

## A finer look at predicate decomposition: evidence from causativization

Ekaterina Lyutikova and Sergei Tatevosov\*  
Moscow State University

### 1. Introduction: Radical predicate decomposition

In this paper, we establish an argument supporting radical predicate decomposition (RPD) whereby subevental components of an event description are represented independently from relations between them. One of the fundamental assumptions that virtually all theories of syntactically represented event structure share (Pylkkänen 2002, Borer 2005, Zubizarreta and Oh 2007, Ramchand 2008, Travis 2010, Tubino Blanco 2011), often tacitly, is that subevent descriptions appear together with their relations to a subordinate subevent, as in (1).

$$(1) \quad \lambda e \exists e' [Q(e) \wedge P(e') \wedge \text{CAUSE}(e')(e)]$$

XP

$$\begin{array}{ccc} \text{X} & & \text{YP} \\ \lambda P \lambda e \exists e' [Q(e) \wedge P(e') \wedge \text{CAUSE}(e')(e)] & & \lambda e [P(e)] \end{array}$$

In (1), which is an instance of what we call standard predicate decomposition (SPD), the denotation of XP is a predicate of events that fall under the extension of the predicate Q, introduced by the X head. These events bring about an event from the extension of P, another predicate of events denoted by YP, the complement of X. On this view, crucially, the causal relation comes out as part of the denotation of the X head.

We propose instead that subevents and relations are distinct components of event structure, as in (2).

$$(2) \quad \lambda e \exists e' [P(e') \wedge Q(e) \wedge R(e')(e)]$$

$$\begin{array}{ccc} \lambda e [Q(e)] & & \lambda Q \lambda e \exists e' [P(e') \wedge Q(e) \wedge R(e')(e)] \\ \text{higher (sub)event} & & \lambda P \lambda Q \lambda e \exists e' [P(e') \wedge Q(e) \wedge R(e')(e)] \quad \lambda e [P(e)] \\ & & \text{relation between subevents} \quad \text{lower (sub)event} \end{array}$$

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In (2), two components of event structure, event predicates P and Q, are represented independently from the R relation between events from their extensions. Our narrow claim is that *semantic composition* works along the lines of (2), whereby introducing a causing subevent and its relation to a subordinate subevent are distinct steps of derivation.

The wider claim is that subevents and their relations are represented independently *in the syntax*. We argue the heads contributing a subevent (e.g., Folli’s (2002) and Ramchand’s (2008) *v/init* and *V/proc*) are mediated by a relation-introducing Aktionsart element, as in (3).

(3)  $[_{VP} \dots V [_{AktP} \dots Akt [_{VP} \dots V \dots ]]]$

Below, we mostly discuss evidence for RPD that comes from causativization. In section 2, we address semantics of causal relations in Tatar (Altaic, Turkic) and argue that it varies independently from the descriptive content of subevental heads, which supports our narrow claim. In Section 3, we develop an argument from semantics and morphology of denominal verbs that supports the wider claim. Finally, in Section 4, we examine cross-linguistic data from Tundra Nenets, Malagasy and Hindi (the latter two originally discussed by Ramchand (2008) and Travis (2010)). We argue that properties of the causative in these languages, problematic for previous SPD proposals, receive a principled explanation on the RPD analysis along the lines of (3).

## 2. Semantic evidence

Our first argument, supporting the narrow claim that the subevental content of event structure and relations between subevents involve distinct steps of derivation, as in (2), runs as follows. Since setting up a relation and introducing an event predicate are distinct operations, (2) predicts that the descriptive content of event predicates corresponding to the higher subevent (P in (2)) and properties of the relation (R in (2)) vary independently. With (2), if we have two classes of predicates,  $\alpha$  and  $\beta$ , and two relations,  $R'$  and  $R''$ , we expect that all the four logical possibilities, the Cartesian product of  $\{\alpha, \beta\}$  and  $\{R', R''\}$ , should be empirically real.  $\alpha$ -type events should enter both  $R'$  and  $R''$  relations, same for  $\beta$ -type events. If (1) tells us a true story, the default expectation is the opposite: given that characteristics of the relation are always tied up to a specific event predicate (e.g., in (1) the predicate Q and the causal relation form a denotation of the X head), we should only regularly find two options of the four logically possible.

What we need to test this prediction are a set of different types of event descriptions  $\{P, P', \dots\}$  and a set of different relations  $\{R, R', \dots\}$ . We would then be able to check if every member of the former can occur in combination with every member of the latter. For constructing the first set, one can rely on the semantic distinction independently motivated in the literature starting from Rappaport Hovav and Levin 1998; see a recent discussion in Rappaport 2008, Levin and Rappaport Hovav 2010 and Beavers 2011. We know that many natural language predicates are specified for the manner of action (these are ‘manner verbs’ in Rappaport Hovav and Levin’s terms). Classical examples are *wipe* and many other verbs of surface contact, whose meaning includes rich information about the activity performed by the external argument. Other verbs, e.g., *break* or *kill*, are underspecified for manner: *kill*, for instance, is compatible with wide variety of the agent’s activities that bring about the death of the patient: shooting, poisoning, hitting with the hammer, etc. It is only in the context where the exact nature of the activity can be identified (or still left unclear). Therefore, manner specified (or [+manner]) vs. manner underspecified ([-manner]) are classes of event descriptions that are suitable for our purposes.

For identifying a set of relations between subevents, we can make use of the observation that the composition of complex event predicates (those consisting of more than one subevental

component) cannot be reduced to a single causal relation. Rothstein (2004) argues convincingly that for predicates like ‘read a novel’, the reading activity and the subevent of the novel getting read enter what she calls an incremental relation (INCR), not the one of immediate causation. Besides, the causal relation itself comes in at least two varieties, direct, or immediate (I-CAUSE), and not necessarily immediate, or general (G-CAUSE). (I-CAUSE and G-CAUSE will be discussed shortly, and INCR will play a key role in the discussion from Section 3.) All these options, once proven empirically real, can serve for our experimental purposes, too.

For the reasons of space, below we will examine a small subset of logical possibilities generated by the {[+manner], [-manner]} and {INCR, I-CAUSE, G-CAUSE} sets. We will show that the same [-manner] event predicate is free to combine with both I-CAUSE and G-CAUSE relations. (Other combinations, which would make our argument complete, are dealt with in Lyutikova and Tatevosov 2010.) Given the architecture in (2), this is exactly what we predict. In a world according to (1), this co-occurrence pattern comes out as a mysterious coincidence.

With this general outline of the argument, we take into account causativization data from Tatar (Altaic, Turkic). Causatives give us a good opportunity to observe a complex event structure in which relations between subevents can be different and thus offer a way of telling (1) and (2) apart. The difference is illustrated in (4)-(5):

- (4) alim kerim-ne ü-**ter**-de.  
 A. K.-ACC die-CAUS-PST.3SG  
 1. ‘Alim killed Kerim.’  
 2. \* ‘{Having paid \$10,000 to the killer,} Alim organized Kerim’s assassination.’
- (5) ukituči alim-ne jariš-ta eger-**t**-te.  
 teacher A.-ACC competition-LOC run-CAUS-PST.3SG  
 1. ‘The teacher made Alim run at the competition (e.g., by pushing him on the lane).’  
 2. ‘{Having convinced the coach that Alim is a good runner,} the teacher organized Alim’s running at the competition.’

