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Cyclicity versus movement: English nominalization and syntactic approaches to morpho-phonological regularity

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Abstract

In this paper, I show that Embick's (2010) cyclic head approach to regular morphology alone cannot account for the freely available variations in the realization of nominalizers in English nominalizations involving overt verbalizers. Instead, I offer an account of the regularity effects using the technology of Local Dislocation (Embick and Noyer 2001, Embick and Marantz 2008, Embick 2007a, 2007b). Using this analysis, I derive both the variable nominalization patterns and the restrictions on particles and results in derived nominals from Sichel (2010). By treating regularity as the by-product of extant morphosyntatic operations, we can better explain the distribution of regular and irregular nominalizers and account for particle/result restrictions in English derived nominals.

Keywords: regularity, head movement, distributed morphology, cyclicity, nominalization

Résumé

Dans cet article, je démontre que l'approche développée par Embick (2010) pour tenir compte de la morphologie régulière en termes de têtes cycliques ne peut pas expliquer la variation libre dans la réalisation des nominalisateurs dans les nominalisations anglaises qui incluent des verbalisateurs visibles. Ensuite, j'offre une analyse des régularités qui exploite le mécanisme du Déplacement local (Embick and Noyer 2001, Embick and Marantz 2008, Embick 2007a, 2007b). Cette analyse explique à la fois les différentes réalisations dans les nominalisations et les contraintes concernant les particules et les résultats dans les nominaux dérivés de Sichel (2010). En analysant la régularité comme le produit dérivé d'opérations morphosyntaxiques actives, nous arrivons à mieux expliquer la distribution des nominalisateurs réguliers et

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irréguliers et tenir compte des contraintes concernant les particules et les résultats dans les nominaux dérivés en anglais.

Mots clés: régularité, mouvement des têtes, morphologie distribuée, cyclicité, nominalisation

1. Introduction

The role of syntax in determining the presence of construction-wide[1] regular or irregular morphology is of particular concern to theories of grammar with unified morphological and syntactic architecture, such as Distributed Morphology (Halle 1990, Halle and Marantz 1993, 1994, Noyer 1997, Harley and Noyer 1999). Under such an approach, (ir)regularity should be determined by locality constraints imposed by the syntactic derivation and not by any lexical or purely morphological processes. In this paper, I show how the syntactic derivation can wholly account for (ir)regularity in English deverbal nominalization.

English nominalizations pose a particularly interesting problem for theories of regularity whether lexically or syntactically based, because English nominal gerunds – also known as mixed nominalizations – and nominal gerunds appear to have virtually identical syntactic distributions and effects, but radically different morphological properties, as illustrated in (1)–(3). Both are modified by adjectives, *of*-mark their objects, and have optional subjects. However, derived nominals have irregular and idiosyncratic categorial affixes, while nominal gerunds have completely regular affixes.

(1) destroy:
   a. The Romans' destroying of the city…
   b. The Romans' destruction of the city…

(2) introduce:
   a. The chairman's introducing of the board…
   b. The chairman's introduction of the board….

(3) marry:
   a. The marrying of flutes and violins…
   b. The marriage of flutes and violins…

To address this issue, I modify Embick and Noyer's (2001) proposal that there are three distinct syntactic operations by which affixes can join their stems:[2] head-movement (pre-PF), Lowering, and Local Dislocation (see also Embick and Marantz 2008, Embick 2007a, 2007b). Under the modified version of the account offered here, head-movement is the environment in which much of the morphological

[1]Further addressed in section 2.

[2]I use the term *stem* as a purely descriptive term to discuss morphological environments where multiple affixes are present. I do not mean to assign any theoretical importance to the terminology. See Embick and Halle (2005) for more discussion.

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irregularity is triggered; this is because such movement necessarily precedes Vocabulary Insertion (VI). I argue that Lowering occurs after narrow syntax but before or at VI – thus allowing some irregularity. Local Dislocation occurs post-VI and produces completely regular forms. The fundamental difference between Local Dislocation and Lowering in this account is the nature of the syntactic features (interpretable or uninterpretable) of the relevant heads.

This model accounts for the differences in morphological regularity between derived nominals and gerunds while also capturing the generalization that English derived nominals disallow particles and results while English nominal gerunds allow them (Pesetsky 1995, Marantz 1997a, Harley and Noyer 2000, Alexiadou and Schäffer 2007, Sichel 2010). I show that Sichel's event-structure based approach cannot adequately capture the facts, but that a purely morphosyntactic account in which derived nominals are subject to overt head movement, and nominal gerunds to Local Dislocation, can.

