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Plural Marking in Argument Supporting Nominalizations

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1   Introduction

This paper investigates the conditions under which Argument Supporting Nominalizations (ASNs) can receive plural marking. Under ASNs, we discuss deverbal nouns that express an event and preserve argument structure. In our discussion we consider ASNs in Romanian, English and German.

Grimshaw 1990 claimed that Referential Nominals (RNs) crucially differ from ASN ones in that only the former pluralize, while the latter do not. This has recently been challenged by Roodenburg 2006 who argues that this property is subject to language variation: unlike Germanic (1b), Romance languages like French (1a) allow plural ASNs:

(1)   a. les fréquentes destructions *des quartiers populaires*
          'the frequent destructions of popular quarters'
       b. *the destructions *of the city* (by the soldiers)[2]

[2] The pattern in (1) is due to Roodenburg (2006). Note that the presence of the adjective *frequent* in (1a) is important for this contrast, since the English example in (i) is also grammatical:

(i) the frequent destructions of the city of Carthage by the Romans
(ii) les fréquentes destructions de la ville de Carthage par les Romains

Iordăchioaia and Soare 2008 show that the possibility to pluralize ASNs is not language-specific, since both patterns may be found within a single language. They correlate the availability of plural with the aspectual properties of the ASNs. In their discussion of the two ASNs in Romanian, they show that the infinitive allows plural marking, but the supine does not (2). The two patterns are argued to differ semantically in that the infinitive involves a [+bounded] event and the supine a [-bounded] one. In the syntax, this distinction is accounted for by the fact that the infinitive projects Number and lacks Aspect, while the supine projects Aspect but not Number.

(2) demolările /   *demolaturile   frecvente *ale cartierelor*
      demolish-Inf-Pl / demolish-Sup-Pl frequent-Pl of quarters-Gen
      vechi de către comunişti
      old   by   communists
      'the frequent demolitions of old quarters by the communists'

Drawing on the syntactic and semantic differences between the two ASN patterns in Romanian and the comparison to Germanic languages, in this paper, we argue that pluralization of ASNs is not subject to language variation. We show that ASNs generally pluralize across languages depending on aspectual properties such as (a)telicity, (im)perfectivity and (un)boundedness. We also propose that these properties correspond to the projection of Number, Aspect and Classifier in the syntactic structure.

The paper is structured as follows. In Section 2, we start with a presentation of the differences between the two Romanian ASN patterns which lead us to the generalization that Number and (outer) Aspect exclude each other in the functional structure of ASNs. The projection of Number is motivated by various nominal properties and it correlates with the inner aspect telicity of the event. The projection of Aspect is necessarily related to unboundedness triggered via aspect shift. The former case characterizes infinitival ASNs, the latter characterizes the supine. The two patterns are described in Section 3. In Section 4, we show that ASNs in German and English also pluralize and we establish a correlation between the two Romanian ASNs and the English verbal vs. nominal.

Further scrutiny of the English nominal gerund reveals that atelic inner aspect also blocks realization of morphological plural. In Section 5, we

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This casts serious doubt on the language parameter assumption. Our proposal is that the pluralization of ASNs is cross-linguistically available and depends on the aspectual properties of the nominal, so the grammaticality of (i) is expected.

show that the ClassifierP within the noun phrase is the projection responsible for this behavior. More precisely, we argue that an ASN like the Romanian infinitive in (2) projects both Classifier and Number, while the nominal gerund only projects Classifier. Number is projected if the Classifier bears a [+count] feature motivated by the telic inner aspect. A [-count] Classifier created by the atelic inner aspect cannot be the input for a further Number projection. In this respect, ASNs with inner aspect atelicity have a structure similar to that of mass nouns. We present our final conclusions in Section 6.

2   The case of Romanian

2.1 The two nominalization patterns

Romanian has two main types of deverbal nominalizations, both of them very productive. The infinitival one (*-re*) derives from the (long) infinitive and the supine (*-t/s*), from the past participle[3]:

(3)   a. Infinitive:
     a cînta – cînta-**r-e** /   cîntă-**r-i**
     to sing –   sing-Inf-Fem.Sg / sing-Inf-Pl
     a reproduce - reproduce-**r** -**e** / reproduce-**r**-**i**
     to reproduce - reproduce-Inf-Fem.Sg / reproduce-Inf-Pl
    b. Supine:
     a cînta – cînta-**t** /   *cînta -**t**-uri
     to sing –   sing-Sup / sing-Sup-Pl
     a reproduce - reprodu-**s** /   *reprodu-**s**-uri
     to reproduce - reproduce-Sup / reproduce-Sup-Pl

The two ASNs display very different properties beginning with their morphology: unlike *–t/s,* which is included both in the form of the past participle and that of the supine, the suffix *–re* attaches to the short infinitive and derives infinitival nouns. This suggests that *–t/s* is a verbal affix, while *-re* is a nominalizer. In confirmation of its nominal status, *-re* carries (feminine) gender features (3a), while the supine receives default neuter gender.[4] Thus, infinitive ASNs successfully establish anaphoric relations with the feminine demonstrative *aceasta* (4b), while the supine rejects the masculine / neuter syncretic form *acesta* (4c) and can only be referred to by the gen-

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[3] The plural ending *-uri* for the supine in (3b) is given by analogy with other nouns derived from the supine. See the discussion below on plural marking.