In (4), the unaccusative verb ‘die’ undergoes causativization. (4) is only compatible with the scenario in which the agent’s action is an immediate cause of the patient’s death (exactly as what happens to the lexical verb *kill* in English). In contrast, the causative in (5) accepts two scenarios: in (5.1), there still is an immediate causal relation between the teacher’s acting and Alim’s running, but in (5.2), the causal chain connecting these two events can contain intermediate causes (e.g. convincing the coach, the coach making his decision, etc.)

In the literature, a number of grammatical manifestations of the immediate/non-immediate distinction are cited.<sup>1</sup> One of the most striking ones is that the non-immediate causative allows for adverbials to scope over subevents independently. (6) is three-way ambiguous, but (7) is not:

- (6) marat eki minut ečendä alsu-dan täräz-ne ač-**tir**-di.  
 M. two minute within A.-ABL window-ACC open-CAUS-PST.3SG  
 1. ‘In two minutes, Marat made Alsu open the window.’  
 2. ‘It took two minutes for Marat to make Alsu open the window (in a second)’  
 3. ‘What Marat did (in two hours) was make Alsu open the window in two minutes.’

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<sup>1</sup> This distinction is known under different labels including manipulative vs. directive (Shibatani 1976), contactive vs. distant (or non-contactive), Saksena 1982), immediate vs. mediated (Kulikov 2001), causer-controlled vs. causee-controlled (Shibatani 2002). The distinction has been a constant topic in the studies of causativization phenomena since late 1960s and one of the central issues surrounding the debate on lexical and syntactic causatives (Lakoff 1965, Fodor 1970, McCawley 1972, Shibatani 1973, Yang 1976, see a recent discussion in Miyagawa, to appear).

- (7) marat čiläk-ne tul-**dİR**-dİ.  
 M. bucket-ACC fill.intr-CAUS-PST.3SG  
 1. ‘In two minutes, Marat filled the bucket.’  
 2. \*‘It took two minutes for Marat to make the bucket fill (in an hour)’  
 3. \*‘What Marat did (in a second) was make the bucket fill in two minutes.’

In terms of Kratzer (2005), in (4.1) Alim’s activity is *a causing of* Kerim’s being dead, while in (4.2), had this interpretation been available, paying \$10,000 would have been the event that *causes* Kerim’s being dead. The same difference is observed in (5.1) and (5.2). Therefore, the causative in (4), given that (4.2) is inappropriate, is based on the relation of immediate causation. The causative in (5), compatible with both scenarios, introduces a more general relation comprising immediately and non-immediately related events. Semantics of these two relations can be represented as in (8) (quasi-formally, which suffices for our current purposes):

- (8) a.  $\| \text{I-CAUSE}(e')(e) \| = 1$  iff  $e$  is the sum of all the members of a causal chain with the maximal element  $e'$  (Kratzer 2005).  
 b.  $\| \text{G-CAUSE}(e')(e) \| = 1$  iff  $e$  is a sum of some members of a causal chain with the maximal element  $e'$ , provided that the minimal element in that chain is part of  $e^2$

Given that (4)-(5) involve different causal relations in (8a) and (8b), the question is: Do these relations correspond to different descriptive properties of the causing subevent or those properties are the same in (4)-(5)? As far as one can tell, there are good reasons to believe that in both (4) and (5) we are dealing with the same event predicate over causing subevents.

In languages like Tatar, causing subevents are underspecified for the descriptive content. In much the same way as English lexical result verbs like *break*, (4) is compatible with wide variety of the agent’s activities that bring about the death of the patient. Like result verbs in English, causatives like ‘kill’ in Tatar accept manner specifying adjuncts, as illustrated in (9) for ‘break’. The same holds for ‘make run’ in (10):

- (9) alim ujnčİK-nİ taşla-p || sug-İp sin-dİR-dİ.  
 A. toy-ACC throw-CONV hit-CONV break-CAUS-PST.3SG  
 ‘Alim broke the toy by throwing || hitting it’.
- (10) ukituči alim-ne tert-ep || trener-ne İşandır-İp jariş-ta  
 teacher A.-ACC push-CONV coach-ACC convince-CONV competition-LOC  
 eger-t-te.  
 run-CAUS-PST.3SG  
 1. ‘The teacher made Alim run at the competition by pushing him.’  
 2. ‘Having convinced the coach, the teacher organized Alim’s running at the competition.’

Another property indicative of manner underspecified verbs (e.g., Kratzer 1996, Alexiadou and colleagues 2006, Nash 2006, Koontz-Garboden and Beavers 2011) is that thematic characteristics of the external argument are flexible: not only agents, but also natural forces, events and a certain class of instruments are licensed as subjects in sentences like (11)-(12):

<sup>2</sup> (8) departs from Kratzer 2005 in one significant respect: Kratzer pairs her ‘causing of’ relation, identical to I-CAUSE in (8a), with the relation of indirect causation. What we need to capture both (4) and (5) is different: (5.1)-(5.2) comprise both direct and indirect causation, and hence the desired relation has to include both as a special case. We believe that (8) does precisely this.

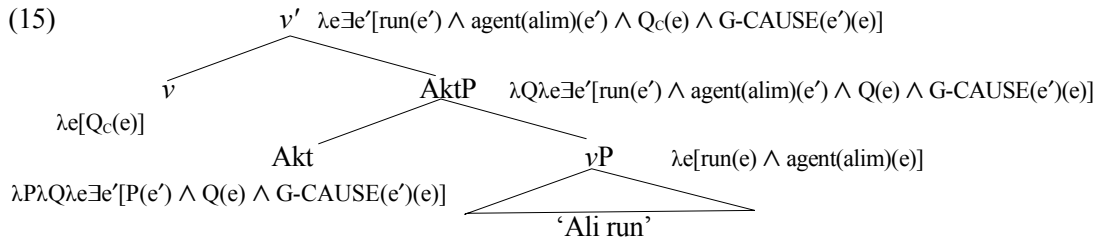
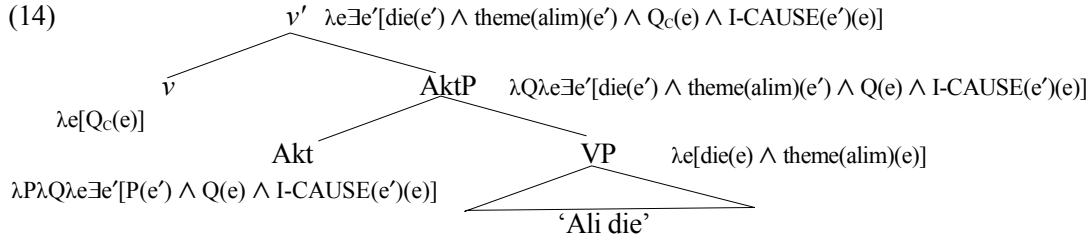
- (11) žil tārāz-ne sin-dir-dī.  
wind window-ACC break-CAUS-PST.3SG  
'The wind broke the window.'
- (12) žiñü-e-nej teläg-e alim-ne jariš-ta eger-t-te.  
victory-3-GEN desire-3 Alim-ACC competition-LOC run-CAUS-PST.3SG  
'The desire to win made Alim run at the competition.'

