problem conceptualising the act of pushing a rock as an activity that does not entail any result. *John*

pushed the rock (but it didn't move) describes an event where John performs the action of pushing on a rock, with no entailed result of his doing so.

Associating the non-marked AT form with being the DO variant of verbs tracks with the observation that appearance in the AT form in Malagasy is highly correlated with the Agency of the subject argument. The subject arguments in the AT form have been claimed to necessarily be agentive, just as is the case for the argument that v_{DO} introduces in its specifier (Paul et al., 2020). In Malagasy, however, Agentivity has been claimed to be not as strongly correlated with animacy as in some other languages (such as English) which has been used to account for the well-formedness of sentences such as the below.

- (19) Nandoro ny tranoko ny afo nefa tsy may tanteraka.
PST-AT-burn DET house-1SG DET fire but NEG burned completely
'The fire burned my house but it isn't burned completely.'

Paul et al. (2020) notes that compared to an example such as (12), the example in (19) does sound somewhat marked, although not entirely ungrammatical. From the perspective of my theory, I see there as being two options. The first option is that the claim above is correct and *the fire* is an inanimate Agent and thus can unproblematically be introduced by DO, which requires no additional modifications. Alternatively, it may be that in fact the subject argument being inanimate does have some effect.

It may be found that a sentence like (19) is only defeasible in the 'partial success' sense and not in the 'failed attempt' sense. This would mean that unlike when 'Rabao destroys her house (but not completely)' where she can

be understood to either have destroyed some amount but not all of her house or can be understood to not even have removed a single brick, it might be that when ‘a fire burns a house but not completely’ some amount of the house does actually need to have been burned and that one could not say *The fire burned the house but the flames never even touched it*. If that is the case, then in AT forms with inanimate subjects only the partial success meaning is available.

If only the partial success meaning is available, one would expect this to mean that only verbs which can be construed as ‘degree achievements’ would be compatible with inanimate subjects. If this is that case, then these Malagasy examples would in fact entail a change-of-state with inanimate subjects, but this change-of-state may be movement by degrees toward some endpoint, rather than entailing actually reaching that endpoint. This is the same as for sentences with degree achievement verbs in English, e.g. *The chef cooled the soup, but not completely* vs. *The north wind cooled the late summer air, but not completely*.

Whichever analysis turns out to be correct (that is, whether in Malagasy some inanimates really are Agents and therefore can be introduced by DO, or whether when the subject is inanimate some form of change-of-state is entailed and Malagasy demonstrates the same alternation as English and many other languages where animacy correlated with defeasibility) the key takeaway from this section should be that the AT prefix, being unmarked, provides insight to the meanings of the verbal roots and that what can be seen is that since the verbal roots do not entail culmination even where it might be implied, the events described should be seen as referring to actions

undertaken by Agents and as such should be associated with the DO-flavour of verbs.

To summarise, there are two potential analyses: either i) in Malagasy some inanimates really are Agents and therefore can be introduced by DO, or ii) when the subject is inanimate, some form of change-of-state is entailed, in which case, Malagasy demonstrates the same alternation as English and many other languages where animacy correlates with defeasibility. Whichever analysis turns out to be correct, the key takeaway from this section should be that the semantic content of verbs is not modified by the neutral AT prefix. Furthermore, since verbal roots with this prefix do not entail culmination, even when it might otherwise be implied, the events described should be viewed as actions undertaken by Agents. As such, they should be associated with the DO-flavour of verbs.

Across language, a fact is that some verbs entail results in their meanings and other verbs do not. Languages differ in which verbs do and which verbs do not (as well as in which verbs do in some grammatical contexts but not in others). Compared to e.g. English, fewer verbs in Malagasy entail results within their root meaning, but there are some that do and these are incompatible with the neutral AT verb form and must occur in the AHA form instead. Perception verbs for example never occur in the neutral form in Malagasy (Travis, 2010, p. 214).

- (20) Verbs that must take aha- (Rabenilaina, 1986, p. 372)
- a. mahazo ‘to understand, to seize’
 - b. mahalala ‘to know’
 - c. mahatsiahy ‘to feel, to remember’
 - d. mahatsikaritra ‘to remark’

- e. mahatsiaro ‘to perceive’
- f. mahahay ‘to know’ (>mahay)
- g. mahahita ‘to see’ (>mahita)

The neutral AT prefix is non-marked and, beyond indicating the thematic role of the subject argument, does not have additional semantic meaning associated with it. This contrasts with the AHA form I discuss in the next section where the AHA prefix carries additional semantics (Keenan and Manorohanta, 2001; Travis, 2019). What this means is that even though there is a grammatical alternation between the AT form and the AHA form, this is a superlexical alternation where the prefix associated with the AT form is semantically null while the prefix associated with the AHA form is not. This means that my theory is only relevant for the AT form, where the neutral prefix does not contribute external material to the lexical structure. So even though it is the focus of the next section, the effects that the AHA prefix have on the sentence meaning is beyond the scope of my theory. This may be surprising because on the surface it appears that my claim should be that ‘The AT form correlates to the DO-variant and the AHA-form to the BECOME variant because in the latter, results are entailed’. In the next section I will show why this is not the claim I make and why these variants should not be considered a semantic alternation.

4.3 Culmination with the Malagasy Prefix AHA

Unlike for the Actor Topic (AT) form of verbs, when the AHA prefix is attached to a root implied results are entailed to obtain. As such, continuations attempting to negate that result are infelicitous. This form is incompatible with either failed attempt or partial success readings.

- (21) Naharava ny tranony Rabe #fa tsy voaravany
 PST-AHA-destroy DET house-3 Rabe # COMP NEG VOA-destroy-3
 mihitsy.
 at.all
 ‘Rabe was able to destroy his house # but it didn’t get destroyed at
 all.’

