On the syntax of episodic vs. dispositional -er nominals

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1. Introduction

In this paper, we are concerned with the semantic and morphosyntactic properties of -er nominalizations in English. Our main contribution to the theoretical discussion on these nominals is that we should distinguish between two groups of -er nominals: those that obey the external argument generalization, irrespectively of whether they are eventive or not, and whether they have complements or not, and those that do not obey the external argument generalization. The first group -er nominals sub-divides into episodic ones, which always project their internal complements, and dispositional ones, which may leave these objects unexpressed; we argue that both episodic and dispositional nominals have the exact same rich syntactic structure, namely they are derived from verb phrases. They differ as far as their aspectual properties are concerned, a property from which we will derive the presence vs. absences of complement structure. The second group contains -er nominals that are not fully productive; we argue that these have a poorer syntactic internal structure. Specifically, these involve affix attachment at the root level and not contain any verbal layers.

The paper is structured as follows. In section 2, we offer a brief overview of the literature on the subject and outline our analysis as well as our theoretical assumptions. In section 3, we propose our decomposition of -er nominals. In Section 4, we discuss the episodic vs. dispositional distinction for -er nominals that obey the external argument generalization. In section 5, we turn to those -er nominals that do not obey this generalization. In section 6, we offer some brief conclusions.

2. Background

2.1 Types of -er nominals

Previous approaches to English -er nominals held that these can be divided into two major subclasses (see Rappaport Hovav & Levin 1992, Fabb 1984, Keyser & Roeper 1984, van Hout & Roeper 1998 to mention a few), the relevant semantic property being whether they refer to an
actual event or not. That is, -er nominals vary with respect to the [±event] specification.

Several sub-classes of these major categories have been discussed. First, it was pointed out that [+event] -er nominals are not necessarily agentive; more concretely, they simply correspond to the external argument of the base verb irrespective of the thematic role that this verb assigns to its external argument (agent, causer, holder, experiencer, instrument; the ‘external argument generalization’). Some examples (from Rappaport Hovav & Levin 1992) are given below:

(1) a. … is a great defuser of pent-up emotions (causer)
   b. … a holder of a Visa or Master cart (holder)
   c. …as a dazzled admirer of Washington (experiencer)
   d. A protein that is a potent inducer of new blood vessel growth (instrument)

[-event] -er nominals also fall into two thematic groups. In the first group we find [+agentive] nouns, as in (2); in the second group, we find [+instrumental] -er nominals, as in (3). Both classes have in common that they denote entities which are designated for some specific job or function but which do not have to be actually been involved in such a job or function (the [-event] property).

(2) lifesaver, fire-fighter, teacher → a person educated for a specific job

(3) a. a grinder → machine intended for grinding things
   b. the destroyer → something intended for the purposes of destroying, warship

The [±event] division has been argued to correlate with the availability of complement structure (CS). This is stated clearly in Rappaport Hovav & Levin (1992). The term CS here is understood as involving the projection of full DPs, which, as argued in detail by Longobardi (1994), can receive thematic roles and appear in argument positions:

**Correlation A:** An -er nominal has a complement structure iff it has an eventive interpretation [+event].

The examples in (4) and (5) illustrate this. In (4a) and (5a), the presence of the internal argument leads necessarily to an interpretation according to which the referent of the -er nominal must have been involved in a saving event or a murdering event.
(4) a. a saver of lives → can only refer to a person that has saved a life  
    b. lifesaver → has not necessarily saved lives

(5) a. the murderer of the president → Lee Harvey Oswald  
    b. the presidential murderer → not necessarily L. H. Oswald, but it could refer to a murderer employed by the presidential office

Several syntactic and semantic contexts distinguish between the two types of -er nominals; for example, modification by adjectives such as frequent implies an actual event and is only possible with -er nominals which have complement structure.

(6) a. the constant defender of the government's policies  
    b. frequent consumer of tobacco

(7) *this machine continues to be our only frequent transmitter

As indicated above, for Rappaport Hovav & Levin, the instrumental -ers lack eventive readings and hence complement structure (CS). These authors establish a second correlation:

**Correlation B:** An instrumental reading is possible only for the nominals derived from verbs for which the expression of an instrumental performing a 'subject' role is available.

That is, the external argument generalization holds for [-event] instrumental -er nominals, too. To illustrate this, compare the instrument in (8) with the instrument in (9). They differ in that the instrument in (8a) can occur as the subject of a corresponding sentence (8b) while this is not possible for the instrument in (9a) (see 9b).

(8) a. Mary opened the can with the new gadget  
    b. The new gadget opened the can

(9) a. Bill ate the food with a fork  
    b. *The fork ate the meat

Instruments of the former type are called intermediary instrument, instruments of the latter type are called facilitating or enabling instruments. These two types of instruments differ in that only the former can be understood to perform the action expressed by the verb (to
some extend) independently, a property that qualifies them as subjects of these verbs (Kamp & Rossdeutscher 1994, Alexiadou & Schäfer 2006 and references therein). Crucially, corresponding instrumental -er nominals are only possible for verbs that combine with intermediary instruments.

(10) a. opener (agent or instrument)  
    b. eater (agent but not instrument)

How can these two correlations be derived? In syntactic approaches to nominalization (e.g. Borer 1993, Alexiadou 2001, van Hout & Roeper 1998 to mention a few), the second correlation is actually not discussed. The first correlation is typically captured by the assumption that in (1a-d) a verbalizing head signalling event structure is present which is also responsible for the licensing of CS; in (2)-(3) this verbalizing head is missing and complement structure is, in turn, not licensed.

1.2 Our contribution: same structure for both types of -er nominals

In a recent paper (Alexiadou & Schäfer 2008), we presented a finer-grained classification of these nominals which makes use of structural decomposition, as put forth in syntactic approaches to nominalization (see e.g. Marantz 2001, Alexiadou 2001, Borer 1993, to appear, van Hout & Roeper 1998 among others). Importantly, we showed that the ±event classification as well as correlation A that is based on this classification are misleading. We argued that both types of -er nominals involve an eventive v-layer. The presence of this v-layer is necessary but not sufficient for the licensing of CS. If even -er nominals without CS involve a v-layer, then, obviously, the term “[event] -er nominal” is a misnomer for them. Instead, we argued that the interpretational differences between the two types of -er nominals result from different aspectual operators binding the event introduced by v, namely a dispositional vs. an episodic aspect. This move forced us to dissociate the presence of layers introducing events from the licensing of complement structure (see Alexiadou 2009, Harley 2009b for the same conclusion for -ation nominalizations). We hypothesized that the different aspectual operators are causally related to the presence vs. absence of CS.