I assume a three-way distinction in the forms of English nominalization: 1) derived nominals, which have specialized morphological nominalizers, of-marked objects, and adjective modification; 2) verbal gerunds, which are nominalized with *-ing*, do not *of*-mark objects, and are modified by adverbs; 3) nominal gerunds, which are nominalized with *-ing, of*-mark objects, and are modified by adjectives. The differences between these three constructions is seen in (4)–(6):

(4) The Viking's quick construction of a new ship…. (derived nominal)

(5) The Viking's quickly constructing a new ship… (verbal gerund)

(6) The Viking's quick constructing of a new ship… (nominal gerund)

This three-way distinction among English deverbal nominalizations is discussed in great detail in Chomsky (1970), drawing heavily on Lees (1960). Chomsky argues that verbal gerunds are the output of syntactic operations while derived nominals are the product of the lexicon and that nominal gerunds have mixed lexical and syntactic properties. This latter claim leads him to term this construction "mixed nominalization," because it shares properties with both verbal gerunds and derived nominals. Because I do not adopt this assumption, I adopt the more theory-neutral term of "nominal gerund". The current discussion focuses primarily on differences between nominal gerunds and derived nominals.

I also contrast the type of post-syntactic morphosyntactic operations found in nominal gerunds (Local Dislocation) with those found in Lowering contexts like English tense. I argue that the factor determining whether an item will lower or be locally displaced is the interpretability of the triggering syntactic features.

This analysis is compared with Embick's (2010) proposal where regularity is determined by the presence of intervening cyclic (phase) heads. For Embick, a head that is separated from another head by at least two cyclic heads (counting itself) will always exhibit regular morphology. I show that Embick's cyclic head analysis cannot predict the presence of both regular and irregular morphology in nominalizations involving overt verbalizers. Nor does the cyclic head proposal account for the lack of particles or results in English derived nominals. Under both Embick's

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(2010) approach and the approach offered here, regularity is fundamentally a property of syntactic locality; however, that locality is defined derivationally here and representationally by Embick.

Evidence for a derivational approach comes from the behaviour of particles and results in nominal gerunds and derived nominals. Sichel (2010) notes that nominal gerunds allow particles and results while derived nominals do not. Under the movement-driven approach to regularity offered here, this restriction follows automatically.

The analysis provides a succinct explanation for seemingly unrelated facts about English derived nominals and nominal gerunds. English derived nominals are morphologically irregular and disallow particles/results while English nominal gerunds are completely regular and allow particles/results. For both Embick (2010) and Sichel (2010), these facts are unrelated. However, under the account proposed here, both properties follow from the presence or absence of overt head movement.

The paper is structured as follows. Section 2 is a discussion of the theoretical importance of regularity and an introduction to the particular definition of regularity to be used in this discussion. Section 3 addresses the limitations of Embick's (2010) proposal, showing why a cyclic head approach does not correctly capture the facts. Section 4 presents an alternative account of these nominalization facts based on the ordering of morphological merger. The properties of Lowering and Local Dislocation that derive the phenomena are discussed in section 5. In section 6, I explain how the generalization about the lack of particles and results in derived nominals can be subsumed under the account of regular and irregular morphology developed in the previous sections. I conclude, in section 7, with a discussion of the potential benefits of the analysis offered here.

2. Regularity and theories of grammar

The term "regularity" covers a range of linguistic phenomena. There is not a universally accepted distinction between what is "regular" and what is "irregular". Harley and Noyer (1999: 12) note that "it is often thought that there is a gradient between suppletion and other types of more phonologically regular allomorphy, and that no reasonable grounds can be given for how to divide the two or if they should be divided at all." However, there is arguably a reasonable and necessary distinction between predictable and productive morphological forms and unpredictable and less productive ones. Further, this distinction is one that requires theoretical attention. Such a view is certainly argued for in Embick (2010).

The primary concern of this paper is the differences in the morphological realization of derived nominals and nominal gerunds, illustrated in (7) and (8).

(7) The Romans' quick destruction of the city… [derived nominal]

(8) The Romans' quick destroying of the city… [nominal gerund]

What makes these constructions so compelling for a study of regularity is the apparent similarities of their syntax and semantics contrasted with their radically differing morphological status. If we imagine regularity as a spectrum, nominal gerunds

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would inhabit one side of the scale (completely regular) while derived nominals would be near the other end (idiosyncratic and irregular).[3] It is my hope that by first developing a theory to explain the edges of the regularity spectrum, we can narrow in and explain the muddled middle of the spectrum.