Further diagnostics for the lack of manner specification can be found in Koontz-Garboden and Beavers 2011; (9)-(12) will suffice for our survey. We believe that (9)-(12) point towards a clear conclusion: they involve a causing subevent underspecified for the descriptive content. Predicates of causing subevents can have whatever events in their extension that can bring about a subordinate subevent, the causee becoming dead in (4) or running in (5). Furthermore, with no evidence for the opposite, one can make a stronger claim: in (4) and (5), we are dealing with the same [-manner] predicate, not with two distinct ones.

Ljutikova and Tatevosov (2010) argue that the descriptive properties of causing subevents come out as a free variable over event predicates that receives its value from the assignment. This allows those descriptive properties to vary with the context, which seems to be exactly what we need to capture the meaning (4)-(5):

- (13)  $\lambda e[Q_C(e)]$

In our system, (2), both I-CAUSE and G-CAUSE are introduced independently from  $Q_C$  and before  $Q_C$ , so when  $Q_C$  appears, I-CAUSE or G-CAUSE are already there. The derivation of (4)-(5) would look, leaving out irrelevant details, as in (14)-(15):



We follow Harley 2008, Travis 2010, Miyagawa (to appear) and much other literature in that the causative is a realization of  $v$ . In Ljutikova and Tatevosov 2010, we argue that for languages like Turkic the choice between I-CAUSE and G-CAUSE is fully determined by structural considerations. If an unaccusative configuration is causativized, the causative morpheme takes VP as its complement, as in (4), and the causal relation is necessarily I-CAUSE. When a transitive or unergative verb gets causativized, the causative merges with  $vP$ , not VP, which leads to the G-CAUSE interpretation, as in (5). (14c) is a predicate that contains events in its extension that

immediately cause an event of Kerim’s dying. (15c) is a predicate of events that (not necessarily indirectly) bring about an event of Alim’s running. All we need to complete the derivation is introduce an external argument (e.g., by Event Identification, Kratzer 1996, Pykkänen 2002).

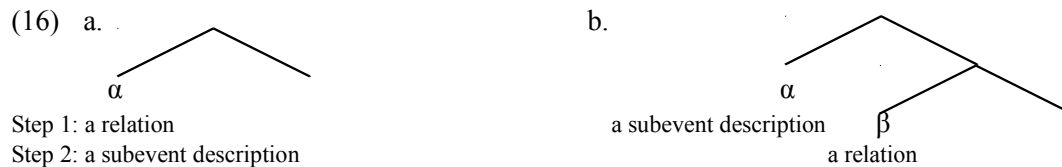
To recapitulate, the evidence from Tatar consists of two parts. First, the causal relation comes in two varieties, I-CAUSE and G-CAUSE. Secondly, no matter which of the two causative configurations is built up, it involves the same predicate of causing subevents underspecified for the descriptive content. What we get, then, is exactly what we have been looking for: a case where the relation varies independently from the properties of an event predicate that introduces causing subevents. RPD provides a principled explanation for this fact: since relations and subevent descriptions appear in the structure at distinct steps of derivation, the integration of the latter into the event structure is correctly predicted to be blind to the properties of the former.

If the above reasoning is correct, we have an argument that RPD provides a right view of how the event structure is built in terms of semantic composition. This is a narrow claim of this paper. The wider claim is that subevents and their relations are also representationally distinct, as shown in (3). In the next section, we will discuss evidence supporting this wider claim.

### 3. Morphological evidence

#### 3.1. The two classes

So far we have argued that subevents and their relations involve distinct steps of semantic derivation. However, it does not necessarily follow from this that they correspond to distinct pieces of syntactic structure. For it may be the case that two semantic operations occur when the same syntactic head is interpreted, an example being what Pykkänen (2002) calls Voice Bundling. In Voice Bundling, causativization and introduction of the external argument, distinct steps of semantic derivation, happen as two subsequent steps of interpretation of the same head. One can imagine that (1)-(2), interpretationally distinct, are representationally identical. We thus have to tell apart the two options represented in (16a-b):



Our second argument is based on the fact that (16a-b) make different predictions as to the spell-out of the event structure. If (16b), based on (3), is correct, the expectation is: not only are subevents and relations independent for the interpretation mechanism, they are *spelled out* independently as well. We expect to encounter a situation where properties of the relation hosted by the Akt head in (3) have visible consequences for the morphology. In what follows, we present evidence suggesting that this prediction is borne out, hence alternatives to (3) cannot be correct. Specifically, will examine a class of denominal verbs in Tatar collected in Kirpo and Kudrinskij 2011 and show that their morphological shape is indeed sensitive to the properties of Akt.

Among denominal verbs in Tatar, two classes are especially prominent, which differ as to the morphological make-up of the transitive member of the causative-inchoative pair. Transitive/causative verbs from class 1 are derived by the *-la-* morpheme (LA henceforth), while a corresponding intransitive/inchoative involves an additional piece of morphology, the *-n-* morpheme (N).

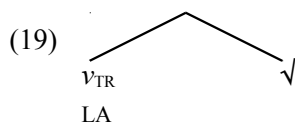
- (17) **Class 1: transitive (causative) verbs in *-la*, inchoative verbs in *-la-n*.**  
*jüeš-lä* ‘wet’ / *jüeš-lä-n* ‘get wet’ (*jüeš* ‘wet’)

*ansat-la* ‘lighten, tr.’ / *ansat-la-n* ‘lighten, intr.’ (*ansat* ‘light, easy’)  
*jäšel-lä* ‘make green, paint green’ / *jäšel-lä-n* ‘acquire green color’ (*jäšel* ‘green’)  
*maj-la* ‘oil, lubricate’ / *maj-la-n* ‘get oiled, soak up oil’ (*maj* ‘oil’)

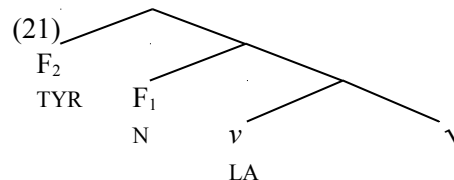
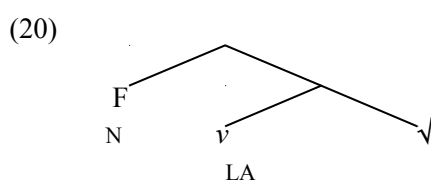
For verbs from class 2, the direction of derivation is apparently the opposite: the transitive member of the pair looks like a product of causativization of a *-la-n-* intransitive verb by the TYR morpheme we have already dealt with:

- (18) **Class 2: inchoative verbs in *-la-n*, transitive (causative) verb in *-la-n-dyr***  
*jalkaw-la-n* ‘become lazy’ / *jalkaw-la-n-dyr* ‘make lazy’ (*jalkaw* ‘lazy’)  
*jaxši-la-n* ‘improve, intr., (of a person)’ / *jaxši-la-n-dyr* ‘improve, tr., make good (of a person)’ (*jaxši* ‘good’)  
*čül-lä-n* ‘turn into a desert, intr.’ / *čül-lä-n-der* ‘turn into a desert, tr.’ (*čül* ‘desert’)  
*saz-la-n* ‘get waterlogged’ / *saz-la-n-dyr* ‘make waterlogged, waterlog’ (*saz* ‘swamp’)  
*mumijä-lä-n* ‘get mummified’ / *mumijä-lä-n-der* ‘mummify’ (*mumijä* ‘mummy’)

An obvious way of treating class 1 and class 2 verbs would be based on the assumption that morphological asymmetry reflects distinct structures they project. In Marantz-style framework (Marantz 1997 and elsewhere; Alexiadou and colleagues 2006) one is tempted to analyze class 1 transitive verbs as in (19):



Their anticausative/inchoative variants would then be represented as in (20), where N can be thought of as a spell-out of a functional head that takes *vP* as its complement. Given that class 1 and class 2 inchoatives are morphologically identical, the structure in (20) naturally extends to class 2 inchoatives. Following the same logic, class 2 transitives would involve an extra projection where the causative morpheme is merged, as in (21).



