Categorization and Category Change
Categorization and Category Change

Edited by

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This book is a collection of selected papers that were presented at the Workshop "Categorization and category change in morphology", which was held at the University of Tromsø in December 2011. The workshop was organized by Antonio Fábregas and Kaori Takamine with the support of the project “Nominalizations: explorations at the syntax-lexicon and the syntax-semantic interfaces (NOMEXPL)” which was funded by the Research Council of Norway together with the German Academic Exchange Service and EGIDE, the French national agency for the promotion of higher education, international student services, and international mobility, via three joint mobility programs: the Aurora program between Norway and France, the German-Norwegian collaborative research support scheme and the PROCOPE program between France and Germany.

The book addresses theoretical and empirical issues related to categorization and category change in syntax and morphology. Linguistic descriptions have always made widespread use of lexical categories, i.e., divisions of words into distinct “parts of speech”. Nouns, verbs and adjectives (and sometimes adpositions) are generally considered the three (sometimes four) major lexical classes. Despite this prevalence in linguistics, lexical categories remain a relatively under-developed area of formal linguistic theory and many open questions remain to be addressed. Common questions that generally arise concern the proper definition of the classes with their specific properties, the inventory of categories across languages, and the link between categories and formal linguistic theory.

The book is structured in two thematic parts. The first part, Categories and categorization, consists of papers that are concerned with means to distinguish among categories in the lexicon and in the syntax, whether they fall within the well-defined categories or pose a challenge to the traditional definition of categorial classes. The second part, Issues in category change, deals with the specific syntactic and morphological derivational processes that are at play when words shift category. It is concerned with the formation of complex words, in particular, how properties of the source category are preserved or modified in the output.

The individual contributions in the volume are in the areas of formal syntax, morphology, the syntax-semantics and the syntax-morphology interfaces. The relevant issues are explored within various theoretical and corpus-based frameworks and within a wide range of languages including
English, French, German, Greek, Japanese, Romanian, Russian, Spanish, and Swedish.

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1. Introduction

It has been noted that nominalizations show certain restrictions on the realization of their external argument compared to their verbal sources (see Grimshaw 1990, Pesetsky 1995, Marantz 1997, Harley and Noyer 2000, Sichel 2010/2011). In the English examples below, Causers or natural forces are disallowed (1b) although the corresponding verbal forms allow them as external arguments (1a). Human agents, on the other hand, are good in both verbal and nominal contexts (1a, c).

(1) a. The authorities/the hurricane justified the evacuation of the inhabitants
b. *The justification of the evacuation of the inhabitants by the hurricane

c. The justification of the evacuation of the inhabitants by the authorities

While initially this was indeed described as an 'agent exclusivity effect', Sichel (2010, 2011) shows that the restriction in English nominals is of a different sort: while verbal forms allow both direct and indirect participants as external arguments, derived nominals require direct participation, which means that the external argument has to be co-temporal and co-spatial with the unfolding event. Following Sichel, we call this the direct participation effect. While human agents can be construed as direct participants quite easily, causes often cannot. Crucially, however, causes sometimes do qualify as direct participants and then they are good as external arguments of nominals (cf. Folli and Harley's (2008) notion of teleological capability). Note, however, that for certain nominalizations the effect is indeed one of agent exclusivity, e.g. psych nominalizations in English (Pesetsky 1995, Grimshaw 1990, Alexiadou and Iordăchioaia to appear). We consider here the agent exclusivity effect a more restricted version of the direct participation effect; see also Sichel (2011) who notes that agents are some sort of default direct participants.

In this paper, we first discuss a lexical-semantic hypothesis proposed by Sichel (2011), who argues that the restriction is related to the size of events that fit into derived nominals. These are necessarily simple events, she argues, and simple events can only combine with direct participants. Based on cross-linguistic evidence from English, German, Greek, Romanian, Spanish and French, but also non-Indo-European languages such as Hebrew and Jacaltec, we argue that Sichel's hypothesis cannot account for the direct participation effect properly. To present here one argument, not only don't we find the effect in all nominalizations across languages, we even find it in the verbal/sentential domain.3

The paper is organized in the following way: In Section 2 we discuss in more detail the direct participation effect in English. Section 3 presents the lexical-semantic account based on event complexity proposed by Sichel (2010, 2011). In Section 4 we discuss some aspect of English nominalizations that we think make Sichel's account problematic. In Section 5, we provide a cross-linguistic landscape of the distribution of the direct participation effect. We show that one has to differentiate between a direct participation effect and an agent exclusivity effect. Next, we show that neither of the two effects is strongly correlated to nominalizations; on the one hand, we find languages where the (smallest) nominalization does
not show any such restriction on the external argument and, on the other hand, we find languages where even verbal/sentential constructions such as passive and even active clauses show such a restriction on external arguments. In section 6, we outline our analysis.

2. The direct participation effect in English derived nominals

As is well known, English nominalizations are morpho-syntactically deficient by comparison to their verbal sources. For instance, they do not allow ECM, double objects, and particle shift (Kayne 1984, Abney 1987), that is, constructions that have been argued to require a VP shell structure (Larson 1988, Harley and Noyer 1998). As the examples (2-5) show, the effects hold for both derived nominals and ing-of gerunds, but not for verbal gerunds.