- (22) a. nahavory ny ankizy ny mpampianatra
 PST.AHA.meet the children the teachers
 ‘The teachers gathered the children’
 b. # ...nefa tsy nanana fotoana izy
 ...but NEG PST.have time they
 ‘...but they didn’t have time.’

On the surface this might look like a telicity variation that fits within my theory. If this were the case my theory would say that since the results are entailed, the AHA prefix must add either CAUSE or BECOME to the structure, transforming the meanings from being actions as they are in the non-marked AT forms to being causatives. However, the contribution of the AHA form is not as straightforward as this.

The AHA form is marked because it encodes ability and/or involuntary

(accidental) action meanings. Most of the time, the prefix is understood by speakers to mean ‘be able to’, or, in the past tense ‘was able to’ or ‘managed to’ (Malagasy speaker, p. c.). When present, the ability readings are generally encoded in the glosses in the literature with ‘was able to’ or ‘managed to’, as was done in (21) above. This is partly to differentiate the reading from the accidental reading and partly to capture an implication that they carry that the action was not entirely straightforward. Presumably, when an action is entirely straightforward, the neutral AT form would be used. Even though these would not entail the result necessarily, without context to the contrary they would successfully imply it and that would suffice. To communicate that the result was achieved in spite of difficulty, the AHA form is used which implies difficulty but also expresses explicitly that the end state was reached in spite of that.

Involuntary action readings are also possible with the AHA form. The sentences in the examples below are ambiguous between a ‘manage to’ reading and an accidental one.

(23) Nahasotro poizina izy
 PST-AHA-drink poison 3
 ‘He drank poison’ Paul et al. (2020)

(24) Nahapetraka teo ambony tsilo i Soa
 PST-AHA-sit PST-LOC on thorn DET Soa
 ‘Soa sat on a thorn’ Paul et al. (2020)

It is world knowledge that leads one to assume the accidental over the ability reading in these cases rather than the grammar itself. The sentence in (24),

for example, could mean that in spite of the difficulty involved, Soa managed to succeed in sitting on a thorn, however, it is more likely that the sentence would be interpreted with the meaning that Soa ended up sitting on a thorn by accident, for example by not being aware of the thorn's presence when going to sit down. Generally, we think that people do not intentionally drink poison or sit on thorns. Given the right context however, the other reading may be chosen instead.⁶

The fact that the AHA prefix carries these additional meanings means that it contributes semantics to the structure in a way that the AT form does not. The system set up in my theory applies to lexical meanings, including structures where modifications are relevant at the lexical level. In the next section I will show that the AHA prefix is not lexical and attaches outside of this level and as such falls without the scope of my system.

4.3.1 The Superlexical Attachment Point of AHA

In this section I provide three pieces of evidence that the AHA prefix attaches high in the structure. The evidence for this comes from tense effects on the culmination entailment, intervening affixes, and adverbs with VP scope.

⁶I suspect that the accidental reading is related to the ability reading through some general mechanism. The same effect occurs in (at least) English, Czech, Finnish, Swedish, Bulgarian, Croatian, Tagalog, and two Salish languages, Skwxwú7mesh and St'át'imcets. Although notably, the Romance languages (at least Spanish and Italian) seem not to do this besides for in a more highly marked/ironic way than the other languages.

- (25) a. I managed to lose my keys = I accidentally lost my keys.
 b. I managed to get lost on my way home. = I accidentally got lost on my way home.

4.3.1.1 Tense Effects on Culmination

It has been noted that the AHA prefix only entails culmination in the past and future tenses but not in the present tense (Paul et al., 2020).

- (26) Mahafaty osivavy ny ambodia fa izy mbola tsy
PRS-AHA-dead goat DET wolf COMP 3 still NEG
hamono fotsiny.
FUT-AT-kill yet
'The wolf is able to kill a goat but it still hasn't done so.'

- (27) Mahaleha 200 km/hre ity fiara ity.
PRS-AHA-go 200 km/h DEM car DEM
'This car can go 200 km/h.'

When used in the present tense, AHA forms just attribute ability to the subject but do not entail that the event has happened. The sentence in (27), for example, can felicitously be used of a car which has just been produced and has never been driven (Paul et al., 2020). An entailment is again present in the future tense. One might wonder whether this is related to perfectivity, however, as the Malagasy past tense is compatible with stative predications, Paul et al. (2020) argue that this is not the case.

- (28) Hahatitra sakafo hoan' ny reniny i Be # fa tsy
FUT-AHA-send food ACC DET mother.3 DET Be # COMP NEG
ho raisiny ilay sakafo.
FUT receive-3 DEF food
'Be will be able to send food to his mother but she won't receive the food.'

The absence of the entailment in the present tense means that AHA does not add telicity to the meaning of roots. The interaction with tense shows that the attachment point must be higher up in the structure. Telicity is a part of lexical aspect, while tense is outside of it (in the outer aspect or viewpoint aspect).

4.3.1.2 Intervening Affixes

Affixes intervening between AHA/AT and the root would be evidence that these prefixes' attachment point is structurally higher. Although I was unable to identify this in Malagasy, the Tagalog cognate prefix to the Malagasy AHA form can be seen to occur with intervening affixes. The cognate Tagalog affix is referred to the Ability and Involuntary Action form (AIA).

- (29) Na-i-tulak ni Ben ang bato # pero hindi ito
 AIA.PFV-CV-push GEN Ben NOM rock # but NEG this
 g<um>alaw dahil napaka-bigat nito
 <NTL.PFV.AV>move because very-heavy this.GEN
 'Ben managed to push the rock # but it didn't move because it was
 so heavy'

(Alonso-Ovalle and Hsieh (2018))

Here the conveyance voice marker *-i-* can be seen to intervene between the AIA affix and the root *push*. Both voice marking and aspect marking affixes can be seen to intervene between the AIA marker and the root. This can be seen in tables below, reproduced from Alonso-Ovalle and Hsieh (2018).