In this paper, we first summarize our recent proposal for the decomposition of -er nominals. We then attempt to provide a syntactic explanation to the licensing of CS, substantiating our rather speculative analysis in Alexiadou & Schäfer (2008). Finally, we turn to a discussion of -er nominals that do not obey the external argument generalization and propose that these have a different structure.
1.3 Our theoretical assumptions

Our proposal is developed within the distributed morphology (DM) framework. The basic ingredients of this framework can be stated as follows (see Arad 2005, Marantz 2001): language has atomic, non-decomposable and category-neutral elements, which we refer to as roots. Roots combine with features, the functional vocabulary, and build larger elements. On this view, words are not primitives. The primitives of word formation are the roots and the functional vocabulary they combine with.

Word categories are determined by category defining functional heads. Derivational endings are part of this functional vocabulary.

Some words are built out of roots. Some others are built out of other words. This means that there are two cycles for word-formation (Marantz 2001), and distinct properties are associated with each one of them:

\begin{itemize}
  \item \textbf{(11) root-cycle} \hfill \textbf{(12) outer-cycle attachment}
  \item \textbf{morpheme} \quad \textbf{\sqrt{Root}} \hfill \textbf{morpheme} \quad \textbf{\sqrt{Root}}
  \item \textbf{\textit{er}} \quad \textbf{\sqrt{Root}} \hfill \textbf{\textit{er}} \quad \textbf{functional head}
  \item \textbf{X} \hfill \textbf{\sqrt{Root}}
\end{itemize}

\textbf{Merger with root implies:}
1. negotiated (apparently idiosyncratic) meaning of root in context of morpheme
2. apparent semi-productivity (better with some roots than others)
3. meaning of construction cannot be an operation on “argument structure” but must depend on root semantics independent of argument structure (see Barker (1998) among others, on this distinction)
4. corollary of the above: cannot involve the “external argument” of the verb

\textbf{Merger above functional heads implies:}
1. compositional meaning predicted from meaning of stem
2. apparent complete productivity
3. meaning of structure can involve apparent operation on argument-structure
4. can involve the external argument of a verb

Adopting the above distinction, we discussed the following properties of \textit{-er} nominalizations: a) the presence vs. absence of morphology related to
verbal layers; b) the presence vs. absence of event related semantic effects and c) the productivity and idiosyncrasy of the formation.

Concerning the first property, in many syntactic approaches to nominalization the presence of a verbalizing head signals the presence of event-structure which, in turn, is taken to be responsible for the presence of complement structure. In other words, a deverbal nominal inherits the complement structure of its verbal source, as a VP is included in the structure of the nominal (e.g. Borer 1993, Alexiadou 2001, though the perspectives vary; cf. Grimshaw 1990). We will stress here that this does not hold; while CS builds on event structure, the presence of event structure does not necessarily imply the presence of CS. Rather the aspectual properties of the constructions are instrumental for the licensing of CS (Borer 2005, Mittwoch 2005).

3. Decomposing -er nominals

3.1 [+event] -ers

In Alexiadou & Schäfer (2008) we argued that the structure involved in the formation of [+event] -er nominals is as in (13):

(13) a. \([-er \[VoiceP[vP[RootP]]]]\)

Let us briefly summarize our motivation for this analysis. The n-layer is clearly the nominalizer. The main function of this head is to introduce the R-argument and in this particular case is spelt out as -er. R has been argued by Williams (1981) to be responsible for the referential reading of the noun. Grimshaw (1990) states that R is identified with an
argument of the base verb. Which argument is identified with R is a function of the affix that is added, so the affix must specify which argument it binds. For instance, the affix -ee binds a patient argument, while the -er binds the external argument:

(14) a. detain (y (x)) detainee (R = x) such that y detains x
b. teach (x (y)) teacher (R = x) such that x teaches y

Since all -er nouns are referential, we claimed that R is introduced in n, irrespectively of the [+event] classification.

Our analysis of -er nominals in terms of (13) is built upon the so-called Voice Hypothesis (Kratzer 1996), according to which the external argument is not introduced by the verb itself, but by a semi-functional Voice-projection on top of vP. As mentioned above, the individual denoted by the -er nominal is, in its productive use, the one that is the external argument of the event entailed by it (see van Hout & Roepers 1998). We proposed therefore that in these kinds of -er nominals the referential argument <R> binds a variable <x> located in Spec,Voice; this derives the ‘external argument generalization’ and ensures the correct theta role for the -er nominal.

We further presented three main arguments in favor of the presence of a vP layer. First, morphology offers us some clues suggesting that a verbalizing head is present with such -er nominals. In English, many verbs are derived from some non-verbal source (the left column in (15) which involves category-neutral Roots in our terminology) by the addition of verbalizing morphology such as -ize, -ate or -ify. Under the perspective of DM, these verbalizing affixes are the spell-out of a v-head as their presence is clearly related to the verbal/eventive nature of the verbs in the middle column in (15). Harley (2009b) discusses in detail that affixes like -ify, -ate and -ize are specific verbalizing morphology. As is shown in the right column of (15), -er attaches to these affixes that have verbalized the bare root; this suggests that the verbalizing head is still present.

(15) | ROOT | Root + v       | Nominal   |
     | √COLON | colon-ize    | coloniz-er    |
     | √MOBIL  | mobil-ize    | mobiliz-er    |
     | √DICT   | dict-ate     | dict-or       |
     | √SPECT  | spect-ate    | spectat-or    |
     | √HTML   | html-ify     | htmlifi-er    |
     | √SATIS  | satis-fy     | satisfi-er    |

A second, semantic, argument comes from modification by adjectives such as beautiful and good. As is well known, such adjectives
are ambiguous, having both intersective and non-intersective interpretations.

(16) a beautiful dancer
   a. x is beautiful and x is a dancer
   b. x dances beautifully

On the first reading, these adjectives modify the <R> argument of the nouns, on the second reading, they modify the event associated with the verb that underlies the -er nominals. The fact that this second reading is available suggests that the nominal contains an event variable (cf. Larson 1998). Since the root itself does not introduce this event variable, this must be introduced by the v-head.