(2)  
  a. *John’s belief / believing of [Bill to be Caesar]  
  b. John’s believing [Bill to be Caesar]  

(3)  
  a. *John’s gift / rental / giving (of) Mary of a Fiat  
  b. John’s giving/renting Mary a Fiat  

(4)  
  a. *John’s persuasion / persuading of Mary [PRO to stay]  
  b. John’s persuading Mary [PRO to stay]  

(5)  
  a. *John’s explanation (away) of the problem (away)  
  b. John’s explaining (away) of the problem *(away)  
  c. John’s explaining (away) the problem (away)  

The restriction on external arguments that we are interested in here, makes, however, a different cut within nominal structures and, therefore, cannot be related to the morpho-syntactic deficiencies above. While these deficiencies hold for both derived nominals as well as ing-of gerunds, only the former restrict their external arguments to a subset of the external arguments found with the corresponding verb, while ing-of (as well as verbal) gerunds allow the same set of external arguments as their verbal base form (6a-c).

(6)  
  a. The boss/The inflation shrinks his salary  
  b. ?The shrinking of his salary by the inflation by the boss  
  c. The shrinkage of his salary by the boss /*by the inflation
While (6a-c) might suggest that nominalizations do not allow causers as external arguments, Sichel (2010, 2011) shows that the relevant constraint does not amount to a strict agent exclusivity effect. This is illustrated by the data in (7-9) (see Sichel (2010, 2011) for more examples) where the accomplishment verbs underlying the nominalizations allow both agents and (direct)\(^6\) causers as external arguments. While clear-cut agents are indeed always possible in derived nominalizations (e.g. 9d-e), natural forces are sometimes good (7b-c) and sometimes bad (8b-c, 9b-c). As the examples show, pre-nominal genitives and \textit{by}-phrases show the same thematic restriction. However, we will focus below on the distribution of \textit{by}-phrases, as the other languages we will discuss don’t permit transitive nominals with pre-nominal genitives for independent reasons.

(7) a. The hurricane destroyed all our crops  
   b. The hurricane’s destruction of our crops  
   c. The destruction of our crops by the hurricane

(8) a. The approaching hurricane justified the abrupt evacuation of the inhabitants  
   b. *The approaching hurricane’s justification of the abrupt evacuation of the inhabitants  
   c. *The justification of the abrupt evacuation of the inhabitants by the hurricane  
   d. The authorities justified the rapid evacuation of the inhabitants  
   e. The authorities’ justification of the rapid evacuation of the inhabitants  
   f. The justification of the rapid evacuation of the inhabitants by the authorities

(9) a. The results/the expert verified the initial diagnosis  
   b. *The results’ verification of the initial diagnosis  
   c. *The verification of the initial diagnosis by the results  
   d. The expert’s verification of the initial diagnosis  
   e. The verification of the initial diagnosis by the expert

Sichel observes that non-human causers are compatible with derived nominalizations only if they can be construed as direct participants, i.e. forces, which directly bring about the event. This is the case in (7) where the hurricane is the force that directly brings about the destruction of the city. But it is not the case in (8) and (9). While in (8) the hurricane might be understood as the direct cause for the justification event and as such can
occur as the subject of the verb 'justify' it is not a direct participant in the relevant sense because the act of justification always involves a human agent as most direct participant. Similarly, in (9), the results can be understood as direct causes for the process as verification, but such a process implies an agent as most direct participant. Direct participation is then a stronger restriction than direct causation. Direct participation depends on both the specific event denoted by the nominal and some property inherent to the entity denoted by the external argument (teleological capability, Folli and Harley 2008). A hurricane's inherent force allows it to be understood as a direct participant in a destruction event, but a hurricane has no inherent property, which can make it a direct participant in a justification event. Human agents, on the other hand, typically qualify as direct participants due to their inherent properties such as intentionality or volition.

3. An account based on event complexity

In order to account for the difference between nominalizations and \textit{ing}-\textit{of} gerunds concerning the direct participation effect, Sichel (2010, 2011) proposes the following: Derived nominals of accomplishment verbs do not inherit the event structure of their source verb. While accomplishments are complex events (Grimshaw 1990), their derived nominals denote simple events and, as such, require direct participation of the external argument, which must be co-temporal and in some sense co-spatial with the unfolding event (see below). \textit{Ing}-\textit{of} gerunds denote the same complex events as their underlying accomplishment verbs, and as such do not require co-temporal direct participants.

The restriction to direct participation for the external argument is derived from a general restriction to simple events. In order to participate in the simple event denoted by the nominalization, the event associated with the external argument (the causing event) has to identify with the simple event. The following restrictions hold on event identification:

\begin{enumerate}
\item \textbf{Conditions on event identification} (Levin and Rappaport Hovav 1999, 2002, Rappaport Hovav and Levin 2001)
\begin{enumerate}
\item The sub-events must have the same location and are necessarily temporally dependent.
\end{enumerate}
\end{enumerate}
II. One sub-event must have a property that serves to measure out that sub-event in time; this property is predicated of an entity that is necessarily a participant in both sub-events. This ensures temporal dependence.

These restrictions have originally been developed to characterize the difference between bare XP resultatives and lexical causatives (as well as NP-XP resultatives). Bare XP resultatives as in (11) denote simple events in that the activity described by the verb is co-temporal with progress towards the achievement of the result and the sole argument is shared by both sub-events. These simple events derive from the identification of the verbal process with the coming about of the result expressed by the XP following the verb. English lexical causatives as in (12), on the other hand, denote complex events, since the two sub-eventualities (process and result) can be temporally distinct.

