

### External arguments in derived nominals

1. We offer a syntactic analysis of an interpretative restriction on the external argument of derived nominals. Sichel (2011) recently (re)formulated this restriction as follows: while accomplishment verbs allow both direct and indirect participants/causers as external arguments, nominals derived from them require direct participation (irrespective of the  $\pm$ animate nature of the external argument). Based on cross-linguistic evidence (English, German, Greek, Romanian, Spanish and French), we propose that this restriction is related to the absence of Voice in derived nominals and the thematic properties of the preposition introducing event participants in the nominal domain.

2. As is well known, English nominalizations are morpho-syntactically deficient in 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 & Noyer 1999). A further property that characterizes only a subset of English nominalizations, namely, derived nominals, and on which we focus here, is the restriction on the nature of their external argument. While verbal forms allow both direct and indirect participants/causers, direct participation is required in derived nominals, illustrated in (1) with respect to the *by*-phrase realizing the external argument. (We concentrate on *by*-phrases; the same effect holds with English transitive nominals (see Marantz 1997, Harley & Noyer 2000, Pesetsky 1995, Grimshaw 1990, Sichel 2010/2011), but the other languages we will discuss don't permit transitive nominals for independent reasons.) Following Sichel (2011), we call this the *direct participation effect*. Derived nominals contrast with *ing-of* gerunds, which allow indirect causers as external arguments (2), although they share properties in terms of morpho-syntactic deficiency (e.g. no ECM, etc.; cf. Chomsky 1970):

- (1) a. The expert/the results verified the initial diagnosis  
b. The verification of the initial diagnosis by the expert/#by the results  
c. ?the verifying of the initial diagnosis by the experts/by the results

3. To our knowledge, Sichel (2010) is the first to offer an account of this phenomenon. She claims that this behavior cannot follow from the general morpho-syntactic deficiency of derived nominals, as *ing-of* gerunds are equally deficient. To account for the contrast in (1a, c) vs. (1b), she proposes that derived nominals of accomplishments 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 with the unfolding simple event. By contrast, *ing-of* gerunds can denote complex events, and thus permit indirect causers as external arguments, which are not co-temporal with the unfolding event. Sichel does not offer an explicit syntax-event structure mapping, and phrases her account in the framework of Rappaport Hovav & Levin (1999). From this perspective, unlike their verbal source, derived nominals of accomplishment verbs have a simple event structure, e.g. [x ACT  $\langle$ MANNER $\rangle$ ]. By contrast, *ing-of* gerunds maintain the complex event structure of the verb, e.g. [[x ACT] CAUSE [BECOME [y  $\langle$ RES-STATE $\rangle$ ]]]. 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]. But note that the morpho-syntactic composition of English nominals such as in (1b) does not seem to match the semantic interpretation attributed to them by Sichel. Following Harley (2011), the verbalizing affix *-ify* in *verify* realizes the Process/v head and combines with the verbal root *-ver* that realizes a semi-compositional result head in (2). Thus the structure in (2) necessarily corresponds to the structure of an accomplishment and it nevertheless builds derived nominals. Furthermore, derived nominals permit *re*-prefixation, e.g. *the re-verification of the diagnosis*. *Re-* has been argued to be compatible with accomplishments only (Wechsler 1990). This makes Sichel's account untenable.

- (2) [<sub>VP</sub> ify [<sub>RESP</sub> ver]]

4. We propose that the effect observed by Sichel is indeed related to a structural difference between the two nominal types, but of a different kind, since both are accomplishments. It is a difference relating to the structural level introducing the external argument (Voice). Following Kratzer (1996), we attribute the difference between derived nominals and *ing-of* gerunds to the absence of Voice in the former, but not in the latter. Voice introduces and thematically licenses the external argument in the active and in the passive. Here we view

nominalization as a type of passivization (Grimshaw 1990). If the nominalization contains Voice, then the thematic role it carries should be similar in the nominal and the verbal domain. In the absence of Voice, languages appeal to their inventory of lexical prepositions to introduce event participants. In some languages, these prepositions are thematically restricted. For English, this means that derived nominals lack Voice, while *ing-of* gerunds have Voice. Evidence for this comes from the observation that English *ing-of* gerunds are not compatible with a self-action interpretation, while derived nominals are: in (3), *registration*, but not *registering* allows an interpretation where the children registered themselves.