(19) and (21) reflect a huge derivational asymmetry between class 1 and 2 transitives, the latter representing more complex event structure, with one more subevent and one more thematic role brought in by the TYR morpheme. Whatever consequences this complexity can have, we expect to observe them when comparing class 2 and class 1 verbs. It should be also noted that (21) is essentially the structure Guasti (2005) and Folli and Harley (2007) assign to Romance *faire* plus infinitive analytic causatives. If this parallelism is taken seriously, class 2 Tatar causatives are expected to be indirect, like their Romance counterparts.

The problem is: there is no detectable difference between class 1 and class 2 transitives. They are identical in terms of argument structure, case marking of arguments, and eventuality type: all involve the Nominative subject and Accusative object, all license agents, events, and natural forces as external arguments; most are accomplishments. These characteristics are illustrated in (22).

- (22) **Class 1:** External argument: Agent, Event or Natural Force, Nominative  
 Internal argument: Theme, Accusative; Eventuality type: telic  
 marat / jaŋgır külmäg-e-n jüeš-lä-de.  
 M. rain shirt-3-ACC wet-LA-PST  
 ‘Marat / the rain wet his shirt’
- (23) **Class 2:** External argument: Agent, Event or Natural Force, Nominative  
 Internal argument: Theme, Accusative; Eventuality type: telic  
 ukıtuči / universität-tä uku-i marat-ni jaklaw-la-n-đır-dı.  
 teacher university-LOC study-3 M.-ACC lazy-LA-N-TYR-PST.3SG  
 ‘The teacher / studying at the university made Marat lazy.’

More significantly, all involve direct causation, as evidenced by the fact that the scope of temporal adverbials must include both subevents (cf. the indirect causative in (6)):

- (24) marat eki minut ečendä külmäg-e-n jüeš-lä-de.  
 M. two minute within shirt-3SG-ACC wet-LA-PST.3SG  
 ‘Marat wet his shirt in two minutes’  
 1. \* ‘Marat did something in two minutes so that the shirt got wet (in a second)’  
 2. \* ‘Marat did something (in a second) so that the shirt got wet in two minutes’
- (25) ukıtuči eki zil ečendä marat-ni jaklaw-la-n-đır-dı.  
 teacher two year within M.-ACC lazy-LA-N-TYR-PST  
 ‘The teacher made Marat lazy in two years.’  
 1. \* ‘The teacher did something in two years so that Marat become lazy (in a week)’  
 2. \* ‘The teacher did something (in a month) so that Marat became lazy in two years’

Finally, we know at least since Dowty 1979 that complex event structures tend to give rise to scopal ambiguities with adverbials like ‘almost’ and ‘again’ (von Stechow 1995, Rapp, von Stechow 1999) as well as under negation. Having compared (26)-(27), one discovers that in negated sentences ‘wet’ and ‘make lazy’ are ambiguous in exactly the same way: the negation either scopes above or below the agent’s activity.

- (26) marat büreg-e-n jüeš-lä-mä-de.  
 M. cap-3SG-ACC wet-LA-NEG-PST.3SG  
 ‘Marat did not wet his cap.’  
 1. ... OK: He said it is not that hot outside, so he does not need to wear a wet cap.  
 2. ... OK: Even after he put it in the water. Waterproof caps do not get wet easily.
- (27) ukıtuči marat-ni jakši-la-n-đır-ma-dı.  
 teacher M.-ACC good-LA-N-TYR-NEG-PST.3SG  
 ‘The teacher did not improve Marat.’  
 1. ... OK: He did not even try.  
 2. ... OK: All his attempts were a complete waste of time.

To the extent that the scope of negation is indicative of the internal complexity of the verbal predicate, (26)-(27) show clearly that ‘wet’ is as complex as and ‘make lazy’, contrary to what (19) and (21) suggest.

One can conclude from examples like these that two types of transitives, contrary to the initial assumption, are structurally identical and semantically alike. Moreover, everything in (22)-



(27) (morphosyntax, scope of temporal adverbials, scope of negation) suggests that both types are derived result verbs like ‘break’ and project as much as a  $vP$ . Given that, the very fact that class 2 transitives consist of four pieces of morphology (root — LA — N — TYR) starts being problematic: in an SPD system, the  $vP$  does not contain enough projections to host all the four.

In what follows, we propose an RPD analysis based on the assumption that class 1 and class 2 transitives are structurally identical, and the difference only emerges when the structure is spelled out. We believe that this analysis, which crucially relies on AktP in between  $vP$  and VP, as in (3), captures more facts with less stipulations than the alternative outlined in (19)–(21). But to make the analysis work, we need to figure out what exactly the structure being spelled out looks like and what determine the choice between the two spell-out options.

### 3.2. The two relations

A solution to the puzzle begins to emerge if we take into account a lexical semantic peculiarity that verbs from class 2 share. They all involve what Rothstein (2004) calls an incremental relation between activity and change of state subevents.

For Rothstein, events  $e$  and  $e'$  are incrementally related, (28), iff there is a contextually salient function that maps every member of the incremental chain of  $e'$ , (29), to a cotemporaneous part of  $e$ . For instance, for predicates like *read a novel* the relation between activity and change of state is incremental, since for any (contextually relevant) part of the reading activity there must be a corresponding part of the process of the novel getting read and vice versa.

(28)  $\text{INCR}(e')(e)(C(e'))$  ( $e$  is incrementally related to  $e'$  with respect to the incremental chain  $C(e')$ ) iff there is a contextually available one-one function  $\mu$  from  $C(e')$  onto  $\text{PART}(e)$  such that  $\forall e \in C(e_2)[\tau(e) = \tau(\mu(e))]$

(29)  $C(e)$ , an incremental chain for  $e$ , is a set of parts of  $e$  such that (i) the smallest event in  $C(e)$  is the initial bound of  $e$ , (ii)  $e$  is in  $C(e)$ , and (iii) for every  $e_1, e_2$  in  $C(e)$   $e_1 \leq e_2$  or  $e_2 \leq e_1$ .