(11)  a. Carey ran/waltzed out of the room  
      b. The clothes steamed dry  
      c. The kettle boiled dry  

(12)  a. Casey's piano playing woke the baby  
      b. Terry shocked Sandy by deciding to run for office  
      c. The widow murdered the old man by putting poison in his soup  

The difference between nominalizations and *ing-of* gerunds can be understood in a similar way, just that this time the causing event associated with the external argument and the (allegedly) simple event denoted by the nominalization have to identify. The two events have to be co-temporal and the argument shared by these sub-events is the external argument. The good and bad nominalizations in (7-9) above can be understood then in the same way as the contrasts in (13a-c). The agent subject 'the teacher' in (13a) can be understood as a direct participant which takes part in the causing sub-event and in the event of separation; the two events are co-temporal and can identify. The event expressed by the causer subject the war in (13b), on the other hand, is understood as a non-co-temporal cause of the separation process and event identification fails. In (13c), on the other hand, the very same causer subject can be understood as co-temporal with the destabilization process.
Sichel concludes that the relation between the event associated with the external argument and the event denoted by the derived nominal is subject to the condition in (14a) and its corollary in (14b):

(14) a. If a simple event includes an external argument, the participation of the argument is co-temporal with the initiation of the event.
   b. Corollary: when the participation of the external argument is not co-temporal the event is a complex event.

4. Some problems for an account in terms of event complexity

Sichel does not offer an explicit syntax-event structure mapping, and phrases her account in the framework of Rappaport Hovav and Levin (2001). From this perspective, unlike their verbal source, derived nominals of accomplishment verbs have a simple event structure, e.g. [x ACT <MANNER>]. By contrast, ing-of gerunds maintain the complex event structure of the verb, e.g. [[x ACT] CAUSE [BECOME [y <RESULT>]]]. In syntactic accounts of event structure such as e.g. Ramchand (2008) and Harley (2011), the former have the structure of activities, i.e. lack a Result State component and simply contain a Process/v head, while the latter contain such a component [v + ResultP], as in (15a vs. 15b):

(15) a. [ProcessP/vP ]
   b. [ProcessP/vP [ResultP]]

However, the morpho-syntactic composition of English nominals does not seem to match the semantic interpretation attributed to them in most of the cases. Following Harley (2011), e.g. justify in (1) contains the verbalizing affix -ify. This combines with the verbal root that realizes a semi-compositional result head (16).
Similar observations hold for many of the other verbs discussed in Sichel’s work, e.g. unify, separate, verify, destabilize, devastate, which thus always host complex events.

Furthermore, derived nominals permit re-prefixation as shown in (17). Crucially, however, it has been argued in the literature that re-only has a restitutive interpretation which means that it attaches to accomplishments, and requires a result state; Wechsler (1990), Marantz (2009/2011).

(17) a. the re-verification of the diagnosis
    b. a re-justification of former notations

Finally, while Sichel clearly shows that the causing event associated with the external argument has to identify with the process event denoted by the derived nominal, she does not show how the two sub-events denoted by the underlying accomplishment verb (process and result) identify in derived nominals. That is, Sichel’s proposal suggests that, independently from the choice of the external argument, the event denoted by an accomplishment verb should differ substantially from the event denoted by the nominal derived from that achievement. Accomplishments are made up by two sub-events, a process-event and an unfolding result. Crucially, these two sub-events are not (at least not necessarily) co-temporal and, therefore, cannot be identified. Levin and Rappaport (1999: 32) show this with the following example, where “by putting arsenic in his coffee” modifies the process sub-event contributed by murder. As they note, in (18) “the putting of arsenic in the coffee certainly does not extend to the point of death, and the dying does not start when arsenic is put in the coffee”, so the two sub-events do not identify.

(18) The widow murdered the old man by putting arsenic in his coffee

The proposal that derived nominals can only contain simple events, i.e. events where the process event and the coming about of the result are co-temporal to make event identification available, suggests that examples like (18) could not be transformed into derived nominals. While ‘murder’ does not form an -ation derived nominal (Grimshaw (1990) in fact argues that zero derived nominals in English lack argument structure), assassinate does. It seems to us that in the nominal the process and the result do not have to be co-temporal, exactly as in its verbal source.

(19) a. John assassinated the president by putting arsenic in his coffee
b. The assassination of the president by putting arsenic in his coffee

To conclude then, while we think that the direct participation effect on derived nominals is the correct generalization and can be captured by assuming that the event or the action associated with the external argument (causer or agent) has to identify with the verbal process, we do not think that the inner aspectual event decomposition shifts from that of an accomplishment to that of a process in derived nominals.

In the next section we will present further challenges for Sichel’s account, based on a preliminary study of the cross-linguistic distribution of the direct participation effect.

5. Nominalizations, active and passive Voice across languages

5.1 The direct participation effect in nominalizations

While the morpho-syntactic restrictions on nominalizations in (2-5) and the direct participation effect found with -ation nominals cannot have the very same explanation, on Sichel's account both effects seem to be connected to the intuition that nominalizations are less verbal than the verbs they are derived from. One way to look at this is to say that the nominalizations contain fewer verbal projections than their base verbs. Some of the missing projections would then be responsible for the morpho-syntactic restrictions in (2-5), see Harley and Noyer (1998), and other missing projections might be responsible for the direct participation effect.

However, it turns out that this general idea is not supported if we look at a larger set of languages. To this end, we systematically investigated direct participation effects in five further languages, German, Greek, Romanian, Spanish and French.

Nominalizations in Greek (20), German (21) and French (22) do not show the direct participation effect. Recall that the corresponding examples are out with English 'verification'.

