THE CAUSATIVE ALTERNATION REVISITED: CONSTRAINTS AND VARIATION

ARTEMIS ALEXIADOU

University of Stuttgart

In this paper, I will deal with the following two questions: (i) How can we determine which verbs enter the causative alternation? (ii) What properties are responsible for the cross-linguistic variation we find in this domain? I will argue, building on Levin and Rappaport Hovav (2013), that eventualities need to contain a result component in order to participate in the causative alternation. In my discussion, I will have a closer look at the properties of causer external arguments, and examine the behavior of particular predicate classes in some detail. I will show that predicates that are considered to be translation equivalents actually have very different properties across languages. I will then offer some discussion as to the possible sources for crosslinguistic variation.*

Keywords: *causative alternation, manner verbs, result verbs, internally caused change of state verbs, agents, causers*

1. Introduction

The causative alternation, illustrated in (1) and (2) with English examples, has been the focus of much and controversial discussion in the literature from a variety of perspectives.

- (1) John broke the vase. *causative*
- (2) The vase broke. *anticausative*

From the point of view of interpretation, the intransitive variant (*anticaus-*

* I have benefited from discussions with Elena Anagnostopoulou, Terje Lohndal, Malka Rappaport Hovav, Florian Schäfer, and Giorgos Spathas. I am grateful to two anonymous reviewers and the participants at the ELSJ Spring Forum, held at the University of Tokyo in April 2013 for their comments as well as to the editors of this volume for their assistance. My research has been supported by a DFG grant to project B6 *Underspecification in Voice systems and the syntax-morphology interface* as part of the collaborative research center 732 *Incremental Specification in Context* at the University of Stuttgart.

ative) describes an eventuality in which the theme, in our example *the vase*, undergoes a change of state. In contrast, the transitive variant (*causative*) is taken to describe the causation of a change-of-state (see Levin (1993), Schäfer (2009)). In this paper, I will use the term *anticausative* to refer to any intransitive use of a verb that also has a lexical causative use (following Alexiadou, Anagnostopoulou and Schäfer (2006, 2015)). In (1), the transitive verb is called (lexical) causative in opposition to periphrastic/syntactic causatives like English ‘John made/caused the door go open’ which involve two independent verbs, each projecting their own *thematic domain*.

In English, this alternation is extremely productive. Levin (1993) and Rappaport Hovav (2014) report that well over 200 verbs participate in the alternation, and new verbs that enter the language participate in the alternation as well.

At least two questions have pre-occupied researchers dealing with the causative alternation. The first one is: how can we characterize the verbs that enter the alternation? The second one relates to the observation that we find a lot of variation across languages but also within a language as to the verbs entering the alternation. Thus a second question is: how can we account for the variation observed within a language and across languages?

With respect to the first question, Jespersen (1927) described the verbs that undergo the causative alternation as *move* and *change* verbs. Cross-linguistically, the core verbs that participate in the causative alternation are indeed verbs of change-of-state and verbs of change-of-degree. However, we find interesting restrictions and variation within a language and across languages. First, not all verbs of change of state alternate in English, e.g. *kill* does not alternate:

- (3) *All the chickens killed.

Second, there are verbs which alternate, but only for certain choices of arguments:

- (4) a. I cleared the screen.
b. The screen cleared.
(5) a. The waiters cleared the counter.
b. *The counters cleared.

In other languages, verbs that do not alternate in English enter the alternation, e.g. *cut* and *kill*. Japanese and Greek are cases in point, as shown in (6) and (7) respectively:

- (6) Kami ga kir-e-ta. *Japanese*
 paper-Nom cut-IA-Pst
 ‘The paper is cut.’ (Matsumoto (2000))
- (7) O Janis skotothike apo to sismo. *Greek*
 The John-Nom killed-NAct from the earthquake
 ‘John got killed by the earthquake.’

In this paper, I will deal with the two questions raised above, namely how can we determine which verbs enter the causative alternation and what properties are responsible for the cross-linguistic variation found. In my approach to the first question, I will use the behavior of internally caused change of state verbs (ICCOS) in English as a tool to understand what enables a particular predicate to enter the causative alternation. I will argue, building on Levin and Rappaport Hovav (2013), that eventualities need to contain a result component in order to participate in the causative alternation. This relies on the distinction between manner and result verbs, as put forth by Levin and Rappaport Hovav (2013). Importantly, the distinction into manner and result predicates will help us understand why manner verbs do not enter the causative alternation. Manner verbs, as will be discussed, impose a restriction on their external argument and thus allow only agentive subjects and hence do not enter the causative alternation. All result verbs, or rather verbs built on the basis of result roots, license only one argument (which appears as the internal argument in the transitive variant). The behavior of this particular group raises two sub-questions. The first one is why only a subset of result verbs can alternate within a language and across languages, although most of them allow external arguments bearing a variety of thematic roles, agents, causers and natural forces. The second one is why ICCOS verbs alternate, although they do not allow external arguments that bear a variety of thematic roles. In fact, they only allow causer arguments. This will lead me to have a closer look at the properties of causer external arguments, and examine the behavior of particular predicate classes in some detail. I will show that predicates that are considered to be translation equivalents actually have very different properties across languages. I will then offer some discussion as to the possible sources for this variation.