For this discussion, it will be critical to establish a clear definition of regularity. In this analysis, I treat regularity as a construction-level phenomenon. I consider a construction to be regular if all morphological instantiations of the construction are based on productive, consistent morphophonological processes (save principled exceptions). Nominal gerunds appear to be exceptionless. Comparatives and superlatives have full root suppletion with good (better, best) and bad (worse, worst). However, following Marantz (1997b) these forms are light elements that are derived differently and thus are not true counterexamples. But such exceptions follow a different derivational path. Constructions that exhibit some regularity and some unpredictable irregularity are considered irregular for the purposes of this analysis. To be clear, I assign no theoretical importance to the construction itself; rather I assume that regularity is a derivational property. Any instances of irregularity within a construction define that construction as irregular.

For instance, English tense and English plural both exhibit a great deal of regular, phonologically predictable morphology (*kick* ~ *kicked, dog* ~ *dogs*). However, there are numerous exceptional forms as well (*break* ~ *broke, ox* ~ *oxen*). For the purposes of this analysis, both constructions are thus considered irregular regardless of the relative proportions of predictable (elsewhere) morphology and irregular morphology. I do not distinguish suppletion from other kinds of irregular morphological processes.

2.1 Regularity in Distributed Morphology

Within DM there is considerable discussion of the status of suppletion and other irregularity. Suppletion is argued to be a property only of functional projections (Marantz 1993, 1997b; for the opposite view see Harley 2011, Bonet and Harbour 2012, Haugen and Siddiqi 2013, Harley 2014). We can contrast suppletion with other forms of irregular morphology traditionally analyzed in DM via Readjustment Rules (first proposed in Chomsky and Halle 1968). Irregularity derived via Readjustment Rules differs from suppletion because Readjustment Rules have "the limited expressive power of phonological rules" (Embick and Halle 2005: 17), while suppletion is phonologically unconstrained. Readjustment Rules could, in fact, be seen as possible rules of regular morphology for a given language, if not the regularly utilized ones.

In contrast, Siddiqi (2009) builds a DM model without Readjustment Rules; instead, irregular forms have their own Vocabulary Items and compete for insertion like other morphological forms. Essentially, under this view, all irregularity is suppletion.

[3]Fully suppletive forms might be considered to be even more irregular, but it is my view that suffixation in derived nominalization should be viewed as a form of affix suppletion.

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Either of these views is generally compatible with the analysis provided here. Whether irregularity is derived via Readjustment Rules and suppletion or just by suppletion is irrelevant to the discussion. Suppletion and Readjustment Rules are both processes that occur at or immediately following Vocabulary Insertion, and the syntactic processes that allow them must therefore occur before VI.

It is certainly worth questioning why some irregular constructions exhibit a greater degree of regularity than others. English tense is largely regular with a few exceptions, while English derived nominals are almost completely irregular. The analysis provided here seeks to explain only why some constructions are regular and others irregular.

Crucially, the processes that underlie completely regular forms (such as nominal gerunds) and highly irregular forms (derived nominals) should be distinct enough to account for the differences while still maintaining the connections between the derived forms and their source. Whatever theory we develop should recognize the connections between *destroy, destruction,* and *destroying* while also explaining the idiosyncratic nature of the morphology in the derived nominal *destruction*.

2.2 Other approaches to regularity

There are many possible approaches to this issue that can capture the split. Under the Lexicalist Hypothesis (Chomsky 1970, Jackendoff 1975), regular forms like gerunds and irregular forms like derived nominals are the outputs of separate processes. In this framework, derived nominals are the output of lexical processes that precede the syntactic derivation, while gerunds are the output of the syntax. There is thus a principled distinction between regular and irregular forms in such a view. Irregularity is found with lexical processes, while regularity is tied to syntactic ones.

There is considerable intuitive appeal to such an account. Because the link between a lexical form and the derived nominal suffix it takes is somewhat arbitrary, it seems reasonable to consign it to the part of the grammar most associated with arbitrariness. The arbitrariness of the relation between form and meaning was a critical insight of de Saussure's (1916 [1983]) foundational work. Aronoff (1976: 43) notes that "[t]he lexicon is conventionally viewed as the repository of all the arbitrary items of a grammar (cf. Chomsky 1965 and Bloomfield 1933), and within our framework these exceptional items will for the most part be (derivational) words."