(20) I epivevosi tis arhikis diagnosis apo/me ta apotelesmata tis eksetasis
‘The verification of the initial diagnosis by the results of the test’
Chapter Eight

(21) Die Bestätigung der ursprünglichen Diagnose durch die Ergebnisse des Tests "The confirmation of the initial diagnosis by the results of the test"

(22) La vérification du diagnostic initial par les résultats du test "The verification of the initial diagnosis by the results of the test"

It could be argued that not all nominalizations are restricted to host simple events. It could be that the nominalizations in (20)-(22), just as English ing-of gerunds, are big enough to host complex events. However, this does not seem to be the case at least for the German and French data in (21) and (22) which involve the smallest nominalizations available in these languages. That is, both languages have a further, more verbal nominalization more akin to the English ing-of gerunds (see Alexiadou, Iordâchioaia and Schäfer (AAS 2011)). In fact, only Greek differs from the other languages in this paradigm as it seems to only have one nominalization type, and in principle this could be more like ing-of gerunds (Alexiadou 2001, 2009). To conclude, the smallest nominalization in a given language does not always show the direct participation effect.

The smallest available nominalizations in Romanian (23) and Spanish (24), on the other hand, show the direct participation effect.

(23) justificarea măsurilor de austeritate de către Emil Boc/*ratingul scăzut al SUA
"The justification of the austerity measures by Emil Boc/by the down-graded rating of the USA"

(24) La verificación de los diagnósticos iniciales por el experto/*por los resultados
"The verification of the initial diagnosis by the expert/by the results"

In Romanian, the preposition de către ('by', lit. 'by to') can only introduce agents/direct participants as external arguments in nominalizations, i.e.,
the restriction is similar to that of the English by-phrase: the wind, the hurricane and insecticides are direct participants in (25b, d), but the bad weather and alcohol are indirect participants in (25a, c) and as thus they are excluded from the nominalizations.5

(25) a. *schimbarea planurilor de weekend de către vremea rea
   change.Inf.the plans Gen of weekend by to weather bad
   “The bad weather's changing our plans for the weekend”

b. schimbarea poziției pietrelor de către vânt
   change.Inf.the position stones.Gen by to wind
   “The wind's changing the position of the stones”

c. *distrugerea lui Amy Winehouse de către alcool
   destroy.Inf.the of Amy Winehouse by to alcohol
   “Alcohol's destruction of Amy Winehouse”

d. distrugerea recoltei de către uraganul puternic/insecticide
   destroy.Inf.the crops.Gen by to hurricane. the strong/insecticide
   “The hurricane's/the insecticides' destruction of the crops”

In Spanish derived nominals, por introduces agents/direct participants, Picallo (1991, 1999), Varela (2012). Therefore, the external argument is more restricted in nominalizations than in the verbal clauses. In (26c-d), por el huracán is a direct participant; this is not the case in (26b).

(26) a. El huracán justificó la evacuación de los habitantes
   the hurricane justified the evacuation of the inhabitants
   “The hurricane justified the evacuation of the inhabitants”

b. *La justificación de la evacuación de los habitantes por el huracán
   the justification of the evacuation of the inhabitants by the hurricane
   “The justification of the evacuation of the inhabitants by the hurricane”

c. El huracán destruyó nuestros cultivos
   the hurricane destroyed our crops
   “The hurricane destroyed our crops”

d. La destrucción de nuestros cultivos por el huracán
   the destruction of our crops by the hurricane
   “The destruction of our crops by the hurricane”
While derived nominals in Romanian and Spanish behave like their English counterparts, both languages differ from English in important respects. On the one hand, the Romanian supine, i.e. the nominalization that is more similar to English ing-of gerunds (AAS 2011, Cornilescu 2001, Iordăchioia 2008) also shows the direct participation effect.

(27) a. *schimbatul frecvent al planurilor noastre de weekend de către vremea rău

“The bad weather's frequently changing our plans for the weekend”

b. ?schimbatul frecvent al pozițiiei pietrelor de către vântul puternic

“The strong wind's frequently changing the position of the stones”

c. *distrusul multor vedete de către alcool

“Alcohol's destruction of many stars”

d. distrusul frecvent al recoltei de către urgențele din această zonă

“The frequent destruction of the crops by the hurricanes in this area”

The situation in Spanish also differs from the one in English. While, as we have seen, Spanish nominalizations restrict their external arguments to direct participants, the verbal infinitive (the nominalization with the most verbal properties in this language, AAS 2011) restricts its external argument to human agents, i.e. it shows a human exclusivity effect.

(28) a. El justificar las autoridades la evacuación

“The justification of the evacuation by the authorities”

b. El destruir los soldados la ciudad

“The destruction of the city by the soldiers”
c. *El justificar el huracán la evacuación
   the justify.Inf the hurricane.Nom the.Acc evacuation
   “The justification of the evacuation by the hurricane”

d. *El destruir el huracán el puente
   the destroy.Inf the hurricane.Nom the.Acc bridge
   “The destruction of the bridge by the hurricane”

So while the small nominalization in Spanish shows a direct participant
effect, the nominalization with many verbal properties shows an agent
exclusivity effect.

An agent exclusivity effect can also be found in German. So while the
German nominalization in -ung does not restrict its external argument, the
nominalized infinitive shows an agent exclusivity effect (Alexiadou et al.
2009).