[4] See Iordăchioaia & Soare 2008, for more details.

derless form *asta*, the common anaphor for CPs in Romanian (see (4a)):[5]

(4) a. Că Ion a venit, *asta* o ştiu.
       'That John came, I know it.'
   b. Am vorbit despre *interpretarea rolului Hamlet* în general. Se
       pare ca *aceasta / ??asta* îi consacră indubitabil pe actorii tineri.
       'We spoke about the interpretation-Inf of Hamlet in general.
       This-Fem / ??it undoubtedly validates the young actors.'
   c. Am vorbit despre *interpretatul rolului Hamlet* în general. Se
       pare ca **acesta / asta* îi atrage pe toţi actorii tineri.
       'We spoke about the interpretation-Sup of Hamlet in general.
       *This-Masc-N / it attracts all the young actors.'

The second difference concerns plural marking. This is possible for the infinitive ASNs, but not for the supine, as already indicated in (2) and (3). The plural *-uri* is a default ending attributed to the supine by analogy with the plural of lexical nouns originating from the supine / past participle: e.g. *tuns* 'haircut' - *tunsuri*; *mers* "manner of walking"- *mersuri*; *venit* "income" - *venituri*. As expected, determiner selection reflects the countable character of the infinitive and the uncountable character of the supine: the former accepts discrete quantifiers, the latter only combines with mass quantifiers:

(5) a. *Prea mult / *un* spălat   al rufelor distruge ţesătura.
       too much / one wash-Sup of laundry-Gen destroys fabric-the
   b. *Prea multe* spălări / *o* spălare a(le) rufelor ...
       too many wash-Inf-Pl / one wash-Inf of laundry-Gen
       'Too much washing of the laundry destroys the fabric.'

The above differences between the two ASNs indicate that the infinitive has a clear nominal character, while the supine does not. The count-mass distinction between the two can be traced back to their aspectual properties, an issue that we address in the next section.

2.2 Aspectual properties

Mourelatos 1978, Borer 2005 among others pointed out that ASNs referring to telic events can in fact pluralize (see also Section 3). This suggests that only atelic ASNs obey Grimshaw's generalization by blocking plural. In what follows, we show that this observation receives further confirmation

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[5] Note that the anaphor *asta* is not excluded in (4b). But in this case we are dealing with coercion since the noun *interpretarea* is understood as a fact (see Iordăchioaia & Soare 2008).

from the two Romanian ASN patterns: the infinitive is telic / bounded, while the supine is atelic / unbounded. As expected - and as mentioned in the previous section - the former can pluralize, but the latter cannot.

Cornilescu 2001 offers a detailed study of the aspectual properties of Romanian ASNs and she concludes that the infinitive is telic, while the supine is atelic. Her claim is based on three main arguments.

The first one concerns the possibility of a transitive ASN to project its theme argument. Building on Borer 1994, Cornilescu correlates the ability / inability of a transitive ASN to project its agent instead of the theme with atelicity / telicity. This has to do with the fact that the presence of the theme identifies the culmination of the event. If the theme is obligatory, it means that the event must culminate so the ASN is telic; if the theme is not projected, the event does not need to culminate, so the ASN is atelic. The argument is particularly clear for Romanian where the DP contains only one case position for one argument. As indicated in (6), the infinitive ASN cannot project the agent alone, whereas the supine can[6]:

(6)   a. *citirea lui Ion   b. cititul lui Ion
          read-Inf-the John-Gen   read-Sup-the John-Gen
                                       'John's reading'

The infinitive in (6a) can only be understood as a RN, not as an ASN. This leads to the second difference between infinitive and supine ASNs which concerns the availability of R-readings with the former, and their unavailability with the latter. This follows from the common assumption that a resulting state only appears with telic events. In Romanian, an R-reading is indicated by the presence of the preposition *de* "of" with time / space modifiers. This preposition is excluded with the supine:

(7)   a. cîntatul lui Ion (*de) la baie
          sing-Sup-the John-Gen of in bathroom
      b. cîntarea lui Ion *de* la baie
          sing-Inf-the John-Gen of in bathroom
          'John's singing in the bathroom'

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[6] One of our reviewers doubts the soundness of this argument, since as they note, not all transitive verbs are telic. It should be noted that Cornilescu attributes the (a)telic character to the nominalizing suffix which - as she convincingly shows - is responsible for a number of properties that characterize only the ASN and not its verbal base. While a full discussion of her view would take us too far afield, we take her results as indicative of our later generalizations and refer the reader to her argumentation in Cornilescu (2001: 484-496), for further details.

The third argument for the aspectual difference between infinitive and supine comes from the selection of the verbal roots. As shown in (8), only the supine is compatible with unergative roots known to be atelic:

(8) | Unergative verb | Infinitive | Supine |
|---|---|---|
| *a călători* (travel) | *călătorirea | călătoritul |
| *a locui* (to live) | *locuirea | locuitul |
| *a munci* (to work) | *muncirea | muncitul |
| *a rîde* (to laugh) | *rîderea | rîsul |

The incompatibility with unergative roots confirms the telicity of infinitive ASN. However, we will argue that the atelicity of the supine (reflected in the properties above) is not of the same nature as the telicity of the infinitive, since the supine does not reject telic roots. In order to account for that, we propose to first distinguish between the two ASNs in terms of boundedness, a wider notion which includes that of telicity (see Jackendoff 1991).