However, without a principled method of determining when a morphological process is located in the lexicon or in the syntax, such a dual-process view merely restates the observation in theoretical terms. If derived nominals are lexically derived, there must be an underlying reason why. The same is true of the syntactic derivation of gerunds.

We could potentially cast the distinction between lexically derived and syntactically derived morphological processes in terms of Anderson's (1982) distinction between derivational and inflectional morphemes. Blevins (2006) categorizes English gerunds as instances of inflectional morphology. Anderson (1982: 585) uses nominal gerunds to show that the link between regularity/productivity and inflection versus derivation is not definitional: "one might legitimately question the

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status of this formation [gerunds] as inflectional or derivational; but there is surely no issue in the case of action nominals [nominal gerunds]."[4] Inflection is not necessarily regular or productive, and derivation can be both. Explaining regularity in nominalization in these terms is therefore unlikely to be fruitful.

Chomsky's (1970: 215) discussion of nominal gerunds, which he terms "mixed nominalizations," is quite sparse, though he is openly skeptical as to whether the Lexical Hypothesis that he argues for can extend to the construction: "…it seems that the transformationalist [syntactic] hypothesis is correct for the gerundive nominals [verbal gerunds] and the lexicalist hypothesis for the derived nominals and perhaps, though much less clearly so, for the mixed forms [nominal gerunds]." If nominal gerunds are derived in the lexicon, then the principled divide between regularity and derivational source is completely lost. If they are syntactically derived, then any hope of clarifying what it means for a given process to be syntactic or lexical is lost. Nominal gerunds and derived nominals both involve overt category shift and are found in nominal syntactic environments; also, both vary between event and result readings.

We can contrast a split-process analysis (i.e., Lexicalism) with a single-process analysis. Such analyses are strongly associated with Distributed Morphology (Halle and Marantz 1993, 1994, Harley and Noyer 1999, Marantz 2001), but earlier versions of such approaches can also be found. Lees (1960) and Lakoff (1971) offer transformational accounts of derived nominalizations. Such accounts can be seen as antecedents of the DM approach to single-process morphology, since transformations were part of the syntactic architecture of the time. However, both of these earlier works make a seemingly arbitrary distinction between lexical items, and transformational rules and regularity. Lees' (1960) transformations are almost completely unconstrained and provide no immediate answer to why transformations should produce irregular forms (which is the object of the present study). In Lakoff's (1971) approach lexical items are pretagged for transformations in a way that effectively reconstructs parts of the dual-process approach (see Jackendoff 1975 for more discussion).

Modern DM accounts (Harley and Noyer 1998, Alexiadou 2001, Harley 2009, Embick 2010, Alexiadou, Iordăchioaia and Soare 2010, Punske 2012, among others[5]) of the relevant phenomena avoid the problems faced by the earlier syntax-based approaches to derived nominalization. Perhaps the clearest illustration of this point is found in Marantz (1997a) who observes that updating the syntactic framework from an (Extended) Standard Theory transformational model to a Bare

[4]See Fraser 1970, Wasow and Roeper 1972, Zucchi 1993, Katz 1999 and Hamm 1999 for use of this terminology and further discussion.

[5]This work largely focuses on Embick's analysis, with some discussion of the other work. Ultimately, this work is an explanation of the regularity facts, not the many other structural and selectional differences discussed by these articles. While the structural differences are almost certainly related to the regularity facts, I believe that the particular analysis I offer here is compatible in varying degrees with the different accounts offered by Harley and Noyer (1998), Alexiadou, Iordăchioaia and Soare (2010) and Punske (2012).

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Phrase Structure model puts what were unconstrained and unexplained transformations deriving nominals (as in Lees 1960) into the lexicon, thus shifting the explanatory burden from those who want to put nominal derivation in the syntax to those that want to keep it out. Marantz further notes that if derived nominalization is a lexical process then the fact that *growth* is obligatorily intransitive is completely unexplained, and thus must be stipulated.

Other than Embick (2010), few have attempted to explain the regularity contrast between nominal gerunds and derived nominals, though as we saw earlier, the status of regularity within DM is controversial. Harley and Noyer (1998) argue that nominal gerunds and derived nominals are the same construction. Under this view, *-ing* is an elsewhere case, used when no more specified derivational suffix is found. Presumably, regularity could be derived through an elsewhere analysis given that elsewhere-morphemes are defaults. However, this analysis faces significant challenges in the availability of both nominal gerunds and derived nominal for a large number of forms (see Punske 2010, 2012 for more discussion).