(29) a. um ein Zerstören der Stadt durch die Soldaten
   in-order-to a destroy.Inf of-the city through the soldiers
   zu verhindern
to prohibit
   “In order to prohibit a destruction of the city by the soldiers”

b. ?*um ein Zerstören der Stadt durch den Sturm
   in-order-to a destroy.Inf of-the city through the storm
   zu verhindern
to prohibit
   “In order to prohibit a destruction of the city by the storm”

Finally, an agent exclusivity effect has actually also been observed in a
specific subclass of English nominalizations, namely nominalizations
derived from object experiencer verbs. While these verbs allow both
agents and causers as external argument, only agents are acceptable in the
nominalizations (see Pesetsky 1995, Doron 2003, Alexiadou and Iordăchioaia to appear):

(30) Mary/the event annoyed/amused/embarrassed John

(31) a. *The event’s annoyance of John
    b. *The event's amusement of the children
    c. *The event's embarrassment of the children

(32) a. ?Mary’s deliberate annoyance of John
    b. ?Mary’s deliberate amusement of the children
    c. ?Mary’s deliberate embarrassment of the censors
To summarize the discussion so far, nominals sometimes but not always restrict their external argument compared to the verbal base. This restriction comes in two variants, either as a direct participant effect or as an agent exclusivity effect. Furthermore, the two restrictions are in no obvious way correlated with the size (or the number of verbal properties) of the nominalization.

5.2 Beyond nominalizations: the direct participation effect in active and passive Voice

The idea that a construction is in some sense too small to host complex events and, therefore, the type of external argument is restricted is challenged by the observation that we find restrictions on the type of external argument even in the verbal/sentential domain.

In Romanian, the verbal passive shows a direct participant effect if the external argument is introduced by the preposition de către. Since the simple preposition de can also introduce indirect participants, it seems as if this specific preposition (which is the only device used to introduce external arguments in the nominal domain) is responsible for this restriction. Consider the following active/passive pairs:

(33) a. Vremea rea ne-a schimbat planurile de weekend
     “The bad weather changed our plans for the weekend”
     b. Planurile de weekend ne-au fost schimbate de/*de către vremea rea
     “Our plans for the weekend were changed by the bad weather”

(34) a. Vântul a schimbat poziția pietrelor
     “The wind changed the position of the stones.”
     b. Poziția pietrelor a fost schimbată de/?de către vânt
     “The position of the stones was changed by the wind”
(35) a. Alcoolul a distrus-o pe Amy Winehouse
   Alcohol the has destroyed-her Acc Amy Winehouse
   “Alcohol destroyed Amy Winehouse”
   b. Amy Winehouse a fost distrusă de/*de către alcool
   Amy Winehouse has been destroyed by*/by to alcohol
   “Amy Winehouse was destroyed by alcohol”

(36) a. Uraganul a distrus recolta
   hurricane has destroyed crops the
   “The hurricane destroyed the crops”
   b. Recolta a fost distrusă de/de către uragan
   crops the has been destroyed by*/by to hurricane
   “The crops were destroyed by the hurricane”

The Spanish *ser* (eventive) passive always shows a direct participant effect, as shown by the following active-passive pairs.

(37) a. El huracán justificó la evacuación de los habitantes
   the hurricane justified the evacuation of the inhabitants
   “The hurricane justified the evacuation of the inhabitants”
   b. *la evacuación de los habitantes fue justificada por el huracán
   the evacuation of the inhabitants was justified by the hurricane
   “The evacuation of the inhabitants was justified by the hurricane”

(38) a. El huracán destruyó nuestros cultivos
   the hurricane destroyed our crops
   “The hurricane destroyed our crops”
   b. Nuestros cultivos fueron destruidos por el huracán
   our crops were destroyed by the hurricane
   “Our crops were destroyed by the hurricane”

Since the Spanish passive uses only one preposition, the question arises whether we should relate this effect to the passive itself or whether we should derive it from a restriction on the preposition as we proposed for Romanian *de către*. It seems that the former solution is correct as the very same preposition can introduce also indirect participants in other constructions. This is the case with anticausative and inchoative verbs in (39) where the *por*-phrase clearly introduces indirect participants (see AAS 2006 for further discussion).
(39) a. La comida se conservó por la sal
   the food Rf preserved by the salt
   “The food preserved through/from the salt”

b. La madera se pudrió por la lluvia
   the wood Rf rotted by the rain
   “The wood rotted through/from the rain”

Note that in Romanian the preposition de către is out in anticausatives and instead either simple de or the complex preposition de la is used to introduce causers. This is compatible with the idea that de către is lexically restricted to direct participants.

(40) a. Ușa s-a deschis de (la)/*de către vânt
   door the Rf-has opened by (at)/ by to wind
   “The door opened from/*by the wind”

b. Lemnul a putrezit de *(la)/*de către ploaie
   wood the has rotted by (at)/ by to rain
   “The wood rotted from/*by the rain”

Finally, the Greek passive has been reported to show the stronger restriction on external arguments, i.e. the agent exclusivity effect (AAS 2006). We exemplify this restriction on the basis of de-adjectival verbs (see AAS 2009). This class of verbs gives us a clear contrast between the passive and the anticausative pattern: the former bears non-active morphology, while the latter has active morphology. Only causer PPs are licit in the anticausative, while only agent PPs are licit in the passive (Hebrew is similar; see Doron 2003, Alexiadou and Doron 2012).