2.2.1 Boundedness

Jackendoff characterizes morphological plural, mass nouns, and atelic and imperfective aspect as [-b]ounded, and morphological singular, countable nouns, and telic and perfective aspect as [+b]. Boundedness is thus a notion that characterizes both the nominal and the verbal domain. The fact that ASNs present mixed nominal and verbal characteristics, we find it appropriate to reformulate the aspectual differences between infinitive and supine ASNs observed by Cornilescu in terms of boundedness.

By applying the tests introduced in Jackendoff 1991, we see that only the infinitive can express a bounded event, located in space and time (9):

(9) Citirea / #cititul cărții a avut loc *astăzi / acasă.*
     read-Inf-the / read-Sup-the book-Gen has taken place today / home
     'The reading of the book took place today / at home.'

The possibility to combine with *until*, a function that bounds a [-b] event with a time producing a [+b] event leads to the same conclusion (10):

(10) cititul / #citirea benzilor desenate *pînă* la vîrsta de 16 ani
     read-Sup-the / read-Inf-the comics-Gen until at age of 16 years
     'reading commics until the age of 16'

2.2.2 Aspect shift

We stated that the telicity of the infinitive ASN is reflected in the unavail-

ability of infinitival nominalizations on the basis of atelic roots. Here we show that the atelicity / unboundedness of the supine is not of the same nature. More precisely, the supine is not incompatible with telic / bounded roots, it rather turns them into [-b]. Thus, the supine introduces aspect shift: the inner / lexical aspect of the verbal root is altered. This can be observed in the interaction of the supine with achievements (11a), accomplishments (11b) and punctual events (11c), all known as [+b]:

(11) a. sositul lui Ion cu întîrziere
          arrive-Sup-the John-Gen with delay has become a rule
          'John's (habit of) arriving late'
      b. mîncatul micului dejun pe terasă
          eat-Sup-the breakfast-Gen on terrace
          '(the habit of) having breakfast on the terrace'
      c. Clipitul Mariei în acest moment e enervant.
          blink-Sup-the Mary-Gen in this moment is irritating
          'Mary's blinking in this moment is irritating.'

Aspect shift from [+b] into [-b] is the defining characteristic of the supine ASN, since atelic roots become grammatical in the supine only if they are turned into [+b], for instance by a function like *until*. The supine of activities and states (12a,b) suggests a plurality of bounded events:

(12) a. Învăţatul lui Ion *(*pînă* la miezul nopţii) nu e un secret.
          study-Sup-the John-Gen (until midnight) not is a secret
          'John's (habit of) studying until midnight is not a secret.'
      b. Dormitul lui Ion *(*pînă* după-amiaza tîrziu) nu e un secret.
          sleep-SUP-the John-Gen (until afternoon late) not is a secret
          'John's (habit of) sleeping until late afternoon is not a secret.'

Individual-level predicates cannot be located in space and time (Kratzer 1995), so they cannot become bounded and then be multiplied. As a consequence, they are ungrammatical in the supine:

(13) *cunoscutul limbilor străine / *descinsul omului
      know-Sup-the languages-Gen foreign / descend-Sup-the man-Gen
      din maimuţă
      from monkey
      'knowledge of foreign languages / the descent of the man from the monkey'

Comparing the above to the behavior of the infinitive which is only sensitive to the aspectual properties of the root, we can then conclude that the supine introduces aspectual information of its own by turning a [+b] event into an [-b] one. More precisely, the supine takes the singular event and turns it into an unbounded plurality of events, similarly to what the nominal plural does: in Jackendoff's terms the plural takes a singular entity and turns it into an [-b] plurality of entities. On this view, plurality as well as aspectual operators are two of the three mechanisms relevant for introducing (un)boundedness (see also Engelhardt 2000). In our view, (un)boundedness is a term that covers these cases, as well as the count/mass distinction.

In what follows, we show that this effect of the supine is due to the presence of a pluractional operator which pluralizes the event.

2.2.3 The Pluractional Operator in the Supine

Iordăchioaia & Soare (2007, 2008) argue that the supine carries a pluractional operator (PO) which is responsible for the [-b] character and the aspectual shift property it exhibits. As discussed in the literature on polysynthetic languages (Lasersohn 1995, Van Geenhoven 2004), POs are usually associated with habituality and iterativity, two effects which can be easily observed with the supine as in (11a), (11b), (12), and (11c), respectively.

Besides these interpretational effects, the supine displays other properties typical of POs (see also the discussion on the Spanish pluractional construction *andar*+ gerund in Laca 2006). These include the lack of multiplicity effects with indefinites (14a), the distribution effects with plurals (14b), and the incompatibility with 'once only' frequency adjuncts (15):

(14) a. *ucisul *unui jurnalist* de către mafia politică
       kill-Sup-the a-Gen journalist by mafia political
    b. ucisul *jurnaliştilor* de către mafia politică
      kill-Sup-the journalists-the-Gen by mafia political
      'the killing of journalists by the political mafia'

(15) cititul romanului (*dintr-o răsuflare*)
    read-SUP-the novel-GEN in one breath
    'the reading of the novel in one sitting'