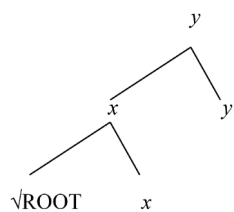
This leaves open the following question: is it possible to systematically account for (ir)regularity? As has been seen, a dual-process (lexicon + syntax) analysis cannot capture the difference between regular and irregular processes via a lexicon/syntax split; either irregularity is arbitrarily found in the lexicon or the question of what processes are lexical is arbitrarily determined in such a system. Embick (2010) attempts to account for regularity within the framework of DM, but as we will see shortly this account appears to be unable to account for nominal gerunds.

I propose a single-process DM-style account of morphological regularity in English nominalization. This proposal distinguishes three types of morphosyntactic operation that systematically determine the (ir)regularity of a given form. Overt head movement and Lowering both precede Vocabulary Insertion and are thus sources of irregularity. Local Dislocation follows VI, necessarily producing complete regularity.

3. Regularity in Embick (2010)

Embick's goal is to account for all suppletive allomorphy within a syntax-all-the-way-down model. Under this approach, suppletion is conditioned by local syntactic relations and phonology's role is reduced to regular processes (see Haugen 2011 for a critique). Embick's account of regularity is based on a simple principle: outer cyclic heads cannot show allomorphy when an inner cyclic head intervenes. Following Marantz (2007), Embick assumes that all category assigning heads (*n, v, a,* etc.) are phase heads.

(9)



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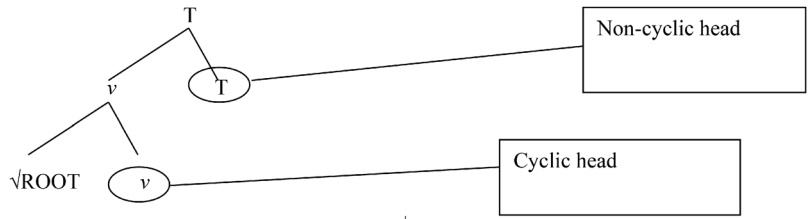
In the structure in (9), if *x* and *y* are both cyclic heads then *y* and the ROOT cannot trigger allomorphy on each other. Because *x* and *y* are adjacent, allomorphy between the two of them should be possible. If either *x* or *y* is non-cyclic, then allomorphy between the ROOT and either of the heads should be possible, as in the English tense structure shown in (10). Because in that case there is only a single cyclic head in the relevant structure, T and the ROOT can trigger allomorphy on each other:

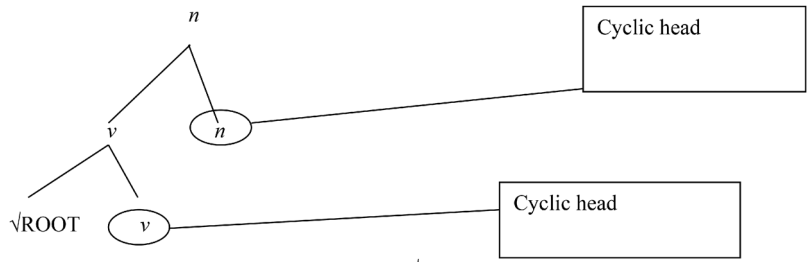
(10)



ALLOMORPHY IS POSSIBLE BETWEEN √ROOT AND T

When both are cyclic heads, then neither the Root nor the outer head should be able to trigger allomorphy (as in gerunds):

(11)



NO ALLOMORPHY POSSIBLE BETWEEN √ROOT AND *n*

Cyclic heads trigger spell out. Following Chomsky (2001), Embick assumes that only the complement of the cyclic head is immediately spelled out and that the edge (the cyclic head and its specifier) are not immediately spelled out. Once material has been spelled out, it is no longer available to the phonological interface. In Embick's analysis a cyclic head spells out its complement when a higher cyclic head is merged.

I illustrate this process using the structures (10) and (11) above. In both structures the ROOT is the complement of a cyclic head *v*. The ROOT will thus be spelled out as soon as another cyclic head is merged above *v*. In (11), *n* is a cyclic head; the moment it is merged, *v* spells out its complement, ROOT. This ROOT is no longer available for any phonological operations of the higher cyclic head (in this case *n*). In (10), T is not a cyclic head. When it merges, *v* does not spell out its complement and thus the ROOT is still visible to T.