The paper is structured as follows: in section 2, I present the model of verbal decomposition that I will assume in this work. In section 3, I discuss the question of determining which verbs participate in the causative alternation. In section 4, I turn to some differences between agent and causer arguments. In section 5, I attempt to explain which verbs can participate

in the causative alternation, while in section 6, I discuss the cross-linguistic variation found. In section 7, I conclude my discussion.

2. Event Complexity and the Causative Alternation

Unlike derivational approaches that assume that either the transitive or the intransitive variant is the basic one in the causative alternation such as Dowty (1979), Levin and Rappaport Hovav (1995) and Reinhart (2002), several authors in recent years have been pursuing a so-called common base approach. This can be roughly represented as in (8), see Alexiadou, Anagnostopoulou and Schäfer (2006, 2015), Doron (2003), Piñon (2001), Lohndal (2014) among others:

In particular, the leading idea behind Alexiadou, Anagnostopoulou and Schäfer's (2006, 2015) proposal is as follows: causative and anticausative predicates are equally complex as far as their event structure is concerned: they are both bi-eventive, which in turn means that they contain a cause component. From this perspective, a cause component is syntactically decomposed as involving a process leading to a result state, cf. Ramchand (2008), Schäfer (2012); causatives differ from anticausatives in that the former include an external argument that brings about the event.

Evidence for the view that causative and anticausatives do not differ in terms of event complexity comes from at least two empirical domains. The first one relates to the two readings available with the adverb *again*, see von Stechow (1996). As is well known, example (9) is ambiguous: it has a reading according to which, the opening event as well as the resultant state is repeated (9i), and a second one, according to which only the resultant state is repeated, (9ii). Both readings can be accommodated, if we assume that the predicate *open* can be decomposed as involving a process/Become head and a resultant state component, as shown in (9).

- (9) The door opened again.
- (i) *The door again became open*
[*again* [... BECOME ... [... STATE ...]]]
 - (ii) *The door returned to a state of openness*
[... BECOME ... [*again* [... STATE ...]]]

Importantly, the transitive variant in (10) also has two readings, and not three. According to the first reading, it is the agent's action that is re-

peated; in the second one, only the resultant state is repeated. Crucially, there is no third reading where only the opening event and the result state is repeated, even though the decomposition in (10) suggests that there is a further layer, namely Cause, and thus one would expect that again can take scope below Cause.

(10) John opened the door again.

- (i) *John did something again and as a result the door opened.*
[again [... CAUSE ... [... BECOME ... [... STATE ...]]]]
- (ii) *John did something and as a result the door returned to its previous state of being open.*
[... CAUSE ... [... BECOME ... [again [... STATE ...]]]]

In view of the fact that the intermediate reading is not available in (10), the simplest way to account for the available readings in (9) and (10) is that causatives and anticausatives do not differ in the number of event predicates involved. Actually, mainly because of this observation, it was proposed that anticausatives involve a BECOME event (cf. (9)) while lexical causatives only involve a CAUSE event, and not both a CAUSE and BECOME (von Stechow (1996: 106), Pylkkänen (2008)). While there are several complications with this test (see Alexiadou, Anagnostopoulou and Schäfer (2015) for discussion), I will conclude that the above contrast shows that causative and anticausative predicates are equally complex.

Moreover, following Alexiadou, Anagnostopoulou and Schäfer (2015), I assume that verbs do not lexically specify their external arguments, but rather these are severed from the verb stem, see Kratzer (1996). Specifically, external arguments are introduced in Voice. This would then in turn suggest that the decomposition of causative predicates involves a Voice layer that embeds the cause component, built on the basis of a process *v* and a result state. While anticausatives lack this Voice layer, they contain the same cause component as causatives.

A second argument in favor of postulating that causatives and anticausatives do not differ in terms of event complexity comes from the availability of causer PPs across languages. Causer PPs are licit with anticausative predicates in e.g. English and their presence has been argued to diagnose the presence of causative semantics in the structure of these predicates (Alexiadou, Anagnostopoulou and Schäfer (2006, 2015)):

- (11) a. The window cracked / broke from the pressure.
- b. The window cracked / broke from the explosion.

The above observations lead us to rephrase our first question as follows: when do verbs need to express their external argument within a language

and across languages, i.e., why are some predicates necessarily transitive?

I will propose that the participation in the causative alternation is not a lexical property; it is rather a structural property, resulting from the combination of a particular root type and an event structure. In particular, I assume that predicates are built on the basis of (at least) two different ontological root types: manner vs. result (Levin and Rappaport Hovav (2013)). This influences the merging of roots in the syntactic component, Embick (2004). Manner roots are modifiers of *v* (14); Result roots are complements of *v* (13). Manner verbs specify the manner in which the event takes place (e.g. *scrub*). Result verbs specify the result of an event (e.g. *open*). The proposal is that predicates that alternate contain a result component. This is the first ingredient that characterizes predicates that participate in the alternation. In the two structures below, *v* introduces a process component. In combination with a result root or ResultP, the structure yields causative semantics, (13). In contrast, in (14), in the absence of a result component, and in a structure in which the root is introduced as modifier of *v*, the interpretation is that of an activity predicate.