Third, the argument why -er nominals can’t be root-nominalizations comes from the observation that such formations are absolutely productive and non-idiomatic. As mentioned in the introduction, while the root cycle is relevant for idiosyncratic meaning composition (e.g. html-ify “put something in the html-format”), the -er nominal is transparently derived on top of the root cycle.

Let us now turn to our analysis of [-event] -ers. Contrary to other syntactic approaches such as van Hout & Roeper (1998), we claimed that there is no difference in structure between [+event] and so called [-event] nominals. This crucially suggests that a classification along the [+event] – [-event] dimension is not accurate and rather an aspectual distinction should be made (cf. Ferrari 2005, Ntelitheos 2007 for nominalizations in particular).

3.2 [-event] -ers

As already mentioned, in Rappaport Hovav & Levin's account, instrument -er nominals are quite different from subject -er nominals. They are non-eventive and they lack argument/complement structure. In Alexiadou & Schäfer (2008) we proposed that instrument -ers also have the structure in (13) by making use of the same reasoning as in the last section.

As we already mentioned in the introduction, Rappaport Hovav & Levin (1992) pointed out that the instrumental reading is possible only for those nominals that are derived from verbs in which the expression of an instrumental performing a 'subject' like role is available. Only when the instrument functions as an intermediary as opposed to facilitating instrument can the corresponding -er be formed (cf. the data in (8-10)). This conclusion, namely that only intermediary instruments can be subjects (see also Kamp & Rossdeutscher (1994), Alexiadou & Schäfer 2006), coupled with the Voice hypothesis, suggests that Voice is present.
Further, instruments seem to contain a vP as they also contain verbalizing morphology. Corresponding to the agent nominals in (15), we find examples which have a preferred instrument interpretation (although an agent interpretation is still possible).

(17) | ROOT     | Root + v | Nominal |
<table>
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<tbody>
<tr>
<td>√VISUAL</td>
<td>visual-ize</td>
<td>visualiz-er</td>
</tr>
<tr>
<td>√FERTIL</td>
<td>fertil-ize</td>
<td>fertiliz-er</td>
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<tr>
<td>√VENTIL</td>
<td>ventil-ate</td>
<td>ventilat-or</td>
</tr>
<tr>
<td>√CALCUL</td>
<td>calcul-ate</td>
<td>calculat-or</td>
</tr>
<tr>
<td>√HUMID</td>
<td>humid-ify</td>
<td>humidifi-er</td>
</tr>
<tr>
<td>√AMPLE</td>
<td>ampli-fy</td>
<td>amplifi-er</td>
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The question that arises is whether we can find the counterpart of event modification with instrumental nominals. We would expect that a -er instrumental nominal would behave similarly to the ‘beautiful dancer’ example above, if it contains a v (eventive) layer. However, when we apply our modification test to this set of nouns, only the event reading is preserved. In other words, no ambiguity involving an intersective reading emerges.

(18) a. fast elevator  b. fast calculator

A similar observation can be made on the basis of Romance data, which is particularly illuminating, as these languages syntactically differentiate to some extent between intersective and non-intersective readings of adjectives. As Cinque (2003) observed, Italian allows two possible positions for attributive adjectives, i.e. prenominal and postnominal. These two positions typically entail slightly different semantic interpretations, with the postnominal one being ambiguous and the prenominal one unambiguous with respect to a range of semantic oppositions, such as stage level vs. individual level, restrictive vs. appositive, intersective vs. adverbial, and so on. In particular, the prenominal position is unambiguously adverbial (i.e. non intersective) in Italian, whereas the postnominal position is, as usual, ambiguous between the two readings, although the interpretation which is out in prenominal position (i.e. intersective) is usually preferred (uniqueness principle) (cf. the examples below):

(19) a. Un *buon* attaccante        (Italian, from Cinque 2003)
     b. A forward good at playing forward        (nonintersective)
     c. #A good-hearted forward                  (intersective)

(20) a’. Un attaccante *buono*
b’. A forward good at playing forward (nonintersective)
c’. A good-hearted forward (intersective)

If all deverbal -er nominals involve a syntactically represented event, this predicts that event modifying adjectives are freer in their distribution if they modify deverbal instrument nouns than with root-derived instrument nouns. The following examples (p.c. Mihaela Marchis, Giannina Iordachioaia) suggest that this prediction is borne out:

(21) a. *o rapida masina a’. o masina rapida (Romanian)
   b. *un rapido coche b’. un coche rapido (Spanish)
   a fast car a car fast

(22) a. un rapid calculator a’. un calculator rapi (Romanian)
   b. un rapido calculador b’. un calculador rapido (Spanish)
   a fast calculator a calculator fast

Finally, such [-event] nominalizations are totally productive and non-
idiosyncratic. This suggests that they are not root-nominalizations.

To conclude, we showed that both, [+event] as well as [-event] nominalizations are structurally identical; they involve both an eventive verbal head as well as an external argument introducing Voice projection. This crucially suggests that the categorization on the basis ±event dimension is misleading and should be replaced.

But saying that instrumental -er nominals contain an event layer creates a problem when we come to discuss the fact that they lack CS. In this they crucially differ from other external argument -er nominals. The ±event categorization of -er nominals could capture that. The claim of this approach was that +event necessarily licenses CS, while -event cannot license CS. Before we present our explanation for this difference in the licensing of CS, we note that this means that the relation between CS and event structure is not bidirectional; the presence of CS implies the presence of event structure but not necessarily the other way around.

4. Episodic vs. dispositional -er nominals

Recall again the core data that were provided by the ±event approach to -er nominals:

(23) a. a coffee-grinder (person or machine)
   b. a grinder of (imported) coffee (necessarily a person)
(24) a. a wiper (person or tool)
   b. windshield wiper (person or tool)
c. a wiper of windshields (necessarily a person)\textsuperscript{iv}

As already mentioned, Rappaport Hovav & Levin link the absence of CS to the absence of event interpretation associated with these nominals (p. 133): A grinder of imported coffee refers to someone who has actually ground imported coffees and thus presupposes that an event of grinding occurred; a grinder can refer simply to a machine intended for grinding something without leading to any presupposition about an actual event. Even the compound coffee grinder may refer to a machine that need never have ground coffee. Something can be called a grinder on the relevant non-agentive interpretation without an event of grinding being presupposed.