In (14a), the supine of the one-time event *kill* is incompatible with a singular theme, since the PO in the supine suggests a plurality of killing events with the same theme. The PO cannot trigger an interpretation in which a different journalist is involved in each killing event. But with a

plural theme, the PO induces distributivity, so that we understand (14b) as referring to several events of killing one or more journalists, and not as one event of killing a group of journalists. This behavior also characterizes the PO *qattaar* in West Greenlandic (Van Geenhoven 2004: 147).
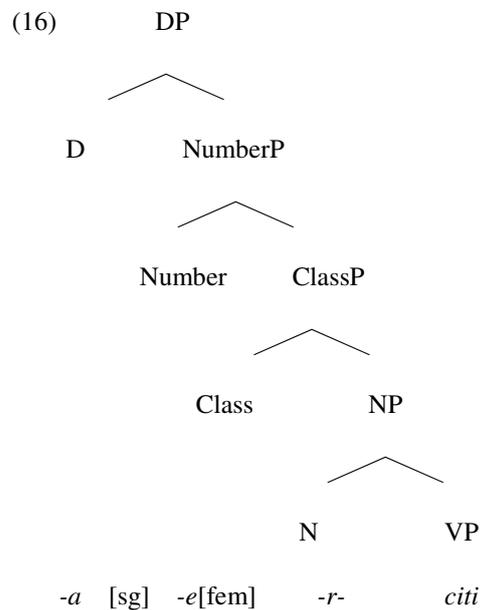
We conclude that it is the presence of the PO in the supine that turns the aspect of the root into [-b].

3 The Functional Structure of Romanian ASNs

The picture that emerges from the description of Romanian ASNs is that we are dealing with two types of event plurality, one by means of (nominal) Number in the infinitive ASN and the other by means of Aspect (triggered by a PO) in the case of the supine ASN. We propose that the difference between the two patterns can be expressed in terms of functional structure, namely that infinitive ASNs project a mainly nominal structure with NumberP, whereas supine ASNs project a mainly verbal structure with AspP. This corresponds to two patterns of nominalization.

3.1. The nominal pattern

We propose the following functional structure for infinitive ASNs:

(16)
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                    DP
                   /  \
                  D    NumberP
                       /    \
                  Number     ClassP
                            /    \
                        Class     NP
                                 /  \
                                N    VP

        -a   [sg]  -e[fem]    -r-      citi
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We make use of a Class(ifier)P as argued by Picallo 2006 to host nominal features. In Picallo's view, the classifier indicates the class / declension to which a noun belongs, and the N head moves to Class to check its features. Importantly, ClassP hosts gender features which feed the Number category, so in her view, the projection of Number obligatorily presupposes the projection of ClassP. This idea is in full agreement with our analysis, since as we have shown, the infinitive suffix *-re* displays feminine gender features. Thus, the nominalizer *-r-* selects a telic root provided by the VP, then the whole nominal checks its declension under Class, number under Num, and eventually attaches to the definite determiner.

3.2 The verbal pattern

The structure we propose for supine ASNs is the one in (17). Given the aspectual properties of the supine, we assume that this ASN projects an AspP which hosts the PO and carries a feature [-b] / [-perf]. The presence of AspP in the syntax is independently motivated by the possibility of the supine ASN to combine with the adverb *constantly* argued by Cinque 1999 to indicate projection of Aspect:

(17)   DP
              /‾‾‾‾‾‾‾\
          D   AspP
                     /‾‾‾‾‾‾\
                 Asp   VP
        -(u)l   PO [-b] / [-perf]   *citit*
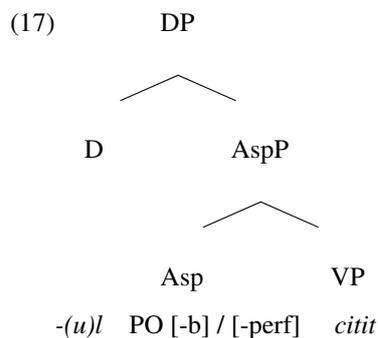
(18) cititul   (*constant*) al ziarelor (*constant*)
  read-Sup-the constantly newspapers-Gen constantly
  'constantly reading newspapers'

In full agreement with our analysis, the infinitive ASN is ungrammatical with the adverb *constantly*, it only accepts the adjective:

(19) a. ??omiterea   (*constant*) a unor informații (*constant*)
  omit-Inf-the constantly of some information constantly

    b. omiterea   *constantă*   a unor informații
       omit-Inf-the constant-Fem of some information
       'the constant omission of information'

Crucially, the functional structure of the supine ASN does not have a nominalizing affix. As proposed by Soare 2006, the supine is a syntactic nominalization based on the participial stem. The absence of a Classifier projection in the supine is related to the presence of a (verbal) Aspect projection and especially to the fact that the supine lacks intrinsic nominal features. As indicated in (4) above and in Iordăchioaia and Soare 2008, it lacks gender features. Besides that, the supine also has a defective case declension, since unlike the infinitive ASN in (20a) it cannot realize the dative-genitive case inflection (20b), but only the nominative-accusative one (20c):

(20) a. Alunecările de teren au apărut din cauza   tăierii pădurilor.
         earth flows-the   have occurred because cut-Inf-Gen woods-Gen
     b. *Alunecările de teren au apărut din cauza tăiatului pădurilor.
         earth flows-the have occurred because cut-Sup-Gen woods-Gen
     c. Tăierea / tăiatul pădurilor provoacă alunecări de teren.
         cut-Inf-Nom /cut-Sup-Nom woods-Gen brings about earth flows

Taking into account Picallo's insight that ClassP hosts the class information of a noun, the incomplete case paradigm of the supine indirectly shows that ClassP is not motivated in the functional structure of this ASN.