- (12) a. John opened the window.
 a'. The window opened.
 b. John scrubbed (the floor).
 b'. *The floor scrubbed.
- (13) [_{VoiceP} (external argument) [_{vP} process [_{Root_{result}/ResultP}]]]
 causative semantics, bi-eventive = (12a)
- (14) [_{VoiceP} external argument [_{vP} process *v*+ _{Root_{manner}}]]
 activity, mono-eventive = (12b)

The second one is the type of eventuality involved (externally caused or not). The third ingredient relates to the syntactic structures available in a language in which externally caused verbs can appear as intransitive predicates. In languages such as Greek, there is a special Voice head, labeled Middle that allows such predicates to appear as intransitive. This is not the case in English, which lacks a Middle Voice (see Alexiadou (2013), cf. Alexiadou and Doron (2012)).

3. Which Verbs Alternate?

As already mentioned, a long standing question in the literature has been how we can determine which verbs alternate within a language and across languages (see Alexiadou et al. (2015), where my discussion is based on, for a summary). It has been proposed that the verbs that enter the caus-

ative alternation are those that allow all sorts of external arguments (see Reinhart (2000), Levin and Rapoport Hovav (1995)):

- (15) *Underspecified external argument condition* (UEAC):

The transitive verbs that cannot form anticausatives restrict their subjects to *agents* or *agents* and *instruments* and disallow *causers*.

Evidence for this is provided by examples such as the ones in (16). The verb *break* allows all types of external arguments, and as predicted by (15) enters the causative alternation. In contrast, the verb *cut* allows only agents as subjects and cannot participate in the alternation.

- (16) a. John/the hammer/the storm broke the window.
b. John/*the knife/*the storm cut the cloth.

However, there is also some evidence suggesting that this cannot be the correct generalization. Two cases in point are illustrated below. First, there are alternations that involve particular *v* + DP combinations. Specifically, as already mentioned and shown again in (17), the verb *clear* alternates when it appears together with the DP *the screen* but not when it surfaces together with the DP *the counter*.

- (17) a. I cleared the screen.
b. The screen cleared.
c. The waiters cleared the counter.
d. *The counters cleared.

A second piece of evidence that (15) is not the correct generalization comes from the behavior of ICCOS verbs. ICCOS verbs involve properties inherent to the entities undergoing the events that are responsible for bringing about the eventuality. Crucially, an internally-caused eventuality “cannot be externally controlled” (Smith (1970: 107)). For this reason, (18) is judged ungrammatical:

- (18) *The gardener blossomed the petunias.

Wright (2002), however, observed that such predicates alternate in English (see also Rapoport Hovav (2014)). Alexiadou (2014) made a similar point about Greek:

- (19) a. Salt air rusted the metal pipes.
b. Early summer heat wilted the petunias.

The interesting observation here is that while ICCOS verbs can be transitive, their external arguments are restricted. Importantly, the subjects of transitive ICCOS verbs are actually exclusively causers. McKoon and Macfarland (2000) observe that agents and instruments are out.

This goes against the observation in Reinhart (2002: 233), who claimed

the following: “In Reinhart (2000), I assumed that the role cause is the cluster [+c(ause) –m(ental state)], i.e. that instrument and cause realize the same feature cluster, and the relevant interpretation is determined contextually. [+c] was assumed to be a special feature cluster which is consistent with the three roles (agent, cause, instrument). However, I did not find subsequently any verb which selects an argument which is obligatorily only a cause”.

Note that ICCOS verbs can also appear together with PP modifiers that introduce a causer, suggesting that they do have a causative component in the sense of (13), Alexiadou, Anagnostopoulou and Schäfer (2006, 2015):

(20) The flowers wilted from the heat/*by the gardener.

As ICCOS verbs alternate but only with a specific type of external arguments, and actually not of the type that conforms with (15), the question that arises is why do ICCOS verbs allow only causers? An answer to this is given in Rappaport Hovav and Levin (2012) (see (21) below):

(21) *The Direct Causation Condition*:

A single argument root may be expressed in a sentence with a transitive verb if the subject represents a direct cause of the eventuality expressed by the root and its argument.

Due to their very nature, the most direct causes of ICCOS predicates are the natural forces and ambient conditions which trigger or facilitate them (see Rappaport Hovav (2014) for extensive argumentation). We can thus conclude that with ICCOS verbs a causer can be expressed if it facilitates the change of state. In contrast, an agent can never be interpreted as a facilitator, hence it is ungrammatical. This in turn means that there is a fundamental difference between agent and causer arguments.

Further evidence for the special status of external arguments of ICCOS verbs comes from the following observation: ICCOS predicates can be transitive, but they do not seem to be able to passivize (Alexiadou (2014)):

(22) *The flower was blossomed.

This suggests that there is something special about the transitivity of these predicates and this relates to the nature of their external argument.

4. Agent and Causers

I noted in the previous section that the behavior of ICCOS transitive verbs suggests that agent and causers are distinct entities of external arguments, since transitive ICCOS verbs allow only causers but not agents. The observation that agent and causers have distinct properties has

been made elsewhere in the literature and here I build on earlier findings, see for example Fujita (1996), Schäfer (2012), and Solstad (2009) though the perspectives differ considerably.

Fujita (1996) argues that the backward binding possibilities of the different types of subjects provide an important clue as to their syntactic positions. Fujita builds on Pesetsky's (1995) observation that only causer subjects allow backward binding. This is illustrated in (23), which involves a psych predicate, but Pesetsky showed this to hold for a wider range of data. The generalization is that backward binding is possible if the subject assumes the (non-volitional) causer role, as opposed to the (volitional) agent role:

- (23) a. ?Each other's pictures annoy Bill and Mary.
 b. *Each other's friends (intentionally) annoy Bill and Mary.