Importantly, this difference in the event-presupposition does not strictly correlate with the thematic role of the nominal but with the presence or absence of argument structure. On the one hand, we also find non-event agentive nominals. This is the case with occupational nouns; people can be referred to by these -er nominals before they have engaged in the activity, if there is no complement structure (25a), but not if there is complement structure (25b).

\begin{enumerate}
\item a. fire-fighter, live-saver, baker, teacher
\hspace{1cm} (educated but not necessarily experienced)
\item b. saver of lives, fighter of the fire …
\hspace{1cm} (necessarily experienced in action)
\end{enumerate}

On the other hand, we also find instrumental nominals that do inherit CS and get an eventive interpretation (event instrumental nominals).

\begin{enumerate}
\item a. A protein … that is a potent \textit{inducer} of new blood vessel growth
\item b. Woks have always been \textit{conservers} of cooking oil as well as fuel
\end{enumerate}

We claimed that both agent and instrument nominals have the full structure in (13) above, i.e. they involve a vP and a VoiceP level. How can we then implement the event/non-event contrast observed by Rappaport Hovav & Levin? In Alexiadou & Schäfer (2008), we proposed that in both cases a vP is present, but that the event variable is bound by different operators.

Compare the agents in (25a) with instruments as in (23a/24a,b). The persons are interpreted as “someone intended to V” similar to instruments which are designed for a specific purpose. In other words, these nominals have either specialized profession- or specialized purpose-denoting uses. As such, they denote dispositional properties. On
the other hand, the agents in (24b/24c/25b) are actually involved in an action and so are the instruments in (26).

It seems to us that there is a striking parallelism between non-event -ers and other habitual constructions in English. Following Mittwoch (2005), we use the term habitual rather freely to include generic and iterative uses. One such environment that shows similar properties is the context of generic middles exemplified in (27).

(27) This mountain climbs easily
    (Can be true even if no one ever climbed that mountain)

As in the case of [-event] -ers, the interpretation of middles is non-episodic. Middles do not make reference to an actual event having taken place; rather they are derived statives (Ackema & Schoorlemmer 1995). The reason for this is that the event variable of the verb is bound by a generic/dispositional operator (e.g. Lekakou 2005). Middles ascribe a dispositional property to the internal argument of the verb, -ers to the external argument of the verb. In middles, the external argument may not be syntactically projected, in -ers it is the internal argument that is left out. In both, the non-projected argument is semantically available, interpreted as generic ONE. The only way to express such arguments is via the use of the beneficiary P for (the NP is again generic (28a, b); in -er nominals it can also be an incorporated predicate restrictor (28c)).

(28) a. These books read easily for young children
    b. a wiper for windshields
    c. can-opener

In middles the verb’s event variable (and the implicit external argument) is bound by a generic/dispositional operator (Lekakou 2005).

In fact, as Mittwoch (2005) shows in detail, in habitual sentences a large range of verbs permit unspecified objects to be dropped, including many that are not process verbs. For instance, objects can be absent in verbal constructions even with core transitive verbs (29), which normally cannot appear without their internal argument (cf. also Levin (1999), Goldberg (2001)). The important observation here is that these constructions are similar to our -er nominals in that they are dispositional, habitual or generic sentences.

(29) The sewing instructor always cuts ∅ in straight lines

We thus propose that event nominals are episodic, while non-event nominals are dispositional. On this view, the event variable in vP is bound either by an episodic aspect head or by a dispositional aspect head.
We believe that the absence of CS with instrumental/-[event] nominals is related to the specific type of event, i.e. to the presence of this dispositional operator in (31). We would like to derive that from the general behavior of generic/habitual contexts and the availability of unspecified objects in such contexts.

According to Mittwoch, the reason why missing objects are much more common in habitual sentences is the greater likelihood for objects in such environments to be interpreted as unquantized. The claim is that since habitual sentences are imperfective, the quantificational properties of the understood objects are [-delimited quantity], and thus are interpreted as nonspecific. Mittwoch (op.cit.: 247) stresses that by their nature habitual sentences generalize over an unlimited number of situations, and therefore, also over an unlimited number of instantiations of the denotee of the missing object. Because of the semantic properties of habitual sentences, the missing object is interpreted as a bare noun. In other words, missing objects and bare objects are both interpreted as non-specific, due to the fact that they can never be quantized in such contexts. Note here that Mittwoch’s point is that missing objects are facilitated in these environments, not that they are obligatory out. In principle, objects can surface, but when they do, they must satisfy the [-delimited quantity] property of the construction, and thus be interpreted as nonspecific.

We propose that something similar is going on in the case of -er nominals. Following Mittwoch, the relevant distinction for the availability of a non-specified/null object is the ±dispositional property, which in case of positive specification goes hand in hand with an
unquantized interpretation of objects. Such objects could be present in
the lexical semantics of predicates, but need not be projected in the
syntax. As discussed by Mittwoch, other nominal constructions provide
further support for this view. Consider the following contrast:

(32) a. the felling *(of the tree)
    b. Indiscriminate felling is harmful to the environment.

In (32a) the presence of the definite article preceding the nominalization
suggests an episodic reading of the nominalized verb. In (32b), the
nominal is assigned a habitual reading. While the internal argument is
obligatory in (32a) (cf. Grimshaw (1990)), it can be dropped in (32b).

This aspectual distinction is crucial both for the interpretation of
nominals and the availability of the internal argument. An episodic
reading requires the presence of an argument, which is interpreted as a
quantity element, i.e. it gives rise to non-homogenous interpretations. As
argued by Borer (2005), quantized objects must be located in a specific
projection (cf. de Hoop 1996 and others), in which they can check Case,
AsP$_{episod}$ in (30). Quantized objects yield telic interpretations of verbal
predicates, which would imply the unfolding of an actual event.

Un-quantized objects, on the other hand, as mentioned above, need
not be projected in the syntax; but if they do, they must check Case
exactly the same way as bare nominals do. The consensus in the
literature is that the Case licensing of bare noun phrases proceeds in a
different manner from that of quantized objects (which are taken to be
full DPs). This is what saw in (28): the bare noun either incorporates (see
Harley 2009a) or is introduced by the preposition for. In other words, the
types of objects that are excluded from dispositional nominals are those
that have quantized readings. Nouns that have unquantized readings are
in, as can be seen in our examples in (28), where the NP is either
incorporated or appears after a case licenser, the preposition for, but is
crucially a bare plural. For assigns case to the noun directly, while
incorporation is an alternative case licensing mechanism (Baker 1988).