In Table 4.1 above, the conveyance voice marker again can be seen to intervene between the AIA affix and the root. In Table 4.2, Imperfective (IMPF) aspect marker and the Prospective (PROS) aspect marker again

	Neutral	AIA
AGENT	b< um >ukas	naka -bukas
PATIENT	b< in >ukas*	na -bukas*
LOCATIVE	b< in >kus- an	na -buks- an
CONVEYANCE	i -b< in >ukas	na-i -bukas

Forms marked * are slightly marginal

Table 4.1: Sample voice forms for *bukas* ‘open’

	Neutral	AIA
(INF)	buks- an	ma -buks- an
PFV	b< in >uks- an	na -buks- an
IMPF	b<in>u -buks- an	na-bu -buks- an
PROS	bu -buks- an	ma-bu -buks- an

Table 4.2: Sample aspect forms for *bukas* ‘open’

intervene between the AIA affix and the root.

The fact that the AIA affix attaches outside of affixes marking both voice and aspect means that AIA attaches higher in the structure. If the effect that the AIA form has on the semantic meaning occurs outside of the level of voice and aspect, then that semantic effect must take place outside of the lexical level, which means that the effect it has, whatever that may be, is external to the system that I set up in this thesis.

4.3.1.3 Adverbs with VP Scope

If an adverb can be seen to modify the root, or the root combined with any internal arguments, while not also modifying the AHA affix, this would mean that a predicate is formed before the AHA affix is applied. This would be further evidence that AHA does not modify at the lexical level but rather at a level higher up in the structure and external to my system. This is the case in Malagasy.

- (30) Nahaorina sasaka ny tranony io vehivavy io.
 PTS.AHA.build half DET house.3 DEM woman DEM
 ‘This woman managed to build her house halfway.’

(Paul et al., 2015)

(31) Saika nahaorina trano iray io vehivavy io.
 almost PST.AHA.build house one DEM woman DEM
 ‘This woman almost managed to build a house.’

- i. She changed her mind before even starting the construction.
- ii. She started but did not complete the house.

(Paul et al., 2015)

In (30) the interpretation is that the woman managed to build half a house, not that she halfway managed to build her house. That is, she did fully manage to do something, specifically building half a house. *Build* here must combine with the internal argument *house* forming a predicate that is first modified by *halfway* and subsequently by the effect of the AHA affix. In (31) it can be seen that *almost* is able to scope over AHA but is also able to modify at a level below the scope of AHA.

4.3.1.4 Summary

The evidence presented above shows that AHA attaches higher in the structure than at the lexical level. This means that the semantic effect it has takes place at the superlexical level. Since my system is related to the lexical and sublexical levels, this means that AHA’s impact is outside of my system. One might think that since AHA attaches at a higher point in the structure, surely the AT affix does too and wonder whether this means that the non-culmination evidenced in the AT forms also falls outside of my system. This is not the case because the neutral AT form does not have a semantics but only serves to verbalise roots (Keenan and Manorohanta, 2001). This

means that the semantics that can be seen is really the lexical semantics of the root. The AHA form on the other hand contributes additional semantics to the structure. This is to say that AT vs. AHA is a superlexical alternation between a semantically null affix and an affix with semantic content.

4.3.2 The Malagasy Culminating Form as Further Evidence that Causation is Non-Eventive

Even though the AHA affix attaches too high for the culmination to be explained within my system, it is still of interest to note that these forms provide a further piece of evidence that linguistic causation must be non-eventive.

Roots in Malagasy can be either eventive or stative (Phillips, 2000). Roots that refer to properties are stative, roots that refer to events are eventive, and roots that refer to things can be either, depending on what the thing is. Examples of this are below (reproduced from Phillips (2000)).

- | | | | |
|------|--|--|--------------------------------|
| (32) | Eventive roots (abilitive <i>maha-</i>) | | |
| | <i>Nouns</i> (THING) | | <i>Verbal passives</i> (EVENT) |
| | hoby ‘acclamations’ | | tapaka ‘cut’ |
| | kafara ‘complaint’ | | resy ‘vanquished’ |
| | sava ‘action of separating’ | | laitra ‘penetrated’ |
| | tohitra ‘resistance’ | | tapitra ‘finished’ |
| | havokavoka ‘action of hitting’ | | rovitra ‘used’ |
| | | | |
| (33) | Non-eventive roots (causative <i>maha-</i>) | | |
| | <i>Nouns</i> (THING) | | <i>Adjectives</i> (PROPERTY) |
| | loto ‘filth’ | | tsara ‘good’ |
| | dio ‘cleanliness’ | | fmarilla ‘happy’ |
| | tsatso ‘tastelessness’ | | kamo ‘lazy’ |
| | ando ‘moistness’ | | bendry ‘prudent’ |

hery ‘strength’

ratsy ‘bad’
maina ‘dry’

When a verb is formed with AHA from a stative root, a particular restriction is placed on the subject argument. Specifically, the subject argument cannot be interpreted as being an Agent (Phillips, 2000).

- (34) a. # Mahatsara ny trano Rabe.
PRS-AHA-good DET house Rabe
‘Rabe makes the house beautiful.’
- b. Mahatsara ny trano ny voninkazo.
PRS-AHA-good DET house DET voninkazo
‘The flowers make the house beautiful’
- (35) a. # Mahamena ny akanjo Rabe.
PRS-AHA-red DET clothes Rabe
‘Rabe makes the clothes red’
- b. Mahamena ny akanjo ity loko ity.
PRS-AHA-red DET clothes this colour this
‘This colour makes the clothes red.’