For verbs from the class 1 the relation between the activity and change of state is not incremental (and for some cannot be incremental). Rather, it is a more general relation of immediate causation, I-CAUSE. Take ‘wet’ as an example again. It is fully compatible with at least two types of scenario. It can be the case that every subevent of the theme getting wet corresponds to some portion of the agent’s activity (imagine that the agent spatters water over the theme). But it can also be the case that the whole subevent of getting wet occurs at the very final part of the activity (e.g., the agent takes the object and throws it into the water). The same two options obtain with verbs like ‘make green’: the agent can accomplish this by gradually laying the green paint on the surface of the patient as easily as by putting it into the dye. In the latter case, the whole subevent of getting green occurs after the agent’s activity. Therefore, verbs from class 1 do not meet the crucial criterion of Rothstein’s incrementality: the change of state does not require contemporaneous input of the agent’s activity.

Verbs from class 2 are minimally different in that the nature of change which the internal argument undergoes is incompatible with scenarios where the change occurs at the final part of the activity. Such verbs refer to temporally stable properties that, under normal circumstances, come to existence gradually. Moreover, they all require this gradual change be brought about by some temporally coextensive causing event. Take *jalkaw-la-n-dir* ‘make waterlogged; lit. turn into a swamp’ or *čül-lä-n-der* ‘turn into a desert’ as an example. The result state of events referred to by these verbs are ‘be (like) a swamp’ or ‘be (like) a desert’, respectively.

- (30) vāxši-lār      šäxär-ne      čül-lä-n-der-de-lär.  
 barbarian-PL    city-ACC    desert-LA-N-TYR-PST-PL  
 ‘Barbarians turned the city into a desert.’
- (31) jaŋgir-li      žäj      kir-ni      saz-la-n-dir-di.  
 rain-ATR    summer    field-ACC    swamp-LA-N-TYR-PST  
 ‘Rainy summer waterlogged the field.’

For both (30) and (31), the change of state where the city turns into a desert and the field into a swamp is conceived of as happening in a way described by Rothstein: the progress of these changes is dependent on a temporally coextensive causing subevent. The more barbarians act, the more the city looks like a desert, and the more the rainy summer lasts, the more the field resembles the swamp. Setting up a scenario that breaks an incremental relation (e.g., ‘The bomb turned the city into a desert’) leads to a drastic decrease in acceptability. Therefore, the right generalization about the class membership of a denominal verb seems to be as follows: whenever the relation between the activity and change of state subevents is incremental, the verb falls within Class 2; otherwise, it is a member of Class 1.

We propose that RPD can provide a principled explanation for the distribution of class 1 and class 2 transitives. If the generalization that the class membership depends on the properties of the relation (I-CAUSE vs. INCR) is correct, the prediction derivable from RPD is straightforward: the head where the relation is located is expected to be spelled out in different ways depending on the properties of the relation. With this in mind, we are ready to lay the analysis out.

### 3.3. The two spell-out patterns

Our wider theoretical claim is that the structure of *v*P looks as in (3), repeated in (32):

- (32) [<sub>VP</sub> ... *v* [<sub>AktP</sub> ... Akt [<sub>VP</sub> ... V ... [<sub>XP</sub> ... X ... ] ] ] ]

In line with Folli 2002, Ramchand 2008, Travis 2010, Borer 2005, Zubizarreta and Oh 2007 we assume a syntactic view of event structure. *V* and *v* correspond to Ramchand’s (2008) *init* and *proc*; *Akt* is what makes (32) a (variant of) RPD theory. The closest analogue of *Akt* found in the literature is Travis’ (2010) Inner Aspect; for the reasons of space we are not able go into further detail, see Lyutikova and Tatevosov 2010 for the discussion. In (32), we are abstracting away from the internal structure of *XP* where the non-verbal component originates.

To account for the distribution of denominal verbs in Tatar we only have to make two additional assumptions. One of them is about the syntactic configuration associated with transitive and inchoative verbs from both classes; another has to do with the spell-out of this configuration.

We have seen that an analysis in (19)-(21) that posits a derivational asymmetry between class 1 and class 2 transitives runs into serious complications. We propose instead that class 1 and class 2 verbs project the same structure in both transitive and inchoative configurations, and that it is exactly a configuration in (33). Inchoative clauses only differ from transitives as to the second order feature (in the sense of Adger and Svenonius 2011) [TR]/[INCH] on *v*, (33a-b). This assumption puts the analysis in line with the family of approaches where the inchoatives and transitives are derived by different ‘flavors’ of *v* (e.g., Folli and Harley 2005):

- (33) a. Transitive: [<sub>VP</sub> ... *v*<sub>TR</sub> [<sub>AktP</sub> ... ] ]  
 b. Inchoative: [<sub>VP</sub> ... *v*<sub>INCH</sub> [<sub>AktP</sub> ... ] ]

The Akt head bears the feature [INCR]/[CAUSE], which determines if the relation between the activity and change of state is incremental or a relation of immediate causation, (34a-b):

- (34) a. Transitive: [... [AktP ... Akt<sub>INCR</sub> [VP ... ] ] ]  
 b. Inchoative: [ ... [AktP ... Akt<sub>I-CAUSE</sub> [VP ... ] ] ]

Our second assumption has to do with the spell-out of the structure. We assume a ‘nanosyntactic’ approach to the spell-out that has recently gained a grown popularity by offering elegant solutions to a number of complicated issues (e.g., Caha 2009, Pantcheva 2010, Taraldsen 2010). Three basic principles of this approach are (35)-(37) (Starke 2010:3-5):

- (35) *Superset principle*: A lexically stored tree matches a syntactic node iff the lexically stored tree contains the syntactic node.  
 (36) *The biggest match principle*: The biggest match always overrides the smaller matches.  
 (37) *Elsewhere principle*: If several lexical items match the root node, the candidate with least unused nodes wins.

From the nanosyntactic point of view, a lexical item is a pairing of phonological representation with a syntactic subtree, the latter determining what syntactic configuration can be spelled out by the item. Finally, we assume the subset principle for second order features:

- (38) *Subset principle for second order features*: If a node A in a tree being spelled out and a node  $\alpha$  in a lexically stored subtree match, the set of second order features on  $\alpha$  must be a subset of those on A.

Lexical entries for LA, N, and TYR are specified in (39).

- (39) a. LA  $\Leftrightarrow$  [<sub>VP</sub>  $v_{TR}$  [AktP Akt<sub>CAUSE</sub> [VP V ] ] ]  
 b. N  $\Leftrightarrow$  [<sub>VP</sub>  $v_{INCH}$  [AktP Akt ] ]  
 c. TYR  $\Leftrightarrow$  [ [<sub>VP</sub>  $v_{TR}$  [AktP Akt<sub>CAUSE</sub> ] ] ], where CAUSE = {I-CAUSE, G-CAUSE}

Since out of the three items in (39) only LA is specified for the VP node, it is the only option for spelling out VP. In effect, LA always surfaces in denominal verbs regardless of what features  $v$  and Akt bear. The spell-out of other components depends on their featural content.

*Class 1 verbs* are based on the I-CAUSE relation. Depending on the TR/INCH feature on  $v$ , two configurations would be available. In (40), the whole structure is spelled out by LA. Other competitors (N for Akt<sub>I-CAUSE</sub> and TYR for  $v_{TR}$  and Akt<sub>G-CAUSE</sub>) lose to LA according to (36), since LA is the biggest match. In (41), N is the only option for spelling out  $v_{INCH}$ . It competes with LA for Akt<sub>CAUSE</sub>, but loses the competition due to (37): unlike N, LA bears the I-CAUSE feature and is thus more ‘specific’.