(41) a. To pukamiso katharis me to plisimo / apo mono tu /
   the shirt cleaned-Act with the washing/ by itself /
   *apo to Jani
   by the John
   “The shirt cleaned with the washing/ by itself/ by John”

b. to pukamiso katharístike apo to Jani / *me to plisimo
   the shirt cleaned-Nact by the John/ with the washing
   “The shirt cleaned by John/ with the washing”

Recall in this connection that the Greek nominalization is not restricted at all. We exemplify this again with the same verb in a passive and a corresponding nominalization. As AAS (2009) observed, we find passive nominals of verbs that lack a verbal passive: the example in (42) only has
an anticausative but not a passive interpretation, as the licensing of PPs shows. The corresponding nominalization, surprisingly, allows both agent and causer PPs, introduced by ‘apo’ (43):

\[(42) \text{To dasos kaike apo ti zesti / *apo to Jani}\]
\[\text{the forest burnt-\textit{Nact} from the heat / *by the John}\]
\[\text{“The forest burnt from the heat / by John”}\]

\[(43) \text{to kapsimo tu dasus apo ton Jani / apo ti zesti}\]
\[\text{the burning the forest-\textit{Gen} by the John / from the heat}\]
\[\text{“The burning of the forest by John/ from the heat”}\]

Finally, even active clauses in some languages can show the restrictions discussed here. Craig (1976) reports what looks like an agent exclusivity effect for Jacaltec, a Mayan VSO language spoken in Guatemala. While subjects of intransitive verbs may be animate as well as inanimate, subjects of transitive verbs are restricted to animate Agents (44a vs. b). Inanimate Causers must be introduced via a preposition combining with the anticausative variant of the verb as in (44c).

\[(44) \text{a. speba naj te’ pulta}\]
\[\text{close he cl. door}\]
\[\text{“He closed the door”}\]
\[\text{b. *speba cake te’ pulta}\]
\[\text{close wind cl. door}\]
\[\text{“The wind closed the door”}\]
\[\text{c. xpehi te’ pulta yu cake}\]
\[\text{closed cl. door by wind}\]
\[\text{“The wind closed the door” (lit.: The door closed by the wind)}\]

A direct participant effect has been reported (though under a different name/characterization) for Hebrew (Doron 2003). While the subject of an active clause in the simple template can be either direct or indirect participant, the subject of an active clause in the intense template needs to be a direct participant. Very often this looks like an agent exclusivity effect as in the examples below.

\[(45) \text{ha-menahel/ macavo ha-bri’uti patar et dani}\]
\[\text{the director/ the state of his health excused-Simpl Acc Dani}\]
\[\text{me-ha-’avoda}\]
\[\text{from the job}\]
\[\text{“The director / the state of this health excused Dani from the job”}\]
ha-menahel/ *macavo ha-bri`uti piter et dani  
*the director/ *the state of his health excused-Intns Acc Dani  
me-ha-`avoda  
from the job  
“The director/ the state of his health excused Dani from the job”

However, the decisive notion is not agentivity or animacy. In both sentences in (47), the subject is inanimate. The simple verb produce in (47a) has a reading where the protein is the trigger for antibodies being produced (an indirect participant in our terms). The intensive-template verb in (47b) can only be interpreted such that the protein actually participates in the production process itself (a direct participant). (Note that Doron does not characterize these data in terms of direct/indirect participation but in terms of the contrast agent of an action vs. causer where the agent of an action is not necessarily animate.)

(47) a. ha-xelbon yacar ba-guf nogdanim  
*the protein produced-Simpl in the body antibodies  
“The protein produced antibodies in the body.”

b. ha-xelbon yicer ba-guf nogdanim  
*the protein produced-Intns in the body antibodies  
“The protein manufactured antibodies in the body.”

To conclude this section, both the direct participant effect and the agent exclusivity effect are not restricted to the nominal domain but they can also be found in the verbal/sentential domain, both in active as well as passive clauses.

6. Towards an account

To summarize our discussion so far, the above facts challenge Sichel's account in terms of event complexity, as, in order to account for this distribution of the direct participant restriction, one would have to argue that passivization in e.g. Romanian and Spanish involves a shift in the event structure of the predicate, i.e. an accomplishment should become a simple event under passivization, a point that would be rather hard to provide evidence for. The same would have to be assumed for the Jacaltec active or the Hebrew intensive template (see also fn. 3). We thus conclude that an account in terms of event complexity cannot be on the right track. In addition, the cross-linguistic investigation of nominalizations showed us that an account in terms of small vs. big structures cannot work either, as
the effect is found in both small and more clausal like nominalizations. Finally, the Romanian data show that occasionally the effect is related to the preposition used: if a language possesses a lexically restricted preposition, the effect will arise independently of the type of construction (e.g. the effect is observed both in the verbal passive as well as in all types of derived nominals that use this preposition). The only correlation that can thus be established is that specific constructions across languages show or do not show the effect, and this is subject to parametrization in the sense that it will not be the same construction across languages that will show the effect. What is then the locus of variation?

Following most of the recent literature, we adopt the Borer-Chomsky Conjecture in (48), label due to Baker (2008):

(48) All parameters of variation are attributable to differences in the features of particular items (e.g., the functional heads) in the lexicon.

In the next section we first discuss our assumptions about the decomposition of verbs. Afterwards we turn to the question how specific Voices such as active Voice, passive Voice but also nominalizations which we treat as specific Voices, can be parametrized to bring about agent exclusivity and direct participation effects.