In the examples above, Rabe cannot be interpreted as the agentive subject in an event. In (34), Rabe can only be understood as some source of beauty, as if he is the decoration in the house rather than the decorator of it. Likewise in (35), the only possible interpretation is that something about Rabe, for instance some chemical he excretes through his skin has the property of turning clothes red (Phillips, 1996). When verbs are formed from AHA combined with a stative root, arguments that are typically processed as referring to animate entities sound strange, and one is forced to conjure

implausible scenarios.

Roots that are inherently eventive allow for Agentive subjects and eventive interpretations, while roots that are inherently stative will lead to ‘ability’ readings where the sentence encodes a stative causal meaning between the subject argument and the meaning of the root (Phillips, 1996). In the examples above, the AHA affix attaches to an adjectival root rather than to an eventive root and in these cases, while animate subjects are possible, they cannot be interpreted as being Agents (Travis, 2005). With the Actor Topic form of the verb in (34) ‘*manatsara*’ meaning ‘improve’, the intended reading where Rabe is the Agent of an event is felicitous (Paul et al., 2020).

The full details of structures involving AHA is outside the scope of this thesis, but what is clear is that in these cases there is a causal link between the necessarily non-eventive Cause and the content of the predicate. This causal link is associated with the primitive CAUSE. When the complement of CAUSE is a stative root combined with an internal argument that the stative property is applied to (as it is in these examples), the principle of ontological harmony forces a stative interpretation on the subject argument of the sentence. If CAUSE were eventive rather than non-eventive, some mechanism would be needed to ‘override’ that inherent eventiveness in cases like these. As such, this systematic effect in Malagasy (wherein stative roots combined with AHA lead to stative causation) provides further support for the system I laid out in Chapter 2 and the idea that linguistic causation in non-eventive.

4.4 Conclusion

In this chapter I have suggested that the neutral AT forms of verbs in Malagasy should be treated as simple action verbs, containing Agents that are introduced in the specifier of DO. This is to say that they should not be treated as change-of-state verbs that behave unusually by not entailing a change-of-state. One can think of the situation like so: across languages verbs that imply a change-of-state either do or do not entail that change-of-state as part of their meaning. I will call these options ‘change-entailing’ and ‘non-change-entailing’ here. One way in which languages differ is in terms of which of these categories which verbs fall into. English, for example, puts a good number of verbs into the change-entailing category, which is why in English it would be a contradiction to say that a teacher gathered the students and follow it up by stating that yet the students were not gathered. Malagasy, on the other hand, puts most verbs (or meanings of roots from which verbs are morphosyntactically formed) into the non-change-entailing category, though not all verbs as is evidenced by the existence of verbs which are not compatible with the neutral AT form. At the far end of the spectrum, it has been seen that in two Salish languages (Skwxwú7mesh and St’át’imcets), culmination is never entailed, meaning that in these languages all verbs fall into the non-change entailing category (Travis, 2019). Verbs in the non-change-entailing category can occur in syntactic or morphological contexts which add change-of-state meanings, as has been seen for English in the previous chapter and for Malagasy in this chapter. In neutral contexts however, they are action verbs and are associated with DO when the subject

is animate. What needs to be explained about these is the mechanisms that add culmination, not the fact that they do not inherently entail it.

Chapter 5

Conclusion

This thesis was originally intended to be a thesis about linguistic causation, and specifically about what CAUSE is. Instead, it has become a thesis primarily about what CAUSE is not. This *volte-face* occurred following the observation that some causative sentences in English are stative. This stands in contrast to the literature, where a common underlying assumption—sometimes implicit, sometimes explicit—is that CAUSE is eventive. Throughout this thesis I have presented the findings that have come out of investigating the fact that it is not.

Chapter 1: Introduction In this chapter I introduced some classical approaches in syntax and semantics to the study of subverbal causal meanings (e.g. McCawley (1968); Dowty (1979); Croft (1990)). I then suggested that a limitation faced by these approaches, and in fact all the approaches in the literature that I am aware of, is that only a subset of causal structures are generally considered, specifically eventive causative-inchoative

structures and occasionally eventive periphrastic causative structures. I then presented a range of causal structures, from the canonical Agentive causative inchoatives (1a), though non-Agentive causative-inchoatives (1b), biclausal causal structures (1c), and finally to stative causative sentences (1d) and sentences involving verbs not traditionally analysed as causative at all (1e).

- (1) a. John broke the glass.
b. The wind closed the door.
c. Mary's mother allowed her to go to the party.
d. That John blew up the moon closes off the possibility of him becoming prime minister.
e. John explains Mary acting weird.

The leading question behind this was the following: if CAUSE is a subverbal primitive associated with causation, and since there is reason to think that sentences like the above all relate to causation, then what does it mean about CAUSE that it is compatible with this diverse array of structures. For a primitive to be truly primitive, it should not be ambiguous, polysemous or further decompose. The goal became to understand the shared primitive causal element in these all of these sentences, for which I needed a theory of causation that allows for stative causative meanings.

Since no theories had been built for this purpose, I had to draw on theories of eventive causation and subverbal decomposition more generally, cherry-picking theoretical tools that seemed promising. I present the theoretical building blocks and the theories of eventive causation that I drew from

most in the last two sections of the introduction (not including the chapter conclusion). The key tools I take from the literature are the following. From Folli and Harley (2005) and Folli and Harley (2007) I adopt different types of subverbal functional heads which place different selectional restrictions the arguments they can combine with in their specifier and complement positions. From Pylkkänen (2008) I get a useful separation of DO and CAUSE (for her Voice and Cause respectively) in a layered structure which moves me towards a position to say something independently about the roles that each of these primitives/projections play. Finally, from Schäfer (2012) I take the idea that the ontological category of the arguments has an important impact.