- (40)  $\underbrace{[[_{VP} \dots v_{TR} [AktP \dots Akt_{CAUSE} [_{VP} V [_{XP} \dots X \dots ] ] ] ]]}_{LA}$  Class 1; transitive

- (41)  $\underbrace{[[_{VP} \dots v_{INCH} ]]}_N \underbrace{[AktP \dots Akt_{CAUSE} ]}_{LA} [_{VP} V [_{XP} \dots X \dots ] ] ]$  Class 1; inchoative

*Class 2 verbs* differ crucially in that they are based on the INCR relation. This prevents LA, specified as Akt<sub>I-CAUSE</sub>, from realizing Akt<sub>INCR</sub> and, due to monotonicity of spell-out, from realizing *v* as well. The role of LA is thus restricted to spelling out VP. Akt<sub>INCR</sub> is lexicalized by N in both causative, (42), and inchoative, (43), configurations. In addition, N spells out *v*<sub>INCH</sub> in (43), where it is the only candidate. It cannot lexicalize *v*<sub>TR</sub>, however, due to the feature mismatch, and this is where TYR takes over, (42).

- (42)  $\left[ \underbrace{[_{VP} v_{TR}]}_{TYR} \left[ \underbrace{[_{AktP} Akt_{INCR}]}_N \left[ \underbrace{[_{VP} V]}_{LA} \left[ XP \dots X \dots \right] \right] \right] \right]$  Class 2; transitive
- (43)  $\left[ \underbrace{[_{VP} v_{INCH}]}_N \left[ \underbrace{[_{AktP} Akt_{INCR}]}_N \left[ \underbrace{[_{VP} V]}_{LA} \left[ XP \dots X \dots \right] \right] \right] \right]$  Class 2, inchoative

We believe that the analysis just outlined has a number of attractive properties. First, it suggests that class 1 and class 2 transitives are reduced to the same syntactic configuration consisting of projections of *v*, Akt and V. Transitives that belong to class 1 and class 2 are then correctly predicted to be identical in all relevant respects, and their similarities exemplified in (22)-(27) follow naturally. Secondly, and crucially, representing the relation between subevents within AktP opens a way of explaining why class 1 and class 2 transitives have different morphological shape: the analysis allows to relate this difference to the semantic opposition between I-CAUSE and INCR, hence to account for the observations in Section 3.2. If the Akt head introduces I-CAUSE, it is spelled out by the LA morpheme, as well as V and *v*<sub>TR</sub>. If, on the other hand, Akt is specified as [INCR], LA is no longer available, and N is called for; *v* is then realized by TYR, “the causative morpheme”.

We are in a position of summarizing the argument for RPD based on this material. There are two classes of denominal transitives in Tatar, which only differ as to the properties of the relation between subevents (INCR vs. I-CAUSE) and morphological makeup, being identical in all other respects. This suggests that both types of transitives are associated with the same hierarchical structure, and the difference has to do with the way this structure is phonologically realized. Assuming RPD with the Akt head in between *v* and V enables us to account for the very fact that a transitive verb under relevant circumstances is realized by four, not three, pieces of morphology, where the Akt head receives a unique spell-out, distinct from the exponents of other heads. Besides, not only is Akt realized by a separate piece of morphology: the condition on realization is defined through properties of the relation, too. Crucially, RPD, where the relation is represented as a separate head, is a necessary precondition for this type of analysis. An SPD alternative, where [TR]/[INCH] and [INCR/I-CAUSE] would be features of the same head, would inevitably fail to derive class 2 transitives as composed of four pieces of morphology. In this way, the composition of denominal verbs in Tatar provides us with an argument for RPD.

### 3.4. Cross-linguistics evidence

Denominal verbs in Tatar only serve one configuration where the Akt head can receive a designated spell-out: the INCR feature on Akt triggers a phonological realization of Akt distinct from *v* and V. In all other configurations where the causative morphology is attested, e.g., causatives of unaccusatives or causatives of transitives, Akt has no overt realization. This is illustrated in (44a-b), where (44b) is a product of further causativization of (44a):

- (44) a. marat čiläk-ne tul-**dir**-di.  
M. bucket-ACC fill.intr-CAUS-PST.3SG  
‘Marat filled the bucket.’

- b. alim marat-tan čiläk-ne tul-**dir-t-ti**.  
 M. M.-ABL bucket-ACC fill.intr-CAUS-CAUS-PST.3SG  
 ‘Alim made Marat fill the bucket.’

$$(45) \quad \underbrace{[_{VP} v_{TR} \quad [_{AktP} Akt_{I-CAUSE}]]}_{TYR} \quad \underbrace{[_{VP} V \dots ]}_{TUL} \quad \text{tul-**dir**}$$

$$(46) \quad \underbrace{[_{VP} v_{TR} \quad [_{AktP} Akt_{G-CAUSE}]]}_{TYR} \quad \underbrace{[_{VP} v_{TR} \quad [_{AktP} Akt_{I-CAUSE}]]}_{TYR} \quad \underbrace{[_{VP} V \dots ]}_{TUL} \quad \text{tul-**dir-t**}$$

Given lexical entries in (39), this is exactly what one expects. For  $v_{TR}$  in (50)-(51), TYR is the only suitable candidate. For Akt, TYR is a better choice than N for two reasons. First, N is underspecified for the CAUSE feature on Akt, which makes it an elsewhere candidate according to (38). Secondly, TYR can spell out both  $v_{TR}$  and Akt nodes with no part of its lexically stored tree being unused. For N, its lexically stored  $v_{INCH}$  node is wasted, and N loses to TYR according to (37).

Therefore, the crucial lexical property of the TYR morpheme is that it is able to lexicalize both  $Akt_{I-CAUSE}$  and  $Akt_{G-CAUSE}$  nodes, which is reflected in its CAUSE specification in (39c) comprising both I-CAUSE and G-CAUSE<sup>3</sup>. If our RPD account for Tatar causativization is correct, we can derive a number of further predictions about cross-linguistic variation.

On the view advocated above, whether Akt receives an overt morphological realization depends on featural specifications of lexical items competing for realizing  $v$  and Akt. We expect that languages can vary along two dimensions: what information is lexically stored in the subtree associated with the causative morpheme and what are properties of other competitors. Specifically, we can expect to find a language minimally different from Tatar in a way represented in (47):

- (47) a.  $PHON_1 \Leftrightarrow [_{VP} \dots v_{INCH} [_{AktP} \dots Akt]]$  (“inchoative morpheme”)  
 b.  $PHON_2 \Leftrightarrow [[_{VP} \dots v_{TR} [_{AktP} \dots Akt_{I-CAUSE}]]]$  (“causative morpheme”)