4 The Germanic Languages

4.1 English

As already mentioned, Mourelatos 1978, Borer 2005 show that telic ASNs do pluralize in English (21). This is in disagreement with Roodenburg's claim that pluralization of ASNs exclusively characterizes Romance nominalizations:

(21) a. There were *three arrivals* of a train.
     b. There was *a capsising* of the boat by Mary.
     c. *There was *a pushing* of the cart by John.
     d. There was at least *one pushing* of the cart to New York by John.

Importantly, the contrast between the atelic event in (21c) and the telic one

in (21d), in which only the latter accepts a discrete quantifier (i.e. and indicator of Number) confirms the ASN pluralization patterns identified for Romanian infinitive ASNs.

However, a detailed study of the different patterns for the formation of nominals in English reveals a number of complications. As is well known there are three main patterns to create deverbal nominals in English: (i) the verbal gerund *-ing Acc*; (ii) the nominal gerund *-ing of*, and (iii) other affixes (*-ation* etc) *of*. (i) differs from the other two in a number of ways, suggesting that it contains a verbal internal structure.

Evidence for this claim comes from the observation that verbal gerunds license adverbial modifiers (22a), but disallow adjectival modifiers (23b). On the other hand, the nominal gerund disallows adverbial modifiers (22b), but allows adjectival ones (23a):

(22) a. Pat disapproved of me / my *quietly* leaving the room.
b. *The *carefully* restoring of the painting took six months.

(23) a. His *prompt* answering of the question.
b. *His *prompt* answering the question.

Under the standard assumption that adverbs are (at least) VP modifiers, while adjectives are NP modifiers, this contrast suggests that the verbal gerund contains a verbal internal structure (Abney 1987, Kratzer 1994, Borer 1993 and others), while the nominal gerund has a nominal internal structure. In addition, the ungrammaticality of higher adverbs within verbal gerunds (24a) suggests that the internal structure of the gerund is not as 'big' as an IP (assuming that sentence adverbs attach to IP or other high functional heads).

(24) a. *Pat's *fortunately* collecting the money rescued the operation.
b.*That / *the* criticizing the book annoyed us.
c. *The* criticizing of the book annoyed the author.

The second difference between verbal and nominal gerund is that the subject DP cannot be replaced by any determiner in the former (24b), while this is possible for the latter (24c). Thirdly, in the verbal gerund the internal argument bears a verbal case, i.e. accusative (22a, 23b, 24b), while in the nominal gerund, the internal argument appears preceded by *of*, the nominal case (22b, 23a, 24c).

The claim that the verbal gerund lacks a nominal internal structure, on the basis of the observations in Section 2 with respect to Romanian, would

lead us to expect that it should also lack plural forms; the nominal gerund, on the other hand, should be able to pluralize. This is indeed borne out:

(25) a. my frequent *readings of economic magazines*
     b.*Emma's *readings the poem*

On the basis of the above, we propose that nominal gerunds, like Romanian infinitives, project NumberP (Alexiadou 2001, 2005), while verbal gerunds project AspP (Borer 1993, 2001, Alexiadou 2001, 2005) without NumberP (Alexiadou 2001, 2005). The respective structures are given in (26):

(26) a. verbal gerund:

    $[_{DP}$ D $[_{AspP}$ Asp *-ing* $[_{VP}$ *read*$]]]$

b. nominal gerund:

    $[_{DP}$ D *the* $[_{NumberP}$ Number *-s* $[_{ClassP}$ Class $[_{NP}$ N *-ing* $[_{VP}$ *read*$]]]]]$

The structure of the gerund differs from that of the Romanian supine in two important respects which are related to one another and reflect language-specific properties.

First, in Romanian, the enclitic definite article realizes D. In English, no determiner is present and the subject moves from its base position to Spec,DP. This correlates with the properties of the DP projection across languages. DP is an A-position in English (Abney 1987) and rather similar to a CP projection (subordinator) in other languages. If we are right in analyzing the verbal gerund as lacking ClassP and most importantly NumberP, we expect that no definite determiner will appear in English.

In particular, Borer 2005 argues that the definite determiner in English can be merged lower than D, in projections that correspond to our ClassP and NumberP (although she is using a different description and assigns different functions to these layers.). The important observation in her system is that all definite expressions are quantity expressions. Importantly, the definite article can merge at least as low as Class. If gerunds lack NumberP as well as ClassP there is no position for the definite article to merge. This means that the English definite article is not simply a form to lexicalize definiteness but can also lexicalize Class, in the absence of any other class marking in the language. The definite article in Romanian is different. Following Dobrovie-Sorin 1987 and Giusti 1999, the Romanian definite deter-

miner lexicalizes D, i.e. it is merged directly under D. That the article itself cannot be a Classifier or a Number marker in Romanian is also suggested by the fact that the language makes use of distinct exponents to realize these categories (see our remarks on class / gender marking in Section 3.1). These are absent in the supine, so the structure of this ASN involves only a D head. As D must be licensed, the definite article is inserted in D.[7]

The second important difference between the English gerund and the Romanian supine concerns the internal argument. In the supine, it bears genitive case, while in the gerund, it bears accusative case. We believe that this is related to the first property. Because of its properties, the affixed article in the supine creates a nominal environment, albeit a defective one, hence the case that appears is the one found in nominal environments.