The next question is to offer an explanation for the reason why of-
PPs are out, while in principle PPs can appear within dispositional
nominals. Following Alexiadou (2001), van Hout & Roeper (1998),
Borer (2001) we take -of insertion to be a realization of structural case
licensing related to quantized noun phrases. Given what we have said
thus far, we predict this to be out in the case of dispositional -er
nominals. This is expected under the correlation between the
interpretation of the NP (± quantized) and its realization (incorporated
vs. of insertion)."}

Interesting support for this analysis comes from Ntelitheos's (2007)
discussions of Malagasy nominals. Malagasy has two types of
instrumental nominals, the f-AT ones, and the f-CT ones. As Ntelitheos
points out, only the latter ones can co-occur with DP arguments, and
when they do, an event is implied. The f-AT nominalizations can incorporate their internal argument, and in this case no event implication is present. On his view, it is only the structure of the f-CT that contains a projection where the theme is case-licensed.

5. **Non-subject -er nominals**

Some further comments are necessary on broadness of the ‘external argument generalization’ which was at the heart of our analysis so far. As has been observed in the literature, not all -er nominalizations obey this generalization. The examples in (33) seem to denote the theme, i.e. the internal argument of an underlying verb.

\[(33)\]

<table>
<thead>
<tr>
<th>Nominal</th>
<th>Interpretation</th>
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<tbody>
<tr>
<td>a. baker</td>
<td>(a baked potato)</td>
</tr>
<tr>
<td>b. broiler</td>
<td>(a broiled chicken)</td>
</tr>
<tr>
<td>c. scratcher</td>
<td>(a lottery ticket that is scratched)</td>
</tr>
<tr>
<td>d. bestseller</td>
<td>(something that sells well)</td>
</tr>
<tr>
<td>e. reader</td>
<td>(a compilation of literature which reads easily)</td>
</tr>
</tbody>
</table>

Nominals such as in (33) have an interpretation that is close to the interpretation that the base verb receives in the middle construction. Thus, it was proposed that these nominals are in fact derived from the middle version of underlying verbs where the theme (the argument denoted by the -er nominalizations in (33)) is the (allegedly base generated) external argument of the verb (Rappaport Hovav & Levin 1992, Booij 1986, Heyvaert 1998, 2003).

Besides object denoting -er nominals, we also find -er nominals denoting the complement of a preposition modifying the verb (where the preposition is often locational). For these types of -er nominals, it was also proposed that they can be subsumed under a middle-kind of analysis (at least their Dutch counterparts, Haeyvaert 1998, 2003).

\[(34)\]

<table>
<thead>
<tr>
<th>Nominal</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. diner</td>
<td>(a place to dine in)</td>
</tr>
<tr>
<td>b. sleeper</td>
<td>(a train where one can sleep in)</td>
</tr>
<tr>
<td>c. toploader</td>
<td>(a washing machine which one loads from the top)</td>
</tr>
<tr>
<td>d. kneeler</td>
<td>(something (as a cushion or board) to kneel on)</td>
</tr>
<tr>
<td>e. jotter</td>
<td>(rough book where you make a short notice/sketch)</td>
</tr>
</tbody>
</table>

While examples as in (33) and (34) can be found in English and Dutch, they seem to be hardly present in other languages, for example they occur rather seldom in German. A reason for this difference could be
that English and Dutch form morphologically unmarked middles while German marks its middles with the reflexive pronoun ‘sich’ (cf. Schäfer 2008a for a proposal which correlates this difference in morphological marking with a difference concerning the syntactic position of the theme in middles; in Dutch and English middles, the theme is a derived external argument, while in German middles, it remains in its VP-internal base position).

Be it as it may, it should, however, be noted that even in languages that allow the kind of -er nominalizations in (33) and (34), their formation is certainly not fully productive, but such a nominal has to be accepted in the language community in order to be understood in the right way. A speaker cannot arbitrarily form a -er nominal with the intention that this nominal denotes the object of the underlying verb (or object of a verbal preposition), while this is always possible, if the -er nominal is ought to denote the subject of a verb. That is, while virtually every verb projecting an external argument allows a -er nominal denoting the external argument, only a small subset of verbs allows -er nominals to denote what looks like the internal argument. Also, if a new verb is invented (or a non-existing verb is made up) all speakers will accept a -er derivation denoting the external argument but nothing else. This suggests that object-denoting -er nominals are (in fact need to be) lexicalized. Taking this for granted, it is then a different question why English and Dutch have more of these non-derivational -er nominals (Ryder 1999, Booij & Lieber 2004) than for example German or the Romance languages.

An alternative analysis to the middle theory could be, therefore, that these -er nominals are actually root-derived and have the structure in (35) below.

\[
\text{(35) } [\text{er [Root]}]
\]

\[
\text{nP}
\]

\[
\text{er } \text{\sqrt{Root}}
\]

If this hypothesis is correct then we would expect that -er nominals such as in (33)-(34) show a number of restrictions. First, they should not be productive in the relevant sense. As mentioned above, this seems to be the case.
Second, they should have idiosyncratic interpretations. It seems to us that this is the case, too; if ‘baker’ is restricted to potatoes, ‘broiler’ to chickens and ‘scratcher’ to a lottery ticket, then this is an idiosyncratic selection from the set of things that can be baked, broiled or scratched.
Third, we do not expect to find verbalizing morphology with these -er nominals. And in fact, we have not been able to find such examples in the literature.

Marantz (2001) gives the following English examples to show that lack of verbalizing morphology and gain of idiosyncratic interpretation goes hand in hand. “Donor” and “rotor” have special meanings that the deverbal “donator” and “rotator” lack. E.g. a rotator is something that rotates or causes rotation, but a rotor is a part that revolves in a stationary part, as in a brake rotor or the rotating member of an electrical machine.