Within English nominalization we can see both patterns quite clearly. Derived nominals are massively idiosyncratic and exhibit allomorphy in both the suffix and the stem. On the other hand, gerunds (both nominal and verbal) have only one nominalizing suffix (*-ing*) with no stem allomorphy. This point is illustrated in (12)-(14).

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(12) destroy:

a. The Romans' destroying of the city…

b. The Romans' destruction of the city…

(13) introduce:

a. The chairman's introducing of the board…

b. The chairman's introduction of the board….

(14) marry:

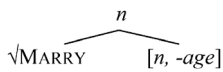
a. The marrying of flutes and violins…

b. The marriage of flutes and violins…

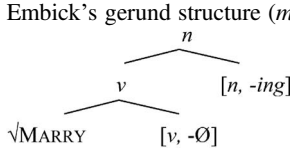
Crucially, nominal gerunds are not blocked by the existence of a derived nominal; the two forms coexist peacefully. This data poses a major challenge for an Embick-style analysis. As we will see, there cannot be a difference in the number of intervening cyclic heads – yet both regular and irregular morphological forms are found. Even if we were to treat *-ing* as an elsewhere nominalizer, we would have no explanation for why it occurs when irregular morphology is also permitted in an Embick-style account.

By focusing more narrowly on nominalization, we can clearly see the applications of Embick's approach and the examples that it fails to capture. For Embick, the crucial distinction between regular forms of nominalization (gerunds) and irregular ones (derived nominals) is the attachment site of n^0: "In special nominals, the *n* head realized as *-ter, -age, -(t)ion,* and the like is Root-attached. In gerunds, on the other hand, the nominalizing *n* morpheme attaches to structure that is verbalized by *v*" (Embick 2010: 15).

(15) Embick's derived nominal structure (*marriage*):



(16) Embick's gerund structure (*marrying*):



It is important to note that Embick was not concerned with nominal gerunds, and it is not completely clear where they would fit in this analysis. Nominal gerunds exhibit complete morphological regularity but share little other than phonetic form with true gerunds. True gerunds and nominal gerunds differ with respect to a number of properties. True gerunds can be formed out of any verb phrase (Lees 1960). They must be modified by adverbs not adjectives; may have auxiliaries; directly assign Case to their object arguments; and have obligatory subjects (Lees 1960, Chomsky 1970, Abney 1987, Baker 2005, among many others).

Nominal gerunds are modified by adjectives; cannot have auxiliaries; do not directly assign Case; and do not have obligatory subjects. Following Abney (1987), Borer (1993), Kratzer (1994), and Alexiadou, Iordăchioaia and Soare (2010),

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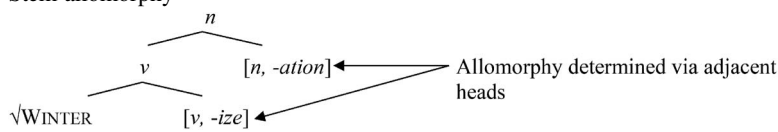
among many others, I assume that verbal gerunds have more internal verbal projections while nominal gerunds have fewer or no internal verbal projections.[6] Kratzer (1994: 122) notes that "the fact that the direct object of$_{ing}$ gerund cannot receive accusative case *has to be taken as a sign that the nominalized constituent does not contain Voice*" (emphasis added). Alexiadou, Anagnostopoulou and Schäfer (2009) note that *-(a)tion* nominals lack a Voice projection because the external argument is not realized obligatorily and there is no accusative case assignment – properties shared with nominal gerunds. Punske (2010, 2012) further argues that nominal gerunds are syntactically less complex than derived nominals based on structural (binding, NPI-licensing) and interpretive (loss of idiomaticity) facts. Regardless of the particular analysis of nominal gerunds, the availability of this third form of nominalization is not accounted for in Embick's (intentionally limited) system.

There are other reasons, both empirical and conceptual, to question this analysis. The relevant examples concern stem allomorphy of forms with overt verbalizers. If we take Embick's analysis at face value and assume that the critical determinant of the phonological form of a given nominalizer is the presence or absence of an intervening (null) cyclic head, then stem allomorphy provides an excellent Petri dish.