(47a) is exactly like its Tatar counterpart in (39b).  $PHON_2$  in (47b), “the causative morpheme”, however, differs from TYR in Tatar in that it is specified for the  $Akt_{I-CAUSE}$  node rather than for both  $Akt_{I-CAUSE}$  and  $Akt_{G-CAUSE}$ . We predict, then, that in such a language, direct causatives would look exactly like in Tatar, but in indirect causatives, the inchoative morpheme would show up inside the causative morphology, as shown in (48)-(51):

$$(48) \quad \underbrace{[_{VP} \dots v_{INCH} \quad [_{AktP} \dots Akt_{I-CAUSE}]]}_{PHON_1} \quad \text{I-CAUSE; inchoative}$$

$$(49) \quad \underbrace{[_{VP} \dots v_{TR} \quad [_{AktP} \dots Akt_{I-CAUSE}]]}_{PHON_2} \quad \text{I-CAUSE; transitive}$$

$$(50) \quad \underbrace{[_{VP} \dots v_{INCH} \quad [_{AktP} \dots Akt_{G-CAUSE}]]}_{PHON_1} \quad \text{G-CAUSE; inchoative}$$

$$(51) \quad \underbrace{[_{VP} \dots v_{TR}]}_{PHON_2} \quad \underbrace{[_{AktP} \dots Akt_{G-CAUSE}]}_{PHON_1} \quad \text{G-CAUSE; transitive}$$

<sup>3</sup> To make this part of the analysis fully explicit one would need a reasonable feature geometry where I-CAUSE and G-CAUSE are dependent on the CAUSE node, to which TYR in Tatar makes reference. We leave a full elaboration of this idea for a future occasion.

As far as we can tell, this is exactly what happens in Tundra Nenets (Uralic, Samoyedic), illustrated in (52)-(53):

- (52) a. man<sup>l</sup> pet<sup>l</sup>a-n<sup>?</sup> mal<sup>l</sup>ca-m<sup>?</sup> tira-**bta-l-pta**-w.  
 I P.-DAT shirt-ACC dry.intr-**PTA-L-PTA**-1SG  
 ‘I made Peter dry his shirt.’  
 b. \*man<sup>l</sup> pet<sup>l</sup>a-n<sup>?</sup> mal<sup>l</sup>ca-m<sup>?</sup> tira-**bta-bta**-w.  
 I P.-DAT shirt-ACC dry.intr-**PTA-PTA**-1SG  
 c. \*man<sup>l</sup> pet<sup>l</sup>a-n<sup>?</sup> mal<sup>l</sup>ca-m<sup>?</sup> tira-**l-bta-bta**-w.  
 I P.-DAT shirt-ACC dry.intr-**L-PTA-PTA**-1SG  
 d. \*man<sup>l</sup> pet<sup>l</sup>a-n<sup>?</sup> mal<sup>l</sup>ca-m<sup>?</sup> tira-**l-pta-l-pta**-w.  
 I P.-DAT shirt-ACC dry.intr-**L-PTA-L-PTA**-1SG
- (53) pet<sup>l</sup>a- mal<sup>l</sup>ca-m<sup>?</sup> tira-**bta-l-ŋa**.  
 P.-ACC shirt-ACC dry.intr-**PTA-L-3SG**  
 ‘Peter started drying his shirt.’

(52) shows a double causative configuration derived from the unaccusative verb stem ‘dry, intr.’, which allows to observe morphological realization of both Akt-*v* sequences. The first instance of the causative creates the direct causative ‘dry’, and the second one derives the indirect causative ‘make dry’. The resulting configuration and its spell-out are shown in (54):

- (54)  $\left[ \underbrace{[_{VP} \nu_{TR}]}_{PTA} \left[ \underbrace{[_{AktP} Akt_{G-CAUSE}]}_L \left[ \underbrace{[_{VP} \nu_{TR}]}_{PTA} \left[ \underbrace{[_{AktP} Akt_{I-CAUSE}]} \left[ \underbrace{[_{VP} \dots ‘dry’ \dots ]} \right] \right] \right] \right] \right] \right]$

Our focus here is the spell-out of Akt’s. The PTA morpheme is associated, by hypothesis, with the subtree in (47b). It lexicalizes the lower Akt<sub>I-CAUSE</sub> for the same reason as TYR does so in Tatar in (45): the inchoative L, represented as in (47a), is a weaker competitor, since, first, it is underspecified for the second order features on Akt and, secondly, it does not make use of the  $\nu_{INCH}$  part of its subtree. This is evidenced by ungrammaticality of (52c-d) where L shows up in between the causative morphology and the verb stem. Things are different for the higher Akt<sub>G-CAUSE</sub>: PTA is not suitable for lexicalizing Akt<sub>G-CAUSE</sub>, due to the feature mismatch, and L is the only candidate. Attaching PTA on top of another PTA morpheme with no L occurring in between is correctly predicted to yield an ungrammatical sentence in (52b).

Finally, (55) shows the inchoative configuration corresponding to (53), where L spells out both higher Akt and higher  $\nu_{INCH}$ :

- (55)  $\left[ \underbrace{[_{VP} \nu_{INCH}]}_L \left[ \underbrace{[_{AktP} Akt_{G-CAUSE}]} \left[ \underbrace{[_{VP} \nu_{TR}]}_{PTA} \left[ \underbrace{[_{AktP} Akt_{I-CAUSE}]} \left[ \underbrace{[_{VP} \dots ‘dry’ \dots ]} \right] \right] \right] \right] \right] \right]$

Once again, RPD together with minimal additional assumptions about the structure of lexical items involved in the derivation correctly predicts the appearance of a certain piece of morphology in between two instances of the causative. The cross-linguistic variation is this reduced to a simple lexical parameter.

We have argued that the difference between Tatar and Tundra Nenets is reduced to the feature specification on the causative morpheme. These languages, however, are fundamentally similar in that whenever Akt is realized by a morphology distinct from the causative morpheme itself, the same morphology shows up in the inchoative configuration: N in Tatar and L in Tundra

Nenets are both specified for the  $v_{\text{INCH}}$  node in addition to the Akt node. However, properties of such morphemes can be subject to cross-linguistic variation, too. A natural expectation is to find a lexical item which is only associated with the Akt node, possibly with an additional G-CAUSE/ I-CAUSE/ INCR specification:

$$(56) \text{ PHON}_1 \Leftrightarrow [\text{AktP Akt}_{(\text{G-CAUSE}/\dots)}]$$

Such an item is expected to not occur in inchoatives and should only be found inside the causative morphology. We suggest that causativization data from Malagasy and Tagalog, discussed extensively in Travis 2010, can be analyzed as involving a morpheme like (56). These languages exhibit a pattern similar to (52) from Tundra Nenets: the two instances of the causative element are separated by a special piece of morphology (*-f-* (F) in (57b), derived from (57a)). For Travis, F is an exponent of the Event head. On her view, it delimits a complete event structure built in the lexicon, which the higher *-an-* morpheme takes as a complement.

However, we believe that reanalyzing F in terms of Akt gains clear empirical advantages. Problematic for the Event Phrase analysis is the very fact that F can only appear in between two instances of the causative. If it marks completeness of the event structure, it is unclear why it is not free to occur in a configuration where no higher causative has been merged. This is not an option, however: Travis' discussion suggests that nothing of the form in (57c) exists in Malagasy.