(36) a. rotor vs. rotator
    b. don-or vs. donator

Finally, these -er nominals should not make an event available for syntactic modification. As mentioned, this is hard to test this for English. We might, therefore, want to sidestep again to Romance languages. Recall, that both, [+event] and [-event] -er nominals in Romanian and Spanish allow pre- and post-nominal adjectives modifying the event while clearly non-verbal nouns allow such adjectives only in post-nominal position. If our hypothesis is correct that examples as in (33)-(34) are root-derived (i.e. do not involve a verbalizing head but have the structure in (35)) then we predict that Romance counterparts of these -er nominals should only license post-nominal adjectives.

It turns out that counterparts of the English -er nominals in (33)-(34) are nearly totally absent in Romance languages. The only exception is a number of -er nominals that denote locations where events denoted by the correlated verb take place, i.e. counterparts to ‘diner’ or ‘sleeper’ above. In (37) we provide three Romanian examples.

(37) a. dormitor – i. a person who sleeps
         ii. bedroom
    b. observator – i. a person/machine that observes
         ii. observatory
    c. spalator – i. a person/machine that washes
         ii. a room where you do the laundry

The second reading that these -er nominals have is not productive in that not every deverbal -er nominal has it in addition to its external argument denoting reading. That is, we have to list that ‘baker’ is not a place where one bakes but ‘observator’ is both, a person that observes something or a place where one observes something.

On the basis of our argumentation, we would expect that different readings of the noun correlate with different adjectival interpretations. Indeed applying our modification test from section 3 to such data
confirms our analysis: First, note that in Romanian the adjective *fiabil* ‘reliable’ can only be used to modify objects. Thus (38a) can only mean a reliable observatory. The adjective *bun*, however, ‘good’ can both modify a human and an object and thus (38b) is ambiguous. Our analysis predicts that *fiabil* will not be able to appear in pre-nominal position in Romanian. This is indeed confirmed, see (38c) (G. Iordachioaia and M. Marchis, p.c.). In this position, the adjective would need to bring about an event reading, but since it can only modify an object, it is out; *bun*, on the other hand, can appear in pre-nominal position, but only under the first reading, i.e. under the human reference reading (38d), again as expected:

(38) a.  un observator fiabil
     a observatory reliable
   b.  un observator bun
     i.  ‘a reliable observer’
     ii. ‘a reliable observatory’
   c.  *un fiabil observator
     a reliable observatory
   d.  un bun observator
     (can mean i.)
     i.  ‘a reliable observer’
     ii. *‘a reliable observatory’

If examples as in (33)-(34) are in fact root derived, this does not mean that there are no interesting generalizations to be made about what these root-derived -er nominals can denote and why they appear in some languages more often than in others. Here, we think, is the place where studies stressing the relevance of conceptual, cognitive, and pragmatic-semantic factors have a lot to contribute (cf. Ryder 1999). (See also the notion of "pragmatic pressure" in Booij & Lieber 2004.)

The root-derived analysis would also work for other types of -er nominals which are not verb-derived but are derived from adjectival stems (foreigner), prepositional stems (upper, downer, insider), denominal stems (porker, Londoner, villager, Scotland Yarder, teenager) or measure words (fiver) (see Ryder 1999 for a collection of such examples). These types of -er nominals are really very frequent and also exist in German, so every theory has to address them (cf. Ryder 1999). Once again, it should be noted that such derivations are, despite their frequency, not fully productive in that we cannot use any adjective, preposition or noun to form a corresponding -er nominal. Again, this does not mean that there are no interesting generalizations to be made about what kind of non-verb derived -er nominals are possible or not. On the contrary, for example noun-derived -er nominals are clearly
restricted by the semantics of the noun; while some noun classes do not allow -er formation at all (e.g. animals: *doger, *cater, *birder), other noun classes are persistently compatible with -er formation and then, the reading these nouns receive is clearly determined by a stereotypical pattern. For example, -er nominals from nouns denoting civilizing places (cities, villages, countries, …) denote people who live at this place (but not people who just work there, or have any other relation to the place).

6. Conclusion

To conclude, while the class of -er nominalizations which do not denote the external argument of a verb is certainly interesting and amenable to specific generalizations, it seems fair to say that only the formation of external argument denoting -er nominalizations is really a productive derivational process within and across languages. The DM approach outlined above gives us a way to handle the differences in productivity; i.e., we would suggest that all -er nominals are derived with the same derivational morpheme -er, but they differ in that only those which follow the external argument generalization are derived from verbs, all others being derived directly from roots.

In our treatment of -er nominals obeying the external argument generalization, we emphasized that the meaning of the nominal is the result of this internal structure, which includes a number of functional layers. The affix itself does not have a semantic contribution; it simply realizes a nominal head. Whatever nominal semantics is there it comes from the combination of n and the lower structure. In the previous section we showed that the interpretation of non-subject -er nominals is much more unpredictable. In the DM based approach this unpredictability is seen as the result of root affixation, which creates a domain of non-compositional interpretation. But in principle, one could argue that -er makes an important contribution, when it attaches to the root.

Such proposals have been put forth in the literature, especially in the context of lexical morphology. For instance, Booij & Lieber (2004) attempt to provide a unified analysis for both types of -er nominalizations and argue that the -er affix does not impose any special semantic conditions on its R argument. As a result, it will always be co-indexed with the highest argument of the base, whatever that is. Semantically, -er affixation will produce concrete situational nouns with non-deverbal forms, while it will produce concrete dynamic nouns with deverbal forms.

In DM terms treating non-subject er as an element that makes a crucial semantic contribution other than realizing the semantics of n
would entail that we view it as part of the list of roots, see Irwin (2006) for an explicit such a proposal. But since its behavior in the non-deverbal case is rather unpredictable a more plausible way to analyse it is to make use of the concept of locality in the sense of Arad (2005): the structure that includes just the root and the categorizing morpheme is not restricted in any particular way in its interpretation. This gives us the right results.

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1 Earlier versions of this paper were presented at the workshop on Nominalizations across languages held at the Universität Stuttgart in fall 2007 and at the poster session of WCCL 27 in UCLA. We thank the participants for their comments and questions. Special thanks to two anonymous reviewers for their extensive suggestions that helped us improve the contents of the paper. Our research is supported by a DFG grant to the project B1: The formation and interpretation of derived nominals, as part of the Collaborative Research Center 732 Incremental Specification in Context at the Universität Stuttgart.

ii Note, however, that in English nouns that are not strictly deverbal can easily be associated with typical events and adjectives can modify such events. The nouns in (i) serve as an example. It does not make sense to assume that ‘king’ or ‘horse’ involve an eventive v-layer; nevertheless, adjectives can modify events prototypically related to these nouns, e.g. the event of ruling, or running/jumping. This means that adjectives can have access to events which are only associated, not syntactically manifested.