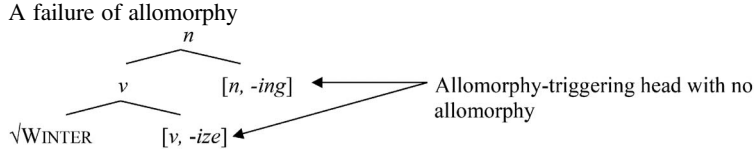
The nominalizer *–(a)tion* associated with derived nominals can also appear on verbs formed with the verbalizer *–ize* (i.e., *winterize* ~ *winterization*). This fact poses no direct problems for Embick's analysis because there is no ban on allomorphy being determined by an adjacent morpheme. In such forms, the presence of *-ation* is determined by the verbalizer and not by the Root:

(17) Stem allomorphy



The problem lies with the availability of the unmarked, non-contextually specified nominalizer *-ing*. Under Embick's analysis the presence of the generic nominalizer *-ing* is unexpected. If regularity is tied to syntactic adjacency, then the availability of both the regular and an allomorphic form is unexpected.

(18) A failure of allomorphy



Embick recognizes the problem presented by the *-ization/-izing* choice for his account of regularity. He argues that the distinction is due to a difference in the *Voice* head contained within each form of nominalization. For gerunds, a "(transitive) voice[ag] head" is present (Embick 2010: 95). Derived nominals lack this form of

[6]For instance, see Alexiadou (1997) and Cinque (1999) for arguments that verbal gerunds contain AspP, which nominal gerunds almost certainly do not (as in Alexiadou, Iordăchioaia and Soare 2010).

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Voice. This analysis would capture the distinction between verbal gerunds and derived nominals, since verbal gerunds do assign accusative Case to their objects (and require agents).

(19) John's colorizing the movies… (Embick 2010: 95)

(20) John's colorization of the movies… (Embick 2010: 95)

However, it is extremely difficult to see how this analysis can be extended to the nominal gerund facts discussed in this paper. Recall, as Kratzer (1994) noted, that nominal gerunds display none of the syntactic effects we would expect if *Voice* were present. Nominal gerunds do not assign accusative case nor do they have obligatory agents. Thus, the choice problem remains a major hurdle for an Embick-style analysis.

I am unaware of any analysis of nominal gerunds that argues for an additional cyclic head between *v* and *n* in an example like (18). Chomsky (1970) does not provide a definitive analysis of nominal gerunds. Harley and Noyer (1998) argue that nominal gerunds and derived nominals are actually instantiations of the same construction with different morphology, *-ing* being an elsewhere case when the Root/stem doesn't trigger allomorphy. Harley and Noyer face the same problem with *winterization* and *winterizing*[7] as Embick does: only one of these non-case-assigning forms should exist.

As noted in review, some analyses of gerunds treat *-ing* not as the nominalizing element but as some other piece of morphological structure (Jackendoff 1977). Ackema and Neeleman (2004: 178) offer such an account based on a principled avoidance of homophony: "[a]n analysis of nominal gerunds as involving overt-affixation must therefore rely on a homophony for which there is no independent evidence." Indeed, to the extent that homophony of this sort is viewed as a problem it is a drawback to the approach that I outline here. However, it is an open question whether such aggressive approaches to homophony are required. Regardless, an approach such as that of Ackema and Neeleman (2004) requires that nominal gerunds have overt verbal syntactic structure which is somewhat similar to Embick's analysis, though Embick's account, like the one presented here, also realizes *-ing* in n^0.

In contrast, Punske (2010, 2012) argues that nominal gerunds are structurally *less* complex than derived nominals based on argument-structure facts. Under Punske's (2012) analysis, a *k*P[8] is found above the nominalizer in derived nominals, but not in nominal gerunds. This *k*P is the locus for a form of case assignment in derived nominals. Nominal gerunds are argued to lack true arguments and contain adjunct PPs. These adjunct PPs superficially resemble derived nominal arguments but are structurally distinct. The arguments for this higher *k*P projection come from differing structural configurations in nominal gerunds and derived nominals, in particular the lack of c-command relations between arguments in ditransitive nominal gerunds, and the fact that nominal gerunds and derived nominals cannot

[7]Google searches show consistent use of both forms to roughly mean preparing something for cold weather.

[8]Adapted from Lamontagne and Travis (1987).