6.1. Verbal decomposition

We assume several functional heads involved in the encoding of verbal meaning. The eventive verbal predicate itself is decomposed into two layers, a v head, which is a verbalizer bringing about event implication, and a root, as in (49) (see Marantz 2005, Alexiadou, Anagnostopoulou and Schäfer 2006). (49) is the structural representation of an unaccusative/ anticausative predicate where the root expresses a result state, e.g. *the door opened.*

(49) \[ vP \ v [ \sqrt{\text{open}} \ DP ] \]

The external argument is severed from the verbal predicate and is introduced by a functional verbal head on top of vP (called Voice in Kratzer 1996, Marantz 1997, Alexiadou, Anagnostopoulou and Schäfer 2006, Bruening to appear, little v in Hale and Keyser 2003, Folli and Harley 2005, Init in Ramchand 2008, agency in Doron 2003 or originator in Borer 2005). Here we call this head v-E(external)A(rgument) to make the relation to the external argument explicit. We assume that v-EA does not
introduce a further event. It introduces a DP in its specifier (on passives see below) and determines the thematic relation between the external argument and the event expressed by the vP in its complement. The decomposition of a transitive verb is given in (50).

(50) \[
{\text{v-EA}} \quad \text{DP}_{\text{Subject}} \quad {\text{v-EA}} \quad \text{vP} \quad \sqrt{\text{open} \quad \text{DP}_{\text{Object}}}
\]

We propose that v-EA comes in the three variants in (51) (cf. Doron 2003), which differently specify the relation between the external argument and the verbal event i.e., three different external argument theta roles. More specifically, (51c) imposes stronger requirements on the external argument (human and co-temporal) than (51b) (co-temporal) and (51a) (direct causer) (cf. section 3). Therefore, the three roles are in a subset relation so that what qualifies as an agent will also qualify as a direct participant, and agents as well as direct participants will qualify as indirect participants but not the other way around.

(51)  
\begin{itemize}
  \item a. v-EA-indirect participant
  \item b. v-EA-direct participant
  \item c. v-EA-agent
\end{itemize}

The vP semantically restricts the kind of a v-EA head it can co-occur with (AAS 2006, and Marantz 2009, Schäfer 2012). Since the v-EA heads are in a subset relation, the vP thereby determines the maximal amount of external argument types it can combine with. A detailed theory of such restrictions is beyond the scope of this paper; we just give an exemplary characterization. For example, if the root implies intentionality (murder), only v-EA-agent is possible (52a). Furthermore, indirect participant causers have been argued to occur only in resultative structures (Travis 2005, Folli and Harley 2005, Schäfer 2012). In (52b, c), the indirect participants the wind and the rain are only grammatical if we add a result state to the basically mono-eventive verb (note that these are NP-XP resultatives in the terminology of Levin and Rappaport Hovav 1999). Agents and direct participants, on the other hand, can occur also in monoeventive structures (52d, e).

(52)  
\begin{itemize}
  \item a. *The storm / John murdered the president
  \item b. The wind rolled the ball ??(across the goal-line)
  \item c. The rain washed the stairs ??(clean)
  \item d. John rolled the ball/washed the stairs
  \item e. John/The train whistled
\end{itemize}
6.2. Patterns of variation

In section 5 we have seen that J acaltec restricts the external argument of active accomplishment verbs to agents. This suggests that this language lacks the v-EA heads introducing indirect and direct participants (though we think that the difference between indirect and direct participants in this language would need further investigation).

Most languages have, however, all three v-EA heads and then the restrictions on the external argument show up only in passives and/or nominalizations. Following Doron (2003), Sigurðsson (2011), Alexiadou and Doron (2012), or Bruening (to appear), we assume that a further layer can appear on top of (50) as in (53). A family of heads, all executing related tasks, can realize this layer. We call these heads Voice-heads (adopting the more traditional understanding of the term as diathesis).

(53) \[ \text{VoiceP} \text{VoiceN/V} [\text{vEA} \text{v-EA} [\text{VP} \text{Root}]]] \]

Voice heads do not introduce the external argument (v-EA does) and they also do not introduce a further event. Instead they take an active v-EAP (a default active VoiceP) as their complement and give a Voice (or diathesis) alternation. Morphologically, Voices introduce characterizing morphology, as described in (54) for English. In addition, while verbal Voices leave the category of their complement unchanged, nominal Voices also change the category. The three Voice heads that account for the English data discussed in this paper are listed in (54):

(54) a. Voice-Passive produces a passive
   b. Voice-ation produces an ation-nominalization
   c. Voice-ing-of produces an ing-of gerund

Syntactically, Voices also often absorb the external argument. We do not provide the technicalities for this process here but refer to Bruening (to appear) for a proposal how the passive/nominalization can technically absorb/existentially bind the external argument in Spec, vP-EA and optionally reintroduce it in a by-phrase. In this kind of analysis we get an intuition of how nominalization is similar to passivization, as Grimshaw (1990) proposes: just like the passive, the nominalization suffix is a Voice head. If the nominalization allows a by-phrase, we have evidence that this nominalization contains the layer that introduces the external argument v-EA, as the default assumption is that the same layer that introduces the external argument in the passive should also be introducing
With this background, we turn to our proposal how to implement the direct participation/agent exclusivity effect. The central claim is that specific Voices can select for specific vP-EAs. And since the different v-EA heads are thematically in a subset relation, such a choice can either filter out indirect participants, or both, direct or indirect participants as external arguments in this specific Voice construction. To give some examples, the English passive Voice is underspecified for the v-EA it combines with so that all types of external arguments are available. The same holds for the Voice producing *ing-of gerunds. The Voice producing *-ation nominalizations, on the other hand, selects for v-EA-direct participant and this choice makes indirect causers unavailable in this construction. Finally, in constructions showing an agent exclusivity effect such as the Greek passive, Voice selects for v-EA-agent. Note that we are aware that our proposal is a pure implementation of direct participant/agent exclusivity effects; from what we know so far about these effects, we cannot predict what Voice selects what v-EA, or why a specific Voice selects a specific v-EA. To our knowledge, these effects have simply not been correlated with any further syntactic or semantic property, which could provide deeper answers to these questions.