Chapter 2: Causation is Non-Eventive In this chapter I present the system that I have developed to account for the full range of causal structures identified in the previous chapter. An underlying assumption of my approach is that structural complexity will mirror the complexity of the situations being described. Because of this, I begin by motivating the view that Agentive causative-inchoative structures like *John broke the glass*) are actually the most complex (even though they are often considered the most basic), followed by structures with inanimate subjects, followed by the stative causative sentences. I use the term complexity here to refer to the total number of participants and subevents involved in the predicate/argument structure local to the causal link between the subject and predicate of the sentence.

I start with the assumption that all three levels of complexity mentioned above involve CAUSE. Because I take CAUSE to be a primitive and so I think

that its contribution should be consistent and minimal, I take the stance that since all three tiers of complexity involve CAUSE, anything the more complex tiers involve that the less complex tiers do not, cannot be related to CAUSE. From here, I am in a position to begin factoring out certain event structural contributions from the contribution of CAUSE.

First, I factor out the introduction of Agents and reassign this task to DO. I do this on the basis that only the most complex causative sentences have Agents and the others do not. In doing so, I also reject the suggestion that DO itself sometimes has a causative meaning and sometimes does not, which would mean that when you have an Agentive causative sentence, DO would both introduce the Agent and licence the causative structure. I reject this i) on the basis that sentences with DO often do not involve causation and the role primitives play should be consistent, and ii) on the basis that it would mean that only some structures involving subverbal causation would actually involve CAUSE.

Next, I factor out the introduction of change-of-state subevents from CAUSE and reassign it to the operator BECOME. I do this because we know that BECOME already exists independently (for example in change-of-state unaccusative verbs like *bloom*) and because not all causative structures involve changes of state at all. Since changes of state are necessarily eventive, and not all causative structures involve events, the change-of-state element cannot be part of CAUSE and should be associated with an independent functional projection headed by BECOME.

Having factored the above out, I suggest that the role of CAUSE is three-fold. Firstly, it links the structural element introducing Agents to those

introducing changes of state in the most complex sentences. Secondly, it introduces inanimate Causers in its specifier. These Causers are restricted to being eventualities, as noted in Folli and Harley (2005). In eventive causation with inanimates, CAUSE links this causing event to the event that it causes, which is usually a BECOME subevent, but may be a subevent of another type. In non-eventive sentences, it links a causing state to the state that it causes. Thirdly, in Agentive causative structures, CAUSE introduces an implicit event argument in its specifier, which, although it cannot be realised in the Agentive structures, corresponds to the causing event that the Agent participates in. The reason for this is that CAUSE is subject to a principle I term ontological harmony.

CAUSE being subject to ontological harmony means that the ontological category of the arguments CAUSE links in any given instance must be the same. That is, events CAUSE events and states CAUSE states. The specific subtype of events can be mixed and matched freely, but events cannot CAUSE states, and states cannot CAUSE events. In the remainder of the chapter, I detail some different possible causative configurations for illustration and finish by listing the rules about CAUSE.

Chapter 3: The Puzzle About the Sea The approach that I laid out in Chapter 2 predicts that, disregarding processes such as *the river flowed* for now, there are only two ways for a verb to be an event in my system. It needs to have DO, or it needs to have BECOME. In this chapter, I discuss three classes of verbs and consider the interaction between the class, how one can be an event, and patterns of entailment. As I have found that there is no

clear correspondence between causal meaning or types of causal structures and aspectual category, these classes do not correspond to aspectual classes. I show that many of these verbs seem to come in both a ‘DO-flavour’ and a ‘BECOME-flavour’, meaning that they either require an Agent subject, or they require a change-of-state entailment, but not both. This chapter illustrates that although my system was built to explain stative causation, it provides explanations of other datasets and creates a link from the fairly well understood causative-inchoative alternation to other, less well understood alternations involving verbs that are at least sometimes causal.

The first class of verbs I discuss is the *provoke*-class psych verbs, a subset of the verbs of psychological state where in certain contexts their implied results are defeasible without being contradictory. Using contrasts such as the one below in (2), I show that these verbs come in two flavours, a DO-flavour, and a a BECOME-flavour.

- (2) a. John comforted Mary, but she was not comforted.
b. John’s improving health comforted Mary, # but she was not comforted.

When this class of verbs takes an Agent subject, the results are not entailed to obtain. This means that they do not structurally contain BECOME (even though in absence of information to the contrary the result is implied) and only contain DO. When the subject arguments are inanimate, the results are always entailed and the structures are causative and contain *become*.

The second class of verbs I term ‘causativised activity verbs’. *Eat*, in

the puzzle about the sea is emblematic of this class, but other members include *throw*, *kick*, *run*, and *hammer*. I show that these verbs also come in a DO-flavour and in a BECOME-flavour and that the change-of-state meanings require the addition of a morphological particle or modifier to contribute the final result. When these verbs occur without the additional particle or modifier, they can only refer to actions and their subjects must be animate. When they occur with a particle, they have change-of-state meanings and can have either Agentive or eventive subjects.

The final class of verbs in this chapter are the biclausal quasi-causals. This class displays a similar alternation to the other classes of verb in this chapter, but differs in that they do not allow BECOME. Instead, they alternate between a DO-flavour and a CAUSE-flavour. As in the other classes, when the subject is an Agent, the implied results are not entailed. When the subject argument is not an Agent, the results are entailed. Unlike the other classes, they do not involve changes of state, and so they have stative meanings without an Agent and represent the state CAUSE state configuration.