3.2 German

English is not the only Germanic language that shows such contrasts in the pluralization of ASNs. We find a similar situation in German. There are two main patterns of nominalizations in German: *–ung* nominals and infinitival ones. Only the former can pluralize.

Unlike Romanian infinitives, *-ung* nominals project either the theme or the agent of an activity verb (27a), so they are not necessarily telic. In this case, a plural under the R-reading is possible (27b):

(27) a. die Beobachtung *des Verdächtigen*$_{Th}$ / *der Polizei*$_{Ag}$
    the observe-Ung the-Gen suspect / the-Gen police
    b. die *Beobachtungen* der Polizei
    the observe-Ung-Pl the-Gen police

Roodenburg 2006 argued that German ASNs lack plural forms, as the plural form does not maintain the argument structure:

(28) die *Beobachtung* von Vögeln$_{Th}$ / die *Beobachtungen* von Vögeln$_{*Th}$
    the observe-Ung of birds   the observe-Ung   of birds

We claim that this behavior relates to the aspectual ambiguity of *-ung* nominals: the examples above are atelic and atelic ASNs do not pluralize; the plural form is an R-nominal without argument structure. However, with

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[7] We are not making the claim here that all articles in (all Romance) languages are merged under D. In fact, we would agree with Borer 2005 and think of determiners as being able to realize distinct features in the functional projection, depending on the morpho-syntactic shape of the nominal in the respective language. If a language has distinct class marking, there is no reason why the article should realize Class.

telic verbs that obligatorily project the theme, *-ung* nominals realize the theme and may pluralize, like in Romanian and English (29b):[8]

    (29) a. die Tötung des Feindes / des Verbrechers$_{Th/*Ag}$
          the kill-Ung the-Gen enemy-Gen / the-Gen criminal-Gen
       b. die gezielten Tötungen der politischen Führer durch die Armee
          the targeted kill-Ung-Pl the-Gen political leaders via the army
          'The targeted killings of political leaders via the army'

We thus conclude that pluralization of ASNs is related to telicity / boundedness and aspect in general.

5. (A)Telicity and (un)boundedness

Telicity is a property usually associated with so called 'inner Aspect', i.e. an aspectual value lexically determined (*Aktionsart*) and composed within the VP. Verkuyl 1993, Borik 2002 and others distinguish between inner Aspect / Aktionsart and outer Aspect. The latter is usually associated with the notion of perfectivity and is a functional projection above the VP. Here, we make use of telicity and perfectivity as referring to inner/outer Aspect, respectively, while boundedness is a term that covers both, including the mass-count distinction in the nominal domain.

The projection of Aspect in Romanian supine ASNs has to do with outer Aspect, since as we have seen, the [-b] character appears both with telic and atelic roots. In this section, we first show that the presence of AspectP within English verbal gerunds has a similar effect and then we discuss some finer aspectual properties of English nominal gerunds.

5.1 Verbal vs. nominal gerund: inner Aspect

On the basis of the discussion in Sections 2 and 3, verbal gerunds have been

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[8] A reviewer questions our generalization that telic ASNs in German can pluralize, on the basis of counterexamples like (iii) where the theme is excluded with the plural telic ASN:

    (iii) die Erfindungen (*nutzloser Objekte$_{Th}$) / (des Genies $_{Ag}$)
        the invent-Ung-Pl useless-Gen objects / the-Gen genius

While plural ASNs are usually hard to obtain due to the competition with the simpler structure of homophonous R-nominals like in (iii), note that a proper context does make them available:

    (iv) seine zahlreichen Erfindungen von Sportspielen$_{Th}$ / chirurgischer Instrumente$_{Th}$
        his numerous   invent-Ung-Pl of sport games / surgical-Gen instruments

argued to have a structure similar to that of Romanian supines, while nominal gerunds have been shown to resemble Romanian infinitives. One should expect the two patterns to show a similar behavior in connection with inner Aspect properties. However, the interaction between Aktionsart and nominalizing affixes in English is rather complex.

To begin with, Borer 2005, vol. 2: 239-245 notes that the affix used for the formation of nominal gerunds, nominalizer *-ing*, as she labels it, is sensitive to the Aktionsart of the VP involved. For instance, it is out with achievements (30) but OK with non-culminating events (activities and semelfactives in (31)):

(30) a. *the arriving of the train
    b. *the erupting of the Vesuvius
    c. *the exploding of the balloon

(31) a. the sinking of the ships
    b. the falling of the stock prices
    c. the jumping of the cows

Other affixes (32a), the verbal gerund (32b) as well as the progressive (32c) do accept achievements:

(32) a. the arrival of the train
    b. The train arriving at 5 pm is unlikely.
    c. The train is arriving.

Notice, however, a number of grammatical examples involving achievements and nominal gerunds can be found:

(33) a. the arriving of the yuan
    b. a range of events such as the erupting of Vesuvius
    c. the exploding of dynamite

As far as we were able to determine, the data of (33) are interpreted as processes, i.e. as non-achievements. In many cases, it is easier to accept the *-ing* form, if there is no competing deverbal nominal, derived with another affix. But once we delimit the cases where a competition effect is present, the generalization remains that *-ing of* forms are interpreted as processes, hence the inner aspect sensitivity observed by Borer. On the contrary, the affix for the progressive and the verbal gerund are oblivious to the Aktionsart of the predicate, they are equally fine with telics or atelics.