(3) The report mentioned the painfully slow registering/registration of the children  
Following Kratzer (2003), we conclude from (3) that *ing-of* gerunds require the implicit realization of the verb's external argument under Voice, just as verbal passives do (see 4a). The *by*-phrase acts as a purely formal licenser of the external argument, whatever thematic properties Voice assigns to it. The interpretation of *by*-phrases in derived nominals is restricted, however. In (4b) the *by*-phrase is not related to a Voice-head but acts as a nominal modifier; in the absence of Voice, derived nominals behave similarly to non-derived nouns (*the book by Chomsky*). Crucially, the type of *by* involved can only introduce an *agent* or *direct causer*, see Fox & Grodzinsky (1998), Alexiadou & al. (AAS, 2009).

(4) a. [<sub>ing</sub> [VoiceP [vP [Root]]] b. [<sub>ation</sub> [vP [Root]]]

5. Support for our approach comes from comparing the English data with the corresponding derived nominals in German, Greek, Spanish, French, and Romanian. While Romanian (5) and Spanish show the *direct participation effect*, the other three languages don't (6, German):

(5) justificarea masurilor de austeritate de catre Emil Boc/#ratingul scazut al SUA  
justification measures of austerity by Emil Boc/#the rating down-graded of US

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

Our structural analysis predicts that: i) Romanian and Spanish nominals should lack Voice **and** their prepositions should be thematically restricted to direct participants (as they are similar to English derived nominals); ii) as Greek, German and French nominals are similar to *ing-of* gerunds (i.e. no restrictions with respect to the interpretation of the *by*-phrase), they should either have Voice (option 1) **or** compensate the absence of Voice through a semantically powerful lexical preposition which is flexible enough to thematically license direct as well as indirect participants (option 2). These predictions are borne out: i) Romanian and Spanish nominals are compatible with self-action (see (7) for Romanian), so they lack Voice, as predicted. In both languages, the prepositions for external arguments, *de catre* and *por*, introduce only agents/direct causers, i.e., they are similar to English *by*.

(7) anuntarea oaspetilor (Ag = Th) (8) die Anmeldung der Gäste (Ag = Th)  
the announcement guests.Gen the announcement the.Gen guests

ii) Option 1 is exemplified by Greek, and Option 2 by German and French. Greek nominals are incompatible with self-action, so they include Voice (see AAS 2009; *apo* and *me* in (6b) introduce direct and indirect causers, respectively). But German (8) and French nominals can have a reflexive interpretation, suggesting that they lack Voice. (Note that German *-ung* nominals are possible only from verbs that are accomplishments, qualifying thus as complex events, e.g. *\*Laufung* 'running' (Roßdeutscher 2010); this is a further counter-argument to Sichel's account.) We explain these cases via the semantic flexibility of the prepositions involved: in German the preposition *durch* isn't restricted to direct participants and is compatible with other thematic roles in non-derived nouns, cf. *\*the danger by the storm* vs. its German counterpart *die Gefahr durch den Sturm*. French *par* is also unlike English *by*: it can co-occur with a direct participant, suggesting that it is not restricted to a direct participant interpretation, see Kayne (1977:228) *Sa vérification du diagnostic par l'expérience* 'His verification of the diagnostic by the experiment'.

6. Our analysis supports the view that not all types of nominalizations share the same internal structure (*ing-of* gerunds vs. derived nominals, Abney 1987, and others). Moreover, it implies that there are two types of *by*-phrases: an argumental one in the presence of Voice, and a modifier one in its absence. We will show that this is confirmed by the Romanian supine and French *-age* nominals which always project Voice and whose *by*-phrases are argumental (see Cornilescu 2001, for Romanian).