Chapter 4: All Accomplishments Culminate The type of alternations described in the previous chapter can be seen widely cross-linguistically. Malagasy appears to display a similar alternation where verbs that imply a result do not actually entail that result. In this chapter I argue that what is actually happening is that non-culmination is the default in Malagasy and that the neutral non-marked forms should be seen as being the DO-flavour. This means that they should not be viewed as degenerate accomplishments, but simply verbs that describe actions. I show that the uncommon and

marked form of verbs where culmination is entailed should not be seen as basic because the affix used in marking these forms supplies semantic content of its own and it attaches superlexically. This means that the culminating forms fall without the scope of my system, which is related to sublexical meanings. It also means that although Malagasy behaves unusually in that more verbs than many other languages do not entail a result inherently, the puzzle to be answered is how the culmination arises, not how the non-culmination arises. This is to say that to call them non-culminating accomplishments is a misnomer.

Summary To summarise the key contributions of this thesis, the basic observation is that causation and therefore CAUSE can be observed to be present in stative structures. This means that CAUSE cannot be eventive. The mechanisms I use to account for this fact are the primitives DO, CAUSE, and BECOME, each with their contributions isolated to be consistent across contexts, combined with the principle of ontological harmony. The system I set up with these leads to new approaches to verb classes, with classes of verbs that are defined on the basis of how they interact with these mechanisms being seen to cut across previously defined classes of verbs, both in English and cross linguistically.

There are several deeper implications of the system I have set up in this thesis. The first, and most obvious, is that it requires thinking about causation in natural language in a new way. While it is easy to think of causation as being an event where things happen, the linguistic data cannot support viewing sublexical causation in this way. The assumption that causation

(and therefore CAUSE) is eventive is so entrenched in the linguistic literature in its current form that the assumption is often not even stated explicitly but can be seen in the things CAUSE is assumed to do. Importantly, since CAUSE cannot be eventive, it cannot be the locus of an event argument in sublexical structures. The system I set up allows us to maintain the introduction of events and implicit event arguments, but reanalyses where that occurs in such a way that it is only present in eventive causative structures. Stative causative structures have to have a realised state description in the specifier of CAUSE, so no implicit event needs to be introduced.

The second implication from this thesis is relevant for the philosophical and psychological literatures on causation, which generally are interested in what it means to be a Causer, and on what it means for one thing to be the cause of another the thing. The key outcome for this application is that the immediate ‘technical’ Cause of something is always going to be an eventuality. That means that individuals are never direct Causes although they can be thought of as acting within causal chains as participants or initiators of causing events. Any philosophical account of causation should be build with this in mind.

The next outcome of this thesis, which I discussed in the conclusion to Chapter 3, is that it suggests a redrawing of the state/event boundary. Since non-agentive processes have neither DO nor BECOME, and these types of processes can be the final result of change-of-state events, it suggests that these processes should be categorised together with states. This applies both to non-agentive processes in the complement of BECOME (e. g. *John caused the flag to become in the state of flying*), and to standalone non-agentive

processes such as *the river ran*. This also ties into the next outcome.

Prior to Dowty, there were two separate literatures. One was on Aktionsarten or lexical aspect (e.g. Vendler (1957)) which was based on theories that made no reference to subverbal primitives like DO, CAUSE, and BECOME. The other was on lexical decomposition (e.g. McCawley (1968); Lakoff (1970)) and made no reference to aspect. Dowty (1979) conflated the two and used DO, CAUSE, BECOME and similar primitives to build a theory of aspectual classes. This move was motivated by the fact that it looks at first as though there is a mapping between the two, and has been adopted widely for the same reason (e.g. Van Valin (1993); Rappaport Hovav and Levin (1998); Pustejovsky (1995)). For example, at a first pass it looks as though a generalisation is that if a structure has all three of DO, CAUSE, and BECOME then it is an achievement, and if it has only BECOME and a state, then it is an accomplishment. In this thesis, I have found that the two do not correspond to each other and that decomposition is orthogonal to compositional treatments of Aktionsarten.

I have found that not only do combinations of the primitives not map onto Aktionsarten categories such as accomplishments or achievements, but the primitives do not even correlate with the features upon which aspectual category is determined (i.e. duration, telicity). Evidence for this comes in part from the fact that CAUSE is present in stative structures as well as eventive structures, and also from sentences such as *John cooled the soup* and *Mary rustled the trees*. These structures contain all of DO, CAUSE, and BECOME yet the first of these is a degree achievement without a clear telic endpoint and the latter is a caused change into a process state, again with

no telic endpoint. As can be seen in these examples, and in the fact that CAUSE is present in stative structures, even individual primitives like BECOME and CAUSE cannot be linked consistently to features of Aktionsarten such as telicity or eventhood.

One practical outcome of this is that it suggests a move away from Aktionsarten as the basis for defining verb classes. In this thesis it has been seen, for example, that many classes of verbs participate in alternations between readings with intentions (DO) and readings with entailed results (BECOME or CAUSE when the class cannot have eventive change-of-state meanings). These verb classes cut across previously defined verb classes on the basis of how they enact this alternation and the specific effect it has, which has been seen to lead to real generalisations about grammar and meaning. These classifications could not have been formed on the basis of Aktionsarten.

This thesis has presented a new theory of event structure that has been able to link a variety of phenomena that otherwise look unrelated, taking a unified approach to stative (and non-stative) causation, sublexical modality, non-culminating ‘accomplishments’, and the state/event boundary. However, it has been illustrative at times and further research will be required to fully understand the system and its broader implications. A natural starting place would be the development of an actual semantics for the versions of DO, CAUSE and BECOME that I present here, as well as investigation into how this system interacts with elements further up in the structure, such as aspect (of the non-sublexical variety). Another avenue for exploration might

involve working through event types typologically.

There is always more to be said. However, the fact that I have said everything I want to say for now *lets* me be done.