To explain this, Fujita proposes that causers are introduced in a position lower than agents, as in (24), and actually that agent is a composite role combining the causer role and volitionality.

- (24) [_{VP1} Agent [_{AgrOP} [_{VP2} Causer [_{XP} DP]]]

The DP within XP then moves to Spec,AgrOP at LF, and then it c-commands the trace of the Causer in Spec,VP2, but not of the agent in Spec,VP1. This asymmetry explains why backward binding is possible with causers and not with agents: according to Fujita, backward binding reduces to an LF reconstructions effect in A-chains.

A different perspective on the structural differences between agent and causers is given in Alexiadou, Anagnostopoulou and Schäfer (2015), who point out that a causer is strictly speaking a modifier of the event, while an agent involves a relation between an individual and an event. Building on Solstad (2009), the causer role has no semantic contribution apart from specifying the causing event in the causal relation. Importantly, it simply modifies the causative relation introduced by the predicate itself.

If causers are modifiers of the event, the most straightforward way to introduce them in the structure is to analyze them as vP modifiers (see Hasegawa (2001), Alexiadou, Anagnostopoulou and Schäfer (2006), Solstad (2009), cf. Schäfer (2012)). We can thus propose that Agents are introduced in Voice, while causers are introduced as modifiers of vP (see (25)):

- (25) [_{VoiceP} Agent [_{vP} Causer [Root/ResultP]]]

Further support for the view that causers are not real external arguments but rather modifiers of eventualities comes from the following observations. As we have already seen, causers can be introduced as adjuncts with ICCOS predicates as well as with other predicates of change of state:

(26) The window broke from the explosion.

In fact, in some languages, causers must be introduced as adjuncts. This is the case in e.g. Jacaltec (Craig (1976)):

- (27) a. *speba naj te' pulta*
 close cl./he cl. door
 'he closed the door'
 b. **speba cake te' pulta*
 close wind cl. door
 'the wind closed the door'
 c. *xpehi te' pulta yu cake*
 closed cl. door by wind
 'the wind closed the door'
 (lit.: the door closed by the wind)

This is the case also in Japanese, Yamaguchi (1998):

- (28) a. *kabin ga koware-ta.*
 vase Nom break-Past
 'The vase broke.'
 b. *John ga/*jisin ga kabin o kowasi-ta.*
 John Nom/earthquake Nom vase Acc break-Past
 'John/*the earthquake broke the vase.'
 c. *kabin ga jisin de koware-ta.*
 vase Nom earthquake instr break-Past
 'The vase broke because of the earthquake.'

Turning now to the details of the structural analysis of causers, these, as mentioned above, are licensed in vP. They can be introduced as PPs, in which case the single argument of the predicate enters Agree with T and surfaces with nominative Case. This is the default realization of causer arguments across languages. Sometimes, however, they surface as DPs. To account for this, in principle two options can be explored. According to option I, P incorporates into Voice; when this happens Voice Agrees with and licenses accusative on the internal argument, and the causer DP enters an Agree relation with T (see Hasegawa (2001), Pesetsky (1995); Caha (2009), Taraldsen (2010), Alexiadou, Anagnostopoulou and Sevdali (2014)). While in Japanese and Jacaltec, P incorporation never takes place, in languages such as English and Greek P-incorporation is optional. It is not clear, however, why this is so. Japanese and Jacaltec are SOV and VSO languages respectively, thus one cannot appeal to some sort of word order parameter to resolve this, especially in view of the fact that Greek is predominantly a VSO language as well (Alexiadou and Anagnostopoulou

(1998) for discussion and references). Consider the sample derivation in (29):

- (29) a. [TP (DP_{NOM}) [vP PP_{causer} [ResultP (DP_{NOM})]]]
 b. [TP (DP_{NOM}) [VoiceP (DP_{NOM}) Voice +P [vP [ResultP DP_{ACC}]]]]

In (29a), the PP causer is introduced as a modifier of vP. Subsequently, P incorporates into Voice. These have two consequences, the DP causer can now move into the specifier of Voice and the internal DP can be assigned accusative Case.

According to option II, DP and PP are simply distinct realizations of the thematic role of causer located in vP. There is no VoiceP, and as a result no real transitive structure, which explains why transitive ICCOS cannot enter passivization: some languages, such as Jacaltec and Japanese only have the PP realization, while others have both. Under the assumption that passive in English takes as an input a transitive predicate, i.e. a Voice projection which contains an external argument, the fact that ICCOS verbs do not passivize suggests that they lack VoiceP, see Alexiadou, Anagnostopoulou and Schäfer (2015) for discussion and references on the English passive.

5. Explaining Which Verbs Alternate

Having explained the restrictions on the ICCOS alternation, let me now turn to the question which verbs alternate within a language. Two lines of analysis of this issue have been pursued in the literature. From one perspective, there is a link between the morphological pieces available in a language linked with processes of de-transitivization and the availability of certain roots to enter the causative alternation (see Alexiadou et al. (2006), Alexiadou (2010)). From another perspective, the general intuition is that if we are dealing with an eventuality that is conceptualized as necessarily requiring an external argument to unfold, this eventuality will never be realized as an intransitive predicate; see Haspelmath (1993), Schäfer (2008) and Alexiadou, Anagnostopoulou and Schäfer (2015).