(i) 
\begin{itemize}
  \item a. John is a just king
  \item b. Olga is a fast horse
\end{itemize}

Moreover, even nouns clearly lacking an event variable can be modified by event adjectives. In this case, the adjectives are taken to scope outside the NP:

(ii) I drank a quick cup of coffee = I quickly drank a cup of coffee

In other words, modification via an eventive adjective does not seem to always coincide with the existence of a corresponding verb as the nominal source (introducing an event variable).

We note that such sentence-scope phenomena are most common with light verb constructions in languages like Spanish and Greek (see the contrasts in (iii) and (iv)), though English seems to be generally more permissive (Salanova 2002):

(iii) \begin{itemize}
  \item a. kano ena grigoro duche (Spanish)
    do a quick shower
  \item b. perno ena grigoro kafe (Greek)
    take a fast coffee
\end{itemize}

(iv) \begin{itemize}
  \item a. ??ida mia grigori tenia (Spanish)
    saw a quick movie
  \item b. ??na su serviro ena grigoro kafe (Greek)
\end{itemize}
should I serve you a quick coffee  
(c.f. May I serve you a quick cup of coffee)

As pointed out by an anonymous reviewer, the above cases are not fully productive in English and seem to involve a special case of accommodation.

iii Antje Rossdeutscher (p.c.) suggests the following German examples in order to show that deverbal instruments involve a syntactically represented event which is not present in root derived (non-deverbal) nouns. The point is that only some but not all types of event describing adjectives can be added to non-evective instruments (under the same meaning). The noun ‘Strahl-er’ (spotlight) is derived from ‘strahlen’ (to shine); the noun ‘Lampe’ (lamp) is root derived.

(i) heller Strahler - scharfer Strahler - weiter Strahler - breiter Strahler
bright shiner - sharp shiner - ample shiner - wide shiner
(ii) helle Lampe - #scharfe Lampe - *weite Lampe - #breite Lampe
bright lamp - sharp lamp - ample lamp - wide lamp

iv As RappaportHovav & Levin 1992 mention, tools can be modified by for-phrases in the sense of “intended for” as in (i). As they discuss, this is arguable not a case of argument structure.

(i) a wiper for windshields

v Mittwoch derives from the semantic nature of these constructions their information structure properties, cf. Goldberg (2001) who argues that in these cases the indefinite and non-specific patient argument must be predictable from the verb and the sentence context. Furthermore, the patient argument must not be construed as topical or focal and the action of the verb must be construed as emphasized.

vi In our analysis, only Asp-episodic licenses quantized arguments; Asp-dispositional is not a Case related position. An alternative analysis is adopted in Ntelitheos's work, who argues that structural Case licensing takes place above Aspect. If this were the case, then the object would have to move there from its base position. In this case then, the dispositional operator intervenes between the base position and the landing side (of) the object. The operator functions as a weak island for weak indefinites; therefore the reading is blocked. The other, quantized reading is out due to the generic semantics. A similar effect is found with generic middles; the operator acts as a weak island for the was-für split construction. This is discussed in detail in Schäfer (2008a). The examples below give a brief illustration. Split was-für phrases only have a property reading (“what kind of books”) which is known to be sensible for weak islands; this is illustrated in (i) for a sentence negation.

(i) a.  Was hast du für Bücher gelesen
what have you for books read
b. *Was hast du nicht für Bücher gelesen
what have you not for books read
‘What kind of books have you (not) read’
The examples in (ii) show that generic middles also block was-für splits. This blocking is crucially related to the presence of the generic operator in middles which acts as a weak island. This can be seen by a comparison with reflexive anticausatives in (iii) which have the same syntax as generic middles (involving the reflexive pronoun ‘sich’ but which are eventive (i.e. they lack a generic operator) and allow was-für split formation. The data below where confirmed by a questionnaire involving eight speakers in Schäfer (2008a).

(ii) a. Was für Aufsätze lesen sich angenehm?  
   what for articles read REFL comfortably
b. ??Was lesen sich für Aufsätze angenehm?  
   what read REFL for articles comfortably

(iii) a. Was für Werte haben sich verändert?       (eventive anticausative)
   what for values have REFL changed
b. Was haben sich für Werte verändert?  
   what have REFL for values changed

vii This has even lead to the assumption that it is an epiphenomenon (e.g. Ryder 1999.). Here we defend its status as an important generalization that reflects the structure of the corresponding -er nominals.

viii With the exception of loanwords, e.g. ‘Toplader’ (cf. 34c) (Toplader) and ‘Bestseller’.

ix Booij & Lieber (2004:351) stress that “it should be kept in mind that this category shows at least some productivity in both languages [English and Dutch]”. But they do not explain their usage of the term ‘productivity’. What they mean is that there are quite a number of -er nominals in the languages that do not obey the external argument generalization. But this use of the term ‘productivity’ is different from our use where we mean that a derivational process can be productively applied to every base that fulfils a formal property (being a verb). The types of -er nominals in (33-34) are clearly not derivationally productive as they need to be memorized in addition to the verb as extra lexical entries. Note also that many of the object denoting -er nominals in English are built from specific verbal subclasses (cooking verbs or clothing verbs). Every analysis of -er nominals must say something about this difference in productivity between external argument denoting -er and other -er nominals. The DM-approach provides a hypothesis about this difference (see the discussion below).

x The middle theory could still be right in so far as it provides a trigger for the invention of such root derived, i.e. lexicalised -er nominals. The fact that English and Dutch form unmarked middles while German and Romance languages form reflexively marked middles could then still be connected to the fact that we find more of these -er nominals in the former languages. But these -er nominals would not involve a middle syntax or argument structure.

xi An anonymous reviewer raises the question how -er can have the same function in both cases, i.e. both in the structure containing VoiceP and in the one in (35). The idea that we have been pursuing in this paper is that in the former case -er binds the entity closest to it, namely the implicit external argument