The inner / outer Aspect interaction can be understood as follows. The progressive and the verbal gerund operate on what has been labeled outer Aspect (Verkuyl 1993). These *-ing* affixes are located in AspP and realize the feature specification [-b] / [-perf]. The affix of the nominal gerund is sensitive to the properties of the predicate. It interacts with what has been labeled inner Aspect (following Borer 2005). Operations at the level of outer Aspect do not alter the event type of the predicate, but do interfere with unboundedness. Operations at the level of inner Aspect do affect the event type of the predicate.

5.2 The interaction between Number and Aspect

The next question concerns the relationship between Number and outer vs. inner Aspect. As we have shown, outer Aspect and Number exclude each other: the supine and the verbal gerund contribute Aspect and lack Number.

Number indicates a nominal structure with a Classifier projection. A Classifier is unmarked for Number, it just hosts nominal features like gender and noun class information and it is by default singular (i.e. non-plural – see also Kratzer 2005); plural is added under NumberP. Following Fassi Fehri 2005, Alexiadou et al. 2008 on the parallelism between inner Aspect and Classifier, we assume that the Classifier projection is the one that carries the properties of a noun related to boundedness. Thus, countable nouns project a ClassP with a feature [+count] which will be the input for a further Number projection. Mass nouns project a [-count] ClassP which prevents the projection of NumberP. Note that this is in agreement with Picallo 2006 who argues that ClassP hosts gender features and feeds Number. Since mass nouns express gender just like count nouns, it is reasonable to assume that the difference between the two starts out in the feature specification of the Classifier and is then reflected in the absence / presence of NumberP.

For ASNs, i.e. nominals which contain an event, the Classifier inherits the aspectual information of the event in the VP and it maps it on the nominal specification of the feature [± count]. An ASN like the Romanian infinitive displaying inner aspect telicity will thus project a [+count] ClassP which like in the case of count nouns further motivates NumberP. We believe that this is the origin of nominal pluralization with (telic) infinitive ASNs (Romanian) and nominal gerunds (English):

(34) a. There were at least three pushings of the cart *to New York*.
   b. arestările *lui Miron Cozma* sub luminile reflectoarelor
      arrest-Inf-the-Pl of M.C.–Gen under the spotlights
      'The arrestings of Miron Cozma under the spotlights'

5.2.1 The English nominal gerund

While the situation is quite clear with Romanian infinitive ASNs, English nominal gerunds display contradictory behavior. As indicated by (25a) and (34a), nominal gerund does pluralize when it expresses a telic event. However, as noted in Section 4.1, the rule is that nominalizer *–ing* rejects telic roots (30). In this latter case, nominal gerunds should be analyzed as projecting a [-count] ClassP as corresponding to their atelic inner aspect and the projection of NumberP should thus be prevented. From our investigation, we can conclude that this is indeed the case. Plural marking even with nominal gerunds does not appear very often. The most felicitous nominal gerund contexts in the singular (with atelic events) are completely excluded in the plural form:

(35) a. the building of houses
b. * the (frequent) buildings of houses
c. the writing of books
d. * the (constant) writings of books

At the same time, if a nominal gerund is acceptable in the singular with an achievement verb, thus reinterpreting the latter as an atelic process, the plural form is again excluded:

(36) a. the arriving of the yuan
b. *the three arrivings of the yuan

This is in clear contrast with the corresponding Romanian infinitive which accepts plural of achievements, since it keeps the event telic and does not reinterpret it as atelic:

(37) sosirea / sosirile lui Ion cu întîrziere
arrive-Inf-the / arrive-Inf-Pl John-Gen with delay
'John's late arrival(s)'

Our conclusion on the data involving the English nominal gerund is that this ASN displays a quite unsettled pattern with respect to its aspectual properties and functional projections. It has [-count] ClassP and does not project Number. However, unlike in the case of verbal gerund, it can also project NumberP, sometimes. Its resistance to always projecting NumberP may have two causes: 1) its strong atelic character probably reminiscent of the feature [-perf] of the progressive *–ing*, 2) the competition with other deverbal affixes like *–tion*, *-al* which are unambiguously nominal, so plural

is always available with these.

That this latter point is on the right track can be indicated also by the observation that when another deverbal affix is not available for a telic verb, the nominal gerund is grammatical and easily pluralizes. It is the case with the verb *kill* from which only the noun *killing* can be formed. All our native speaker informants rated the examples in (38) as surprisingly felicitous:

(38) a. the killing of the journalist / journalists
   b. the repeated killings of unarmed civilians

Note that the dual behavior of the nominalizer *–ing* is not uncommon cross-linguistically. As we have seen, Romanian infinitive ASNs are telic. However, this holds only for the infinitive which realizes its theme with the genitive case. The infinitival suffix *–re* can also appear in a construction where the theme is realized as '*de* (of) + bare plural' and this structure is always atelic, an effect triggered by the bare plural theme. As expected, these infinitival forms do not pluralize:

(39) scrierea / *scrierile *de scrisori*
   write-Inf-the / write-Inf-Pl of letters
   'the writing of letters'

In our analysis, this latter instance of infinitival ASNs project a [-count] ClassP and no NumberP. The difference between the Romanian infinitive and the English nominal gerund is that the former displays a Classifier ambiguity in a systematic way encoded in the realization of the theme, while the latter is not an established pattern yet. This contrast may also be related to the fact that in Romanian the nominalizer *–re* is by far the most frequent among nominal deverbal affixes. In English, other deverbal affixes are at least just as productive as *–ing of*.