Let us concentrate on the first type of approach here. I mentioned in section 2 that roots can be classified as belonging to two major ontological types, manner and result. Manner roots are involved in the building up of process eventualities. It has often been suggested in the literature that manner predicates require agents (see Hale and Keyser (2002), Koontz-Garboden and Beavers (2012)). Specifically, as Koontz-Garboden and Beavers argue, the manner component of verbs leads to an agentivity restriction. Such predicates only take agents as subjects and thus fall under

the generalization in (15) and never alternate. By contrast, result verbs generally do not require a specific action of their subjects and are therefore compatible with agents, instruments and natural forces. Such verbs also nicely fall under the generalization in (15). In some cases, it is possible for the same root to be involved in the formation of a process, but also of a result predication; when the latter happens, the external argument can be omitted (see also Matsumoto (2000)).

In the case of ICCOS predicates, we are dealing with verbs which lexicalize a change of state involving only one participant. Thus for these verbs, we need to determine the conditions that govern the addition of a cause argument (not its removal), in the spirit of Rappaport Hovav (2014). The added argument must be construed as a direct cause, as explained above. Alexiadou, Anagnostopoulou and Schäfer (2006, 2015), and Rappaport Hovav (2014) proposed that if the change is not expected in the normal course of events (as is the case with verbs like *break* and *crack* but not verbs like *blossom* or *flower*) the cause will normally be expressed. If the change is expected in the normal course of events, the cause will normally not be expressed. This explains why ambient condition subjects usually express unexpected conditions (Wright (2002)).

Thus it becomes clear that a second ingredient to understand the participation of result roots in the alternation is the type of change of state these denote. While *blossom* is internally caused, *break* is cause unspecified, Harley and Noyer (2000), Alexiadou et al. (2006). Cause unspecified verbs fall under the generalization in (15). In contrast, verbs such as *destroy* and *kill* are externally caused, and it is this class that is subject to cross-linguistic variation, a point to which I will turn in the next section. Finally, there are also agentive verbs for which the change of state is a proper part of an action (performed by an agent), the agent is obligatorily expressed. This is the case with *murder* verbs, which also nicely fall under the generalization in (15): they only allow agentive subjects and hence do not alternate.

Consider now the cases that involve particular *v* + DP combinations, e.g. (17) above. These suggest that the alternation is about eventualities and not pure root classification proper. As Rappaport Hovav and Levin (2012: 169) note, examples such as the ones in (17) show that the verb *clear*, depending on the choice of theme, can be interpreted as an internally caused predicate, behaving very similar to other ICCOS verbs in allowing only causer subjects in transitive uses, see (30), their example (30):

- (30) a. The sky cleared.
 b. The strong wind/*Our prayers/*The scientists cleared the sky.

In (30a), the change of state comes about because of properties of the *sky*. This is very different when *table* or *counter* appears as the theme argument of *clear*. In this case, the eventuality is conceived of as externally caused, and thus the presence of an external force is necessary, as in English such predicates do not alternate although they obey (15), and thus one would expect for the predicate to alternate, but it does not.

- (31) a. The strong wind cleared the table.
 b. The waiter cleared the table.
 c. *The table cleared.

The question then is why only a subset of predicates that fall under (15) alternate in English. (15) correctly predicts that manner roots and consequently process verbs will not alternate, but it wrongly predicts that all result verbs should alternate. And while it is straightforward to predict the behavior of ICCOS verbs, as explained above, the remaining class of result predicates awaits an explanation. If we focus on the behavior of *clear* for the moment, two options are available to us. The one is the line proposed in Rappaport Hovav and Levin (2012), which states these predicates are subject to their Proper Containment Condition:

- (32) *The Proper Containment Condition:*

When a change of state is properly contained within a causing act, the argument representing that act must be expressed in the same clause as the verb describing the change of state.

Alternatively, it could be proposed that *clear* represents a case of polysemy: it is an ICCOS verb when it enters the causative alternation, but it behaves like an externally caused verb, when it does not. From this perspective, alternating *clear* is actually an alternating ICCOS verb, while non-alternating *clear* behaves similarly to *destroy*.

6. Explaining Cross-Linguistic Variation

In the previous section, we discussed cases of inner-linguistic variation, i.e., why certain predicates do not alternate in a language, although they would be expected to do so. From a cross-linguistic perspective, verbs of change of state such as *destroy* and *kill* fall under (15); still they do not alternate in English, while, as we saw earlier, do form anticausatives in other languages, e.g. Romance languages, Greek, and Japanese.

Two questions arise here. A first question is whether it is legitimate to

take e.g. English *kill* and *cut* to be identical to their Greek and Japanese counterparts. In recent work, Levin (2011) pointed out that translation equivalents between languages sometimes turn out to differ in just those semantic components which govern argument alternations.

I mentioned in section 2 that predicates are built on the basis of (at least) two root types: manner vs. result. Following Embick (2004), this influences the merging of roots in the syntactic component. Manner roots are modifiers of *v* (14); result roots are complements of *v*, (13), both repeated below.

(13) [_{VoiceP} external argument [_{vP} process [_{Root_{result}}]]]

(14) [_{VoiceP} external argument [_{vP} process *v*+ _{Root_{manner}}]]

It was also mentioned in section 2 that eventualities that express processes involve manner roots. In contrast, all verbs that alternate involve result roots. Using the manner vs. result classification as a tool we could then determine which verbs alternate in a language and across languages. The expectation is that if we can detect a manner component in the meaning of a verb, this will be sufficient to obligatorily license an external cause. However, the presence of a result component should be also sufficient to allow the presence of causers.