[That I have said everything... < state >] CAUSE [me be done < state >]

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Appendix A

Verbs of Creation

A subset of the verbs of creation have two senses: one where the theme is an object was brought into creation by the process indicated by the meaning of the verb, and one where the theme is the object of the force denoted by the meaning of the verb, but is not brought into creation. These senses have different aspectual properties. The former are aspectually accomplishments and are telic. The endpoints of these are what is brought into existence. The latter are atelic and are aspectually activities.

- (1) a. John baked a potato
→ for an hour.
→ in an hour.
- b. John baked a cake
→ ? for an hour.
→ in an hour.

- c. Mary whittled wood
 - for an hour.
 - # in an hour.
- d. Mary whittled a spoon
 - ?? for an hour.
 - in an hour.
- e. John carved a totem pole
 - for an hour.
 - ? in an hour.

To bake a cake and *to whittle a spoon* mean that the cake and spoon come into existence by the act of baking/whittling. In each of these, the subject is an Agent do the structure involves DO to introduce that Agent. The complement of DO needs to be an event. In these, the events are that the object denoted by the theme is brought into existence. They involve a change of state from not existing, to existing: there is no cake before the baking, and there is no spoon before the whittling. That these can be modified with *in an hour* shows that they are telic. That they are telic means that there is an endpoint and result of the action described by the verb. The complements of the verb describe that result. The continuations with *for an hour* are degraded and do not entail the existence of the intended end result. For example, one can say “John baked a cake for five minutes, and when he took it out of the oven it still was not a cake”, but one cannot say “John baked a potato for five minutes but it still was not a potato”. The atelic continuation from the sentence about ‘whittling a spoon’ is even more obviously degraded.

In examples (1a) and (1c) on the other hand, the complements are not brought into existence by the action the verb describes but rather are a theme somehow affected by the action. These are basically atelic meaning that they are aspectually activities. They are also embedded in the complement of DO as the subject each case is an Agent.

In the above, it is differences in the object arguments that affect aspectual category membership and defeasibility patterns. Here is world knowledge that is responsible for imposing restrictions on the aspectual categories that a predicate is compatible with. Differences in aspectual category also correspond to differences in whether the ‘verb of creation’ necessitates a meaning where something is created.

The same world-knowledge effects can be seen in sentences with non-Agent subjects. In the examples below, *the wind* is an eventive DP and different object arguments correspond to different meanings.

- (2) a. The wind sculpted the cliffs.
 ≠ The wind caused the cliffs
- b. The wind sculpted the dunes.
 = The wind caused the dunes
- c. The artist sculpted the dunes.
 ≠ The artist caused the dunes
- d. The artist sculpted the statue.
 = The artist caused the statue

The first means something along the lines of that the wind caused the cliffs

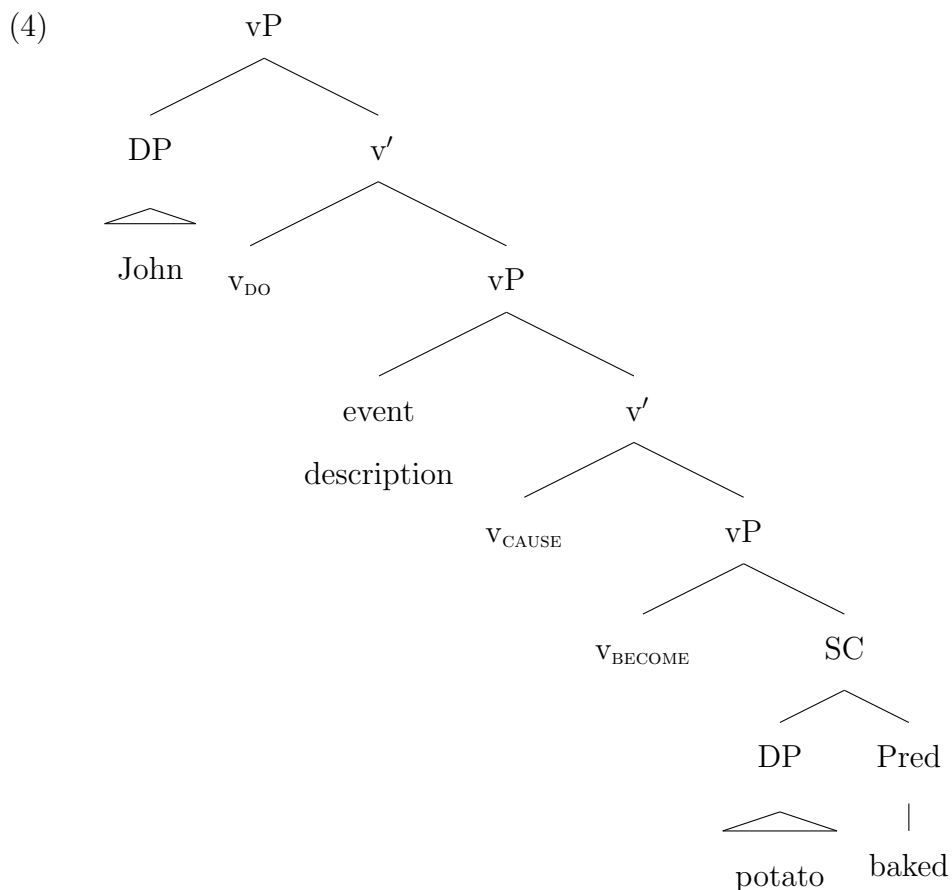
to become sculpted (that is, to have their shape changed by an external factor), but it does not mean that the wind is what brought the cliffs into existence. Dunes on the other hand, are created by wind and the second sentence above can mean that the wind caused the dunes to exist. The later is compatible with both the creation interpretation and the aesthetic change interpretation.