5.3 A final note on outer Aspect

Coming back to the realization of outer Aspect, we would like to summarize the properties that indicate its presence. First of all, both the supine ASN in Romanian and the English gerund have been shown to lack nominal properties and to exhibit verbal ones instead. The lack of gender, defective case declension, incompatibility with adjectives and compatibility with adverbs, the assignment of accusative case have been indicated at various points to apply to one or another or to both of them. These properties reflected a clear contrast with the nominal ASN counterparts, i.e. the infinitive and the nominal gerund, respectively.

On top of this, and most importantly, we have shown that both the supine and the verbal gerund contribute their own aspectual information independently of the inner aspect of the root. They can combine with both telic and atelic roots and they invariably turn them into [-b] / [-perf]. This feature specification is hosted by an Aspect projection which represents outer Aspect. As we have shown above, inner Aspect is encoded under the Classifier projection, since the ASNs which are sensitive to the inner aspect are all nominal in character and do not contribute aspectual operators of their own.

The behavior of PPs provides further evidence for the presence of outer Aspect independently of inner Aspect. Borer 2005 places atelic PPs (*for X-time*) on outer Aspect and telic ones (*in X-time*) on inner Aspect (Asp_Q). As we argued, outer Aspect hosts the pluractional operator of the supine and the verbal *–ing*: it can clearly be atelic.[9] However, inner Aspect can be either telic or atelic in infinitive and nominal gerund ASNs, so we see no reason to restrict it to being telic. For instance, in the Romanian supine, we find scope interaction effects between atelic PPs and the PO:

(40) plantatul de copaci timp de 3 ore / timp de 3 ani
plant-Sup-the of trees for 3 hours / for 3 years
i. *plant> 3 hours*: 'a plurality of planting trees events, each of them taking 3 hours'
ii. *3 years> plant*: '3 years covered with (a plurality of) planting trees events'

In (40i) the narrow interval PP *for 3 hours* modifies the inner Aspect (the basic event which is thus atelic); outer Aspect hosts the pluractional operator and expresses a plurality of these basic events. The PP modifying the inner Aspect is thus outscoped by the PO. In (40ii), *for 3 years* modifies outer Aspect and thus can outscope the PO in the supine.

Such scope interactions do not appear with infinitives. As can be seen in (41), the only reading available with the infinitive is that in which *3 hours* modifies the inner Aspect as the sole aspectual information in the infinitive:

(41) plantarea de copaci timp de 3 ore / # timp de 3 ani
plant-Inf-the of trees for 3 hours / for 3 years
i. *plant> 3 hours*: 'the event of planting trees which took 3 hours'
ii. *#plant> 3 years*: 'the event of planting trees which took 3 years'
iii. **3 years> plant*

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[9] We make no commitment as to its possibility of being also telic in ASNs. So far, our data have not indicated such a case.

Neither *–re* nor *–ing of* introduce anything about the aspect: they are just sensitive to a particular aspect: telic, atelic, respectively (*-re* disallows unergatives; *-ing of* disallows achievements). Clearly, they are not operators on outer Aspect, so if there is Aspect it is the inner Aspect contributed by the VP and encoded within the Classifier feature [±count] required by their nominal structure.

In Table 1 below, we offer an overview of the ASN patterns that we identified in our study:

ASN	Telicity / [±bounded]	Plural	Functional Category	Position of the suffix
Infinitive *–re*	±	±	Class [±count]	N
Supine *–t/s*	–	–	outer Asp [–b]	V
Verbal *–ing*	–	–	outer Asp [–b]	Asp
Nominal *-ing*	±	±	Class [±count]	N

Table 1. Functional patterns in ASNs

6 Summary and conclusion

In this paper we argued that the realization of morphological plural in ASNs is not a language parameter but a matter of internal functional structure associated with the aspectual properties of the ASN.

We showed that plural marking is dependent on a nominal functional structure with a Number projection. This configuration appears with telic ASNs a property embedded under the [+count] feature specification within the (nominal) Classifier projection. This kind of structure was identified in Romanian infinitive ASNs realizing the theme with genitive case, in English telic nominal gerunds, and in German telic *–ung* ASNs.

Morphological plural (and thus, the projection of NumberP) is blocked by unbounded / atelic Aspect, an indicator of a rather verbal structure. In this pattern, NumberP is replaced by (outer) AspP as in the case of the supine ASNs and the verbal gerund. ClassP does not appear because the corresponding suffixes are not nominalizers.

We have also shown that plural blocking is not always an indicator of a verbal functional structure with AspP. Nominal ASNs like the Romanian infinitive with '*de* (of) + bare plural' and the main pattern of nominal gerund are characterized by atelic inner aspect and they do not pluralize.

Since these two ASNs clearly display nominal properties and show no evidence of outer aspectuality, we analyzed them as projecting a ClassP specified as [-count] a nominal encoding of their atelicity. Since like in the case of mass nouns a [-count] Classifier prevents the projection of NumberP, we correctly predict the unavailability of morphological plural with these two last patterns of ASNs.

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