Hebrew provides morpho-syntactic evidence for this type of decomposition in the verbal domain (see Doron 2003 for details). First, Hebrew provides morphological evidence for the existence of different v-EA heads. The sentences in (55a, b) are both active but differ in the template morphology used and this choice corresponds with the availability of external argument types. Thus in (55a), we see once again that the simple template is underspecified for the type of external argument involved, while the intensive template in (55b) is not.

(55) a. ha-yeladim/ ha-tiltulim ba-argaz šavru
   the children/the shaking within the box broke-Simpl
   et-ha-kosot
   Acc-the glasses
   “The children/ the shaking within the box broke the glasses”

b. ha-yeladim/*ha-tiltulim ba-argaz šibru
   the children/*the shaking within the box broke-Intns
   et-ha-kosot
   Acc-the glasses
   “The children/ the shaking within the box broke the glasses”
Furthermore, only the intensive template can combine with Voice-passive. As Doron (2003) states, 'the simple template lacks the passive voice'. This is illustrated in Table 1 from Alexiadou and Doron (2012) for the root √yšv ‘sit, inhabit’. This is expected under an approach to Voice that allows for selection of vP-EAs, as the one put forth here.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Voice</th>
<th>Passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>yašav “sit, inhabit”</td>
<td>yišev “settle, populate”</td>
</tr>
<tr>
<td>Passive</td>
<td>--------</td>
<td>yušav “be settled, populated”</td>
</tr>
</tbody>
</table>

Table 1. Hebrew Template-Voice interaction

7. Conclusions

In this paper we showed that there are in fact two restrictions with respect to external arguments, agent exclusivity and direct participation, which are exhibited by various nominal but also verbal constructions across languages. We argued that an account based on event complexity that proposes that nominals can only host simple events makes wrong predictions and that an account in terms of the structural deficiency of nominalizations, which contain less verbal structure than their corresponding verbal bases, fails to explain the fact that sometimes verbal forms are more restricted than nominalizations (e.g. Greek passives vs. nominalizations). We proposed an implementation of this variation by means of the interaction between three possible types of heads that introduce external arguments (v-EA) and a Voice head that comes higher in the structure and exhibits selectional restrictions with respect to the v-EA it can combine with.

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Notes

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2 We use the following abbreviations: Acc - accusative case, Act - active morphology, cl - clitic, EA - external argument, Gen - genitive case, Inf - infinitive, Intns - intensive template, Instr - instrumental case, Nact - non-active morphology, Nom - nominative case, Pst - Past Tense, Rf - reflexive pronoun, Simpl - simple template.

3 Note here that Sichel (2011) actually observes the same effect in Romance causative formation but concentrates on nominalizations.

4 We follow the standard assumption that the subject of lexical causatives (accomplishments) must be construed as a direct causer (see e.g. Rappaport Hovav and Levin 2012 for recent discussion).

5 It should be noted that for some speakers the preposition de către is more restricted in use: it is excluded with direct participants and only compatible with agents. This is a matter of speaker variation which does not affect our analysis in section 6. The important fact is that de către displays a restriction with respect to the external argument.

6 For alcohol in (25c), we can also build a context where it is a direct participant and thus compatible with de către:

   (i) distrugerea ficatului de către alcool
de către liver.Gen by to alcohol
   “The destruction of the liver by alcohol”

7 The speaker variation mentioned in endnote 5 also applies to verbal passives in Romanian.

8 Tatevosov (2012) provides data from Tatar and Russian active clauses, which look like a direct participant effect. In these languages some accomplishments, which are characterized by specific morphological marking, allow only direct but not indirect participants as their subjects. Consider the following Russian verb pair.

   (i) a. Zhizn' bez otca vospita-l-a Volodju siln-ym
       life without father.Gen bring.up-Pst-F V.Acc strong-Instr
       “The life without the father made (lit. brought up) Volodja strong”
   b. ???Smes' otca vospita-l-a Volodju siln-ym
      death father.Gen bring.up-Pst-F V.Acc strong-Instr
      “The death of his father made (lit. brought up) Volodja strong”
Note that Tatevosov shows that the two classes of predicates do not differ in terms of aspectual structure, i.e. they are both accomplishments irrespectively of the type of external argument involved.

9 Hebrew has a third template, the causative template. As this is not only used to form transitive variants of anticausative predicates, but it is also used to derive causatives of transitive predicates, we do not discuss it here, see Doron (2003) for details.

10 In mono-eventive structures the root is a manner modifier of v.

11 On the licensing of causers in Jacaltec anticausatives, see AAS 2006, Alexiadou and Schäfer 2006. These authors argue that causers in anticausatives are not introduced by the layer which we call here v-EA.

12 Here we call both the nominal and the verbal functional head that selects for a particular v-EA ‘Voice’ to indicate the close selectional relation between the two heads, but in the case of nominalizations one would probably prefer to call it a N(ominalizing head) that selects for a vP-EA of a particular type (indirect, direct or agent participant) (see Bruening to appear).

13 Obviously, this analysis does not capture all types of nominalizations. Some, such as the Spanish verbal infinitive, are active, some do not contain verbal layers at all. See Alexiadou (2001), Alexiadou, Iordăchioia and Schäfer (2011), and Bruening (to appear), for discussion.

14 Borer (2013) also argues that ing-of gerunds and -ation nominals do not differ in terms of internal verbal structure.