World knowledge is what determines whether a sentence with a (potential) verb of creation will receive a caused existence meaning or an action performed on a theme meaning. If the DP in object position is something that occurs naturally or that cannot be created in a way compatible with the meaning of a verb, the sentence will have the activity reading rather than the creation reading. Wood, for example, cannot be brought into existence by humans through the action of whittling, so the only possible interpretation is that whittling was done to the wood. Spoons on the other hand can be i) created by humans, and ii) brought into existence by whittling, so in that case the caused existence meaning is permitted. The example about baking a potato further demonstrates the impact of world knowledge on grammatical judgement. Although the sentence seems most easily compatible with the activity reading, our world knowledge of potatoes and baking them also allowed the caused creation meaning. In this reading the result is not simply a potato per se, but specifically a potato cooked to a specific degree of softness agreeable to the human palate (a baked potato). For this reading to be felicitous, the potato is entailed to have reached that specific degree of softness, if it has not, the telic meaning is impossible.

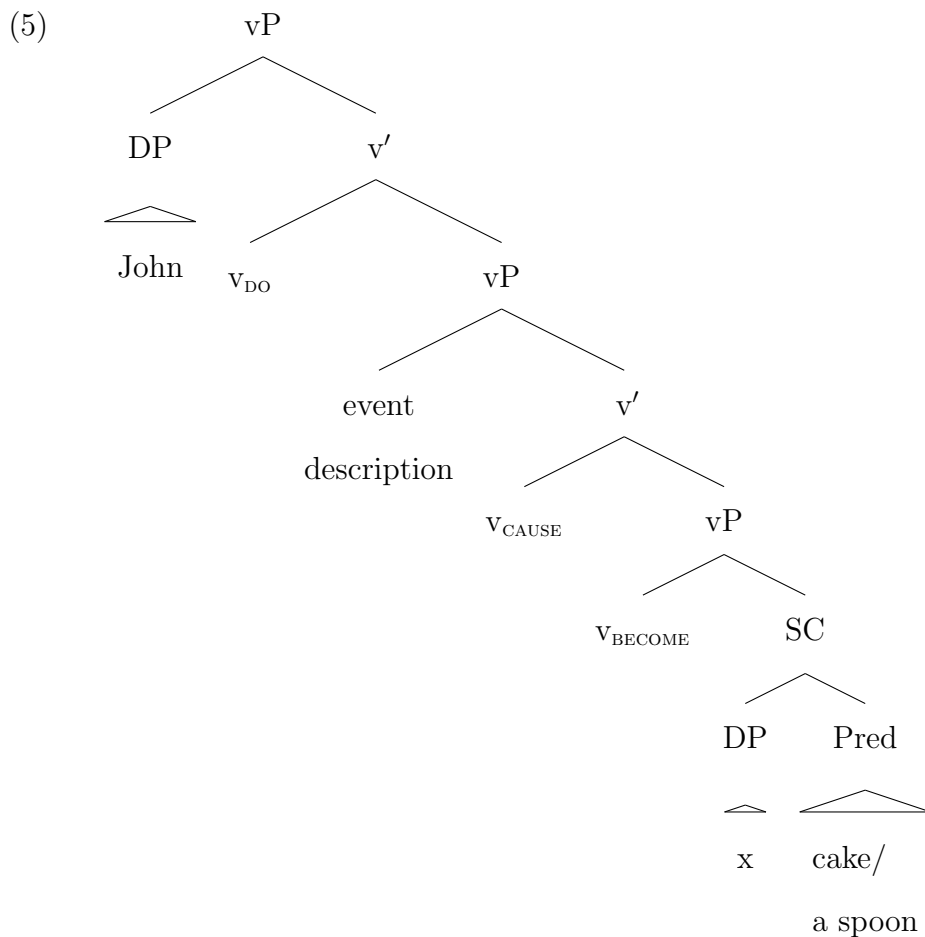
- (3) a. I just got an amazing new oven, it can bake a potato in 30 minutes.

If, however, you remove a potato from the oven after thirty minutes and it is still cold and hard in the middle, you can only say that you baked a potato for thirty minutes, but not that you baked a potato in thirty minutes.

The result predicates in the telic examples differ in how they are states. If you bake a potato, at the end of it the potato is in the state of being baked. This example fits nice into a typical causative structure like so:



For the other caused existence examples however it does not seem particularly natural to say that e.g. ‘After John whittled the spoon, the state that the spoon was in is whittled’ or that ‘After being removed from the oven, the cake was in the state of being baked’. In fact, the result in these seems to be better described as being that after the baking/whittling, some matter in the universe becomes in the state of being cake or a spoon.



In these examples then, rather than being the theme of the verb, the DPs seem to actually be the stative predicates applied to some implicit theme.

This is only possible when the object predicate describes something that can be caused by the verb. (6b) for example must be the direct theme of the verb and cannot be a stative predicate applied to an implicit theme.

- (6) a. John baked a cake in 40 minutes.
b. John baked a pan of batter # in 40 minutes.

So it appears that there are actually three different categories here at play here: activities (whittle wood), normal caused states (bake a potato), and caused existence (bake a cake). Each of these corresponds to a different structure as described above. World knowledge plays a significant roll in determining which structure applies for any given sentence and the interpretation depends on the combination and interplay of the core meaning of the verb and the meaning of the DP in object position.

The caused existence structures notably share features with resultative constructions formed with the same verbs with their activity readings built into resultatives:

- (7) a. John whittled the wood. (activity)
b. John whittled the wood into a spoon. (resultative)
c. John whittled a spoon. (caused existance)

In both the resultative and the caused existence structures, the contribution of ‘a spoon’ is contained in the predicate which is applied to some matter. In the resultative, this matter is specified, while in the caused existence version

it remains implicit.