To begin with, the English verbs *cut* behaves like a manner verb: e.g., it participates in the conative construction (Levin and Rappaport Hovav (2013)):

(33) a. I cut at the rope.

b. *I broke at the window.

In languages such as Greek, and presumably also in Japanese (Matsumoto (2000)), *cut* does not behave as a manner verb. Crucially, at least in Greek, it allows for natural forces as subjects, unlike its English counterpart.

(34) O anemos ekopse to skini.

The wind cut the rope

‘The wind cut the rope.’

Turning now to killing verbs, note that the Greek verb *kill* is different from the English verb *kill*. For instance, it does not form an *-er* nominal (Zombolou (2004), Alexiadou, Anagnostopoulou and Schäfer (2015)):

(35) a. killer

b. *skototis

Zombolou (2004) observes that this is very systematic for the *destroy/kill* class. Alexiadou, Anagnostopoulou and Schäfer (2015) speculate that this is due to an extra condition that is active in Greek relating to manner/instrument/intention imposed on verbs entering agentive-type alternations, like the

formation of *-er* nominals. In other words, only verbs based on manner roots can form *-er* nominals in Greek. Such a constraint does not seem to hold in English. In turn, this suggests that the formation of *-er* nominals in Greek is a further diagnostic to distinguish between manner and result predicates.

Moreover, note that English *kill* and *destroy* are somewhat special. Modern English *kill* originates from Middle English *cüllen* and presumably Old English *cwellen*; its original meaning was either *strike* or *torture*. Levin (1993) notes that in the class of *murder* verbs, *kill* is the odd one out: it does not lexicalize anything about the purpose or manner of killing. Importantly, however, it can be found in the resultative construction:

(36) I'll kill him dead.

As is well known, languages such as Chinese use resultative verbal compounds as counterparts of such predicates (*sha-si* 'kill-die'). From this perspective, there is a manner component that is still active in the meaning of English *kill* and this, as in the case of *cut*, blocks its participation in the causative alternation.

Similar arguments could be made for *destroy*, which can be decomposed into a manner part (*stroy*) and a prefix whose semantic contribution is loosely related to result (Marantz (2001)). Pylkkänen (2008: 114) notes that out of 15 prefixes, which derive a large number of prefix verbs in English, only the predicate *transform* participates in the causative alternation. Her facts suggest that in some corners of its grammar, namely those that involve latinate predicates, English behaves like Lakhota type languages. Specifically, Rappaport Hovav and Levin (2010) proposed that the manner vs. result complementarity is coupled with the lexicalization constraint in (37):

(37) *The lexicalization constraint:*

A root can only be associated with one primitive predicate in an event schema, as either an argument or a modifier.

As Rappaport Hovav and Levin point out, there are two types of languages. In languages such as English, most verbs are morphologically simple as there is no developed notion of stem; thus, manner/result complementarity is manifested in the verbs themselves. In another group of languages, however, verbs are productively formed from stems and affixes, and thus manner/result complementarity holds of the pieces of verbs, rather than the verbs themselves. Lakhota is a language of this type, in which stems describing states which are permanent results combine with a set of prefixes which describe manner or means.

On the basis of these observations, let us now turn to our re-occurring

question: why do not all verbs that fall under (15) alternate in English? For some of these verbs, it can be shown that they have a manner component present in their morpho-syntactic representation. This in turn suggests that the agentivity restriction applies to purely manner roots only, and when predicates instantiate both manner and result (15), they allow all sorts of external arguments, but the presence of manner is enough to block the alternation. Crucially the sub-class of verbs that fall under (15) and do not alternate in English are the externally caused predicates, the ones that arguably have a manner component present. The ones that fall under (15) and alternate are those classified as cause unspecified in Harley and Noyer (2000) and Alexiadou et al. (2006), as discussed above.

Externally caused verbs such as *destroy* and *kill* do not alternate in English basically because they involve a manner component. However, arguably Greek *destroy* has a similar decomposition to English *destroy*. This points to the conclusion that for these predicates to alternate a further ingredient is necessary. As argued in detail in Alexiadou (2010), externally caused roots alternate but in the languages they do, they surface with special morphology in the intransitive variant, for instance non-active morphology in Greek. Since English lacks this type of morphology, an intransitive variant of these predicates is not available. This type of morphology is associated with a Voice head labeled middle, and following Alexiadou and Doron (2012), it basically “takes away” the requirement to project an external argument. English does not have a middle Voice head, and basically there is no other de-transitivization process in English other than the passive formation.

Furthermore, as already mentioned, there are verbs that do or do not alternate, and the type of internal argument regulates this behavior:

- (38) a. John broke his promise.
b. *His promise broke.

Levin and Rappaport Hovav (1995) suggested that this is so because only an agent can break a promise. However, eventualities that are conceptualized as agentive in English can form anticausatives in other languages, e.g. Greek:

- (39) a. O athlitis espase to simvolaio.
The athlete broke-3Sg the contract
'The athlete broke the contract.'
b. To simvolaio espase apo mono tu.
The contract broke-3Sg by itself
'The contract broke by itself.'