- (57) a. m-**an**-sitrika  
 AT-AN-hide.intr  
 'Y hide X'  
 b. m-**an-f-an**-sitrika  
 AT-AN-F-AN-hide.intr.  
 'Z make Y hide X'  
 c. \*m-**f-an**-sitrika  
 AT-**F-AN**-hide.intr

Within our system, on the other hand, F would be analyzed as a realization of Aktionsart, not of Event, as in (58). Moreover, if its lexical subtree looks like (56), the fact that it can only occur in between two  $v$ 's falls out with no additional assumptions. The inchoative clause, parallel to (53), would never be derived, since F is not a legitimate candidate for spelling out  $v_{\text{INCH}}$ .

$$(58) \underbrace{[\text{EP E}_{[-\text{CASE}]}]}_{\text{M}} \underbrace{[\text{VP } v_{\text{TR}}]}_{\text{AN}} \underbrace{[\text{AktP Akt}_{\text{G-CAUSE}}]}_{\text{F}} \underbrace{[\text{VP } v_{\text{TR}} [\text{AktP Akt}_{\text{I-CAUSE}} [\dots \text{'hide, intr.'} \dots ]]]]}_{\text{AN}}$$

If the RPD analysis of Tatar, Tundra Nenets, and Malagasy is correct, it can shed a new light on the structure of Hindi causatives discussed by Ramchand (2008). Hindi presents a slightly different case as compared to what we have dealt with so far. In both Tatar and Tundra Nenets, the G-CAUSE relation only appears when a transitive or unergative configuration is causativized, that is, when the causative structure merges on top of  $v\text{P}$ . Causatives of unaccusatives are always direct. In Hindi, unaccusatives license both direct and indirect causation, the difference being reflected in morphological marking, *-aa-* (AA) vs. *-vaa-* (VAA) in (59a-b):

- (59) a. Anjum-ne    mukaan    ban-aa-yaa.  
 Anjum-ERG    house    make-aa-PERF.M.SG  
 'Anjum built a house.'  
 b. anjum-ne    (mazdurx-se)    mukaan    ban-vaa-yaa.  
 Anjum-ERG    labourers-INSTR    house    make-vaa-PERF.M.SG  
 'Anjum had a house built by the labourers.'

Ramchand argues that both types of causative are to be represented within the same  $vP$ , not by means of a double  $vP$  configuration, and proposes to analyze (59a-b) as (60a-b), respectively. (We couple her *init/proc/res* notation with the  $v/V/R$  notation used throughout this paper.)

- (60) a.  $[_{initP/vP} \text{Anjum } [_{init/v} \text{-aa-}] [_{procP/vP} \text{makaan } [_{proc/V} \text{ban}] [_{resP/RP} \langle \text{makaan} \rangle [_{res/R} \langle \text{ban} \rangle ] ] ] ] ]$   
 b.  $[_{initP/vP} \text{Anjum } [_{init/v} \text{-aa-}] [_{procP/vP} \langle \text{Anjum} \rangle [_{proc/V} \text{-v-}] [_{resP/RP} \text{makaan } [_{res/R} \text{ban} ] ] ] ] ]$

Ramchand suggests that VAA is to be decomposed into V and AA. In both (60a-b), AA spells out the  $v$  head; the R head is realized by the verb root ‘get built’. The difference has to do with the spell-out of V. Ramchand argues that if the direct AA causative is built in (60a), V is taken care of by the root. In case of the indirect causative in (60b), V is realized by the  $v$  element of the decomposed VAA morpheme. On Ramchand’s (2008:182) view, it is the spell-out of V and R by distinct items that leads to indirectness of causation. Essentially, she assumes (tacitly) that indirectness can be reduced to temporal independence of two events, and proposes that the temporal independence obtains if subevents are not identified by the *same* lexical content.

We believe that there are reasons to doubt if this account can be fully justified. It is by far not clear how the temporal construal can be made epiphenomenal of a specific way of spelling out the structure. This seems to be incompatible with the basic tenet of Ramchand’s own theory, namely, that the interpretation is solely determined by the event structure itself. In her system, subevental heads  $v/init$ ,  $V/proc$ , and  $R/res$  possess a fixed interpretation, and the role of lexicon/encyclopedia is limited to providing the descriptive content of relevant event predicates. Assuming that (60a-b) involve different causal relations *because* they are spelled out in different ways, and not that, the other way around, the spell-out mirrors the difference in the type of causation seems to break down the whole logic of the theory.

As Ramchand acknowledges, there is another problem for her account: “Is it possible to make sense of the fact that the  $-v-$  of the indirect causative is actually closer to the root than the  $-aa-$  piece of the morphology that the direct and indirect causatives share?” (Ramchand 2008: 168). This problem is not fatal by itself, of course, but we believe that an RPD alternative to (60b) gives us a significant advantage.

We argue that an RPD account for Hindi data effectively solves both problems with no additional effort. We already have everything we need, namely, lexical entries for the causative morpheme and for the Aktionsart element:

- (61) a.  $aa \Leftrightarrow [_{vP} v_{TR} [_{AktP} Akt_{I-CAUSE} ]]$  (= (47b), Tundra Nenets)  
 b.  $v \Leftrightarrow [_{AktP} Akt]$  (= (56), Malagasy)

Following Ramchand in that direct and indirect causatives are both projected within a single  $vP$ , and turning her SPD structures into RPD structures, we assign (62) and (63) to (59a) and (59b), respectively.

$$(62) \underbrace{[_{vP} \dots v_{TR} [_{AktP} \dots Akt_{I-CAUSE} ]]}_{AA} [_{VP} \dots \text{‘be.built’} \dots ] ] ] ]$$

$$(63) \underbrace{[_{vP} \dots v_{TR} ]}_{AA} \underbrace{[_{AktP} \dots Akt_{G-CAUSE} ]}_{V} [_{VP} \dots \text{‘be.built’} \dots ] ] ] ]$$

As (62)-(63) show, Hindi causativization reduces to what we have independently observed in Tundra Nenets and Malagasy. The AA morpheme realizes both  $v_{TR}$  and  $Akt_{I-CAUSE}$  (as before, V



loses the competition for spelling out Akt<sub>I-CAUSE</sub> due to the biggest match principle, (36), but fails to realize Akt<sub>G-CAUSE</sub>, and this is where v shows up).

If (63) is on the right track, the required ordering falls out with no effort at all: if v is an instance of Akt, the position in between the root and AA is just the right place for it to appear. Another immediate advantage is: with the RPD assumption that relations between subevents constitute a separate component of event structure, one can dismiss a dubious mechanism that derives indirectness of causation in (59b) from the fact that V and R are associated with different morphological exponents. As soon as characteristics of the causal relation are specified explicitly, the right interpretation obtains with no extra cost.

## 5. Summary and conclusion

We have argued for radical predicate decomposition, which assumes, unlike standard decomposition, that relations between subevents in the event structure are represented independently in the syntax and in terms of semantic composition. We presented three sets of causativization facts — semantic, morphological, and cross-linguistic — that support this basic claim. Subevents and their relations are independent, since, first, their semantic properties vary independently, secondly, they can be spelled out by distinct morphological exponents, and thirdly, because the independence predicts correctly the cross-linguistic variation. To the extent that our arguments are correct, we believe that RPD offers a more appealing view of event structure than the SPD alternative. Conceptually, it allows to eliminate a problematic assumption that descriptive properties of subevent descriptions are tightly connected to characteristics of relations between subevents. Empirically, it enables a simple and elegant explanation for the otherwise mysterious connection between the type of causation and pieces of morphology that appear inside the causative morpheme in languages like Tatar, Tundra-Nenets, Malagasy or Hindi.

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