The requirement on the presence of Voice is specific to English -er, an observation that might eventually lead to a different perspective on the selectional properties of the n head forming -er nominals even in English. In German, -er either binds the external argument (in the presence of Voice) or the verbal event in v (in the absence of Voice). The latter is possible only with a specific class of verbal events, namely “naturally atomic” semelfactives, e.g. Hüpfen ‘a person who jumps’ or ‘a jump’ (see Schäfer 2008b for discussion). This is not possible in English, where the zero n-affix appears with semelfactive nouns. Schäfer proposes that in English the n head is simply spelt out in a different way in such a constellation. Within the framework of Distributed Morphology, he proposes that the Spell-Out of the n head forming “atomic” nouns (either -er nominals or semelfactive nominals) can differ depending on the syntactic context. Following Embick (2003), insertion of Vocabulary items is sensitive to Locality. In other words, the Spell-Out rules for n in English make reference to its c-command domain as suggested by the two rules in (i) from Schäfer (2008b: 186):

(i) Spell-out for n: Voice cycle
   \[
   n \leftrightarrow \text{er} \{\sqrt{\text{JUMP}}\ldots\}
   \]
   Spell-out for n: v cycle
   \[
   n \leftrightarrow \text{zero} \{\sqrt{\text{JUMP}}\ldots\}
   \]

   Clearly, in the context of root derived English -er nominals there is no entity present to be bound, hence the interpretation of the nominal is unpredictable and idiosyncratic. If we wanted to formulate a strong requirement for English -er, namely that it always requires an entity, we could assume that in the diner examples, this entity is provided by a covert location, as in (ii). It is not clear to us that all examples of this type are amenable to such a locational source:

(ii) \[
[\text{er} \text{dine} \{\text{pp }x\}]\]

A problem for the analysis of Romanian locational nominals as being root derived is, as Marchis (2008) discusses in detail, that they are built on the basis of the participle, signalled here by the exponent -t-. But note that the location readings of these nominals are not very productive. Thus, in principle they could represent cases of lexicalization. This means that the structure is for some reason ‘frozen’ in interpretation: even if a verbal structure is present it can no longer be accessed.

French has to two different morphemes for the formation of -er nominals, ‘-eur’ and ‘oir(e)’ which are, however, etymologically derived from the same Latin root ‘-or’. Interestingly, the difference between the two is that ‘-eur’ tends to specialise for external argument denoting nouns while ‘-oir(e)’ forms nouns denoting locations and instruments (the division is not perfect in that some ‘-eur’ nouns can denote locations and instruments, too). Under the DM-perspective applied here, we could hypothesize that these morphemes have specialized for different cycles of word formation, ‘-eur’ for the outer cycle and ‘-oir(e)’ for the root cycle. Concerning modification with adjectives, the
prediction would be then that the latter restrict the position of adjectives while the former do not.

This expectation is partly fulfilled (many thanks to Fabienne Martin for her judgements and for explaining to us the complex situation in French). The central intervening problem is that, in French, the distribution of adjectives is freer than it is reported for other Romance languages and it is influenced by a number of different factors, for example the expressive/intensive value of the adjective (cf. Berlan 1992). So while in (i) with a non-verbal noun a prenominal adjective is marginal in an out-of-the-blue context (suspect to variation of acceptability), such structures improve if the adjective carries prosodic accent (ii), is put in the superlative (iii) or if a second, post-nominal adjective is added (iv). Heaviness of the modified noun also has influences (‘une rapide automobile’ (a fast automobile) is ceteris paribus better than ‘une rapide voiture’ (a fast car)).

(i)  #une rapide voiture  
     a fast car
(ii) une MAGNIFIQUE voiture  
     a fabulous car
(iii) une TRÈS/LA PLUS RAPIDE voiture  
     a very /THE most fast car
(iv) une rapide voiture allemande  
     a fast car German

It turns out that, abstracting away from these intervening factors, locational nominals (typically formed with ‘-oir(e)’) prefer post-nominal adjectives while agentive nominals (typically formed with ‘-eur’) allow pre- and post-nominal adjectives (cf. (v) vs. (vi) and (vii) vs. (viii)).

(v) a.  un observatoire fiable  
     b.  #un fiable observatoire  
     ‘a reliable observatory’ (i.e. an observatory where things are observed in a reliable way)
(vi) a.  un observateur fiable  
     b.  un fiable observateur  
     ‘a reliable observer’
(vii) a.  un guettoir efficace  
     b.  #un efficace guettoir  
     ‘an efficient place to watch’ (i.e. a place where the watcher can watch out in an efficient way)
(viii) a.  un guetteur efficace  
     b.  un efficace guetteur  
     ‘an efficient watcher’

The literature sometimes gives examples of -er nominals derived from alleged unaccusative verbs. But these examples involve verbs that can be reanalyzed as unergatives in the right contexts. Such contexts typically assign
control to the sole argument of the verb. In the examples below (from Ryder 1999), the -er nominals are either paired with professional nouns (vanisher -> professional + lawyer, dyer -> actor) or it is described as controller in a different way.

(i)  

a. I swear, the moment I need to talk to Max, he’s suddenly gone. I’m beginning to think he is a professional vanisher, not a lawyer.

b. So many old melodramas end in deathbed scenes that the actors who played in them had to be good dyers.

c. One guy jumped right into the fight, but his friend immediately vanished. The police came and hauled off the fighter, after which the vanisher promptly reappeared laughing.

Similar -er nominals from alleged unaccusatives can be found for German. But their interpretation makes it clear that these verbs have been reanalyzed as unergatives.

(ii)  

a. ‘Umfaller’ (fall down-er) is not someone who is fainting but someone who agentively gives up his old opinion.

b. ‘Abfaller’ (fall away-er) is not something which physically falls apart, but again someone who agentively changes his affiliation with a group, party or idea.

c. ‘Durchfaller’ (fall through-er) is not something that physically falls through some physical object, but someone who misses his goals in school.

On the other hand, some -er nominals with unaccusative bases could also be root derived. As van Hout and Roeper (1998) stress, ‘sinker’ either means a pitch in baseball or an anchor on a boat, but not a rock sinking to the bottom of the lake. These uses seem to be much more idiosyncratic than the examples in (i) and (ii) which just add an agentive component to the unaccusative base meaning.

Again, languages differ in productivity; English allows this only with nouns denoting cities or villages (London-er, New York-er), German allows it also with many nouns denoting countries (England-er, Italien-er, …).