This suggests, as observed in Alexiadou et al. (2015), that Greek *break* is ambiguous between an agentive and a non-agentive interpretation. Evidence that this might be on the right track comes from Japanese. Japanese has two verbs corresponding to English *break*: one that behaves like its English, and one that behaves like its Greek counterpart.

- (40) a. Kare ga gensoku o yabut-ta/kuzusi-ta.
He Nom principle Acc tear-Pst/collapse-Pst
'He broke an established principle.'
b. Gensoku ga *yabur-e-ta/kuzure-ta.
Principle Nom tear-IA-Pst/collapse-IA-Pst
'The established principle broke.' (Matsumoto (2000: 188))

The above suggests that the answer to the first question raised in the beginning of the section is that verbs do involve different pieces in different languages.

Finally, turning to *murder* verbs, there we find no variation, as expected. Note that the Greek verb *murder* contains an overt part introducing intentionality, namely *deceit*, while the Greek verb *shoot* contains a part introducing the element that specifies the manner of death, namely *fire*:

- (41) a. *dol-o-* fon-o
deceit-murder-1Sg
'assissinate/murder'
b. *pir-o-vol-o*
fire-throw-1Sg

In the above cases, the eventuality is conceived of as agentive, hence the external argument is obligatory.

7. Summary and Conclusions

In this paper, I dealt with two questions:

- i) How can we characterize the verbs that enter the alternation?
- ii) How can we account for the variation that we observe within a language and across languages?

I proposed that verbs built on the basis of result roots can in principle have both transitive and intransitive counterparts. Those that are built on the basis of manner roots cannot.¹ Cross-linguistic variation emerges as first predicates do not behave uniformly with respect to their classification into

¹ See Schäfer (2012) for some discussion of *roll* verbs.

manner and result across languages. Second, languages differ with respect to how to treat externally caused eventualities. These types of eventualities require the presence of a special head to host morphology related to de-transitivization processes. Inner-linguistic variation emerges as verbs build together with their internal argument eventualities, and depending on the choice of argument, they can build eventualities that require an external argument or not.

REFERENCES

- Alexiadou, Artemis (2010) "On the Morpho-syntax of (Anti-)causative Verbs," *Syntax, Lexical Semantics and Event Structure*, ed. by Malka Rappaport Hovav, Edit Doron and Ivy Sichel, 177–203, Oxford University Press, Oxford.
- Alexiadou, Artemis (2013) "Where Is Non-Active Morphology?" *Proceedings of the 20th Conference on Head-Driven Phrase Structure Grammar*, 244–262, CSLI Publications, Stanford.
- Alexiadou, Artemis (2014) "The Problem with Internally Caused Change of State Verbs," *Linguistics* 52, 879–910.
- Alexiadou, Artemis and Elena Anagnostopoulou (1998) "Parametrizing Agr: Word Order, Verb-Movement and EPP-Checking," *Natural Language and Linguistic Theory* 16, 491–539.
- Alexiadou, Artemis, Elena Anagnostopoulou and Florian Schäfer (2006) "The Properties of Anticausatives Cross-linguistically," *Phases of Interpretation*, ed. by Mara Frascarelli, 187–212, Mouton de Gruyter, Berlin.
- Alexiadou, Artemis, Elena Anagnostopoulou and Florian Schäfer (2015) *External Arguments in Transitivity Alternations: A Layering Approach*, Oxford University Press, Oxford.
- Alexiadou, Artemis, Elena Anagnostopoulou and Christina Sevdali (2014) "Opaque and Transparent Datives, and How They Behave in Passives," *The Journal of Comparative Germanic Linguistics* 17, 1–34.
- Alexiadou, Artemis and Edit Doron (2012) "The Syntactic Construction of Two Non-active Voices: Passive and Middle," *Journal of Linguistics* 48, 1–34.
- Caha, Pavel (2009) *The Nanosyntax of Case*, Doctoral dissertation, University of Tromsø.
- Craig, Colette (1976) "Properties of Basic and Derived Subjects in Jacalteco," *Subject and Topic*, ed. by Charles N. Li, 99–123, Academic Press, New York.
- Doron, Edit (2003) "Agency and Voice: The Semantics of the Semitic Templates," *Natural Language Semantics* 11, 1–67.
- Dowty, David (1979) *Word Meaning and Montague Grammar*, Foris, Dordrecht.
- Embick, David (2004) "On the Structure of Resultative Participles in English," *Linguistic Inquiry* 35, 355–392.

- Fujita, Koji (1996) "Double Objects, Causatives, and Derivational Economy," *Linguistic Inquiry* 27, 146–173.
- Grimshaw, Jane (1990) *Argument Structure*, MIT Press, Cambridge, MA.
- Hale, Ken and Samuel Keyser (2002) *Prolegomenon to a Theory of Argument Structure*, MIT Press, Cambridge, MA.
- Harley, Heidi and Rolf Noyer (2000) "Formal vs. Encyclopedic Properties of Vocabulary: Evidence from Nominalization," *The Lexicon-Encyclopedia Interface*, ed. by Bert Peters, 349–374, Elsevier Press, Amsterdam.
- Hasegawa, Nobuko (2001) "Causatives and the Role of *v*: Agent, Causer, and Experiencer," *Proceedings of the COE International Symposium*, 1–35.
- Haspelmath, Martin (1993) "More on the Typology of Inchoative/Causative Alternations," *Causatives and Transitivity*, ed. by Bernard Comrie and Maria Polinsky, 87–120, John Benjamins, Amsterdam.
- Jespersen, Otto (1927) *A Modern English Grammar on Historical Principles*, Carl Winters, Heidelberg.
- Koontz-Garboden, Andrew and John Beavers (2012) "Manner and Result in the Roots of Verbal Meaning," *Linguistic Inquiry* 4, 331–369.
- Kratzer, Angelika (1996) "Severing the External Argument from Its Verb," *Phrase Structure and the Lexicon*, ed. by Johan Rooryck and Laurie Zaring, 109–137, Kluwer, Dordrecht.
- Levin, Beth (1993) *English Verb Classes and Alternations*, University of Chicago Press, Chicago.
- Levin, Beth (2011) "Verb Classes within and across Languages," paper presented at the Valency Classes Conference, Max Planck Institute for Evolutionary Anthropology, Leipzig, April 14–17.
- Levin, Beth and Malka Rappaport Hovav (1995) *Unaccusativity: At the Syntax-Lexical Semantics Interface*, MIT Press, Cambridge, MA.
- Levin, Beth and Malka Rappaport Hovav (2013) "Lexicalized Meaning and Manner/Result Complementarity," *Subatomic Semantics of Event Predicates*, ed. by Boban Arsenijević, Berit Gehrke and Rafael Marín, 49–70, Springer, Dordrecht.
- Lohndal, Terje (2014) *Phrase Structure and Argument Structure*, Oxford University Press, Oxford.
- Marantz, Alec (2001) "Words and Things," ms., MIT.
- Matsumoto, Yo (2000) "Causative Alternation in English and Japanese: A Closer Look," *English Linguistics* 17, 160–192.
- McKoon, Gail and Talke Macfarland (2000) "Externally and Internally Caused Change of State Verbs," *Language* 76, 833–858.
- Pesetsky, David (1995) *Zero Syntax: Experiencers and Cascades*, MIT Press, Cambridge, MA.
- Piñón, Christopher (2001) "A Finer Look at the Causative-Inchoative Alternation," *Proceedings of Semantics and Linguistic Theory* 11, 326–345.
- Pylkkänen, Liina (2008) *Introducing Arguments*, MIT Press, Cambridge, MA.
- Ramchand, Gillian (2008) *Verb Meaning and the Lexicon: A First Phase Syntax Approach*, Cambridge University Press, Cambridge.

- Rappaport Hovav, Malka (2014) "Lexical Content and Context: The English Causative Alternation Revisited," *Lingua* 141, 8–29.
- Rappaport Hovav, Malka and Beth Levin (2010) "Reflections on Manner/Result Complementarity," *Syntax, Lexical Semantics, and Event Structure*, ed. by Edit Doron, Malka Rappaport Hovav and Ivy Sichel, 21–38, Oxford University Press, Oxford.
- Rappaport Hovav, Malka and Beth Levin (2012) "Lexicon Uniformity and the Causative Alternation," *The Theta System: Argument Structure at the Interface*, ed. by Martin Everaert, Marijana Marelj and Tal Siloni, 150–176, Oxford University Press, Oxford.
- Reinhart, Tanya (2000) "The Theta System: Syntactic Realization of Verbal Concepts," *OTS Working Papers*, University of Utrecht.
- Reinhart, Tanya (2002) "The Theta System: An Overview," *Theoretical Linguistics* 28, 229–290.
- Schäfer, Florian (2008) *The Syntax of (Anti-)Causatives: External Arguments in Change-of-State Contexts*, John Benjamins, Amsterdam.
- Schäfer, Florian (2009) "The Causative Alternation," *Language and Linguistic Compass* 3, 641–681.
- Schäfer, Florian (2012) "Two Types of External Argument Licensing: The Case of Causers," *Studia Linguistica* 66, 128–180.
- Smith, Carlota (1970) "Jespersen's 'Move and Change' Class and Causative Verbs in English," *Linguistic and Literary Studies in Honor of Archibald A. Hill*, ed. by M. Ali Jazayery, Edgar Polomé and Werner Winter, 101–109, Mouton, The Hague.
- Solstad, Torggrim (2009) "On the Implicitness of Arguments in Event Passives," *NELS* 38, 365–374.
- Taraldsen, Tarald (2010) "Unintentionally out of Control," *Argument Structure and Syntactic Relations: A Cross-linguistic Perspective*, ed. by Maia Duguine, Susana Huidobro and Nerea Madariaga, 283–302, John Benjamins, Amsterdam.
- von Stechow, Arnim (1996) "The Different Readings of *Wieder* 'Again': A Structural Account," *Journal of Semantics* 13, 87–138.
- Wright, Sandra (2002) "Transitivity and Change of State Verbs," *BLS* 28, 339–350.
- Yamaguchi, Toshiko (1998) "Lexical Semantic Analysis of Causative/Inchoative Alternation in Japanese: A Preliminary Investigation of Subclasses of Verbs," *Essex Graduate Students Papers in Linguistics* II.
- Zombolou, Katerina (2004) *Verbal Alternations in Greek: A Semantic Analysis*, Doctoral dissertation, University of Reading.

[received September 18, 2014, revised and accepted November 19, 2014]

Institute of English Linguistics
University of Stuttgart
Keplerstr. 17, 70174
Stuttgart
e-mail: artemis@ifla.uni-stuttgart.de