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be conjoined, suggesting they have different maximal projections. These are illustrated in (21) and (22)

(21) *John's introducing of no boys to anyone… [lack of c-command[9]]
Contrast with:
a. John's introduction of no boys to anyone…
b. John introduced no boys to anyone…

(22) *The Romans' destruction of and pillaging of the city… [lack of conjunction]
Contrast with:
a. The Romans' destruction of and reconstruction of the city…
b. The Romans destroyed and reconstructed the city…

I argue below that by adopting this proposal, we can explain the (ir)regularity effects found across the different forms of nominalization. In particular, if we assume that the higher k^0 is present in derived nominals, but not gerunds, triggers cyclic head movement of the ROOT, then the regularity effects and the availability of both constructions in overtly derived verbal contexts can be readily explained. The details of this proposal are further developed in the next section.

4. Deriving regularity in nominalization

The availability of both an unconditioned (regular) and a conditioned (irregular) nominalizer in forms with overt verbalizers (*-ing* and *-ation* respectively, from the *winterize* examples in the previous section) clearly illustrates that whatever may be responsible for Root-affix (ir)regularity, it cannot be the presence or absence of

[9]A reviewer notes that the ungrammaticality here may not be due to c-command but to other factors having to do with negation in English nominalizations. For instance, as noted in van Hout, Kamiya and Roeper (2013: 146), nominal gerunds do not allow wide scope of negation, while (some) derived nominal do:

(i) The finding of nobody was a surprise.
'What was surprising was the fact that nobody was found.' Narrow
'Of those found, nobody was a surprise.' Wide
van Hout, Kamiya and Roeper (2013: 146, ex. 16)

(ii) The election of nobody last year surprised us.
'No one was elected and that was surprising.' Narrow
'As for those elected, none of them surprised us.' Wide
van Hout, Kamiya and Roeper (2013: 146, ex. 18a)

It is not entirely clear why the lack of wide scope would prevent NPI licensing in the relevant construction above. Rather, I take this difference as further evidence that the apparent objects of nominal gerunds do not have the same status as the objects of derived nominals, which is a happy result for the current analysis.
A similar objection can be found in Fraser (1970) which critiques Wasow and Roeper (1972) and Alexiadou (2001).

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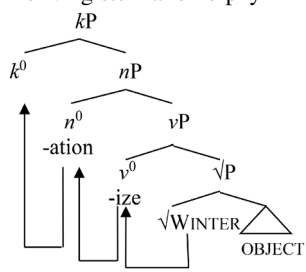
intervening cyclic heads, since *v* is the canonical example of a cyclic head. If a syntactic account of this type of (ir)regularity is to be preserved, another syntactic process must be found to be at work. As noted in Matushanky (2006), head movement is generally thought to feed affixation. In this section, I argue that the fundamental difference between the highly regular nominal gerunds (all marked with *-ing*) and the highly irregular derived nominals (nominalizers idiosyncratic to ROOT/stem) is instead the presence or absence of overt head movement.

Derived nominals involve head movement of the ROOT/stem into n^0 while nominal gerunds do not.[10] Because of this head movement, the conditioning environment necessary for irregularity of this type is visible in derived nominals. In nominal gerunds, which lack head movement, the ROOT/stem is invisible to n^0 so no irregularity is possible. The nominalizer *-ing* and the ROOT/stem are affixed post-syntactically in a modified version of Local Dislocation (Embick and Noyer 2001, 2006).

Like Embick, I assume that allomorphy is subject to syntactic locality; however, I assume that head movement obviates locality restrictions. Hence, head movement can feed allomorphy while simple adjacency cannot. That assumption, coupled with the above analysis[11] of derived nominals, accounts for the availability of both *winterization* and *winterizing* when the v^o and n^0 are in structurally identical positions. The relevant difference between these structures is the presence of a higher head, which triggers cyclic head movement of the Root through n^0. As we will see in the following section, *k* triggers movement because it contains an uninterpretable feature (Case), and uninterpretable features are triggers for overt head movement (and also, as we will see below, for Lowering[12]). No special claims about the nominalizers themselves are required.

(23) Deriving stem allomorphy



[10]The motivation for movement (or not) is addressed in section 5.

[11]The overall thrust of the analysis offered could also hold without the *k*P, if the nominalizing head associated with derived nominals were itself the trigger for head movement. However, such an analysis would lose explanatory power and is more stipulative since featural differences in n^0 would have to be prespecified.

[12]The choice between overt head movement and Lowering is likely subject to the individual lexical specifications of the functional projection. Hence, English *k* heads trigger overt movement while English Ts do not. Both contain uninterpretable features and both must incorporate with a ROOT prior to VI to be realized, though the syntactic mechanisms behind each vary. This is clarified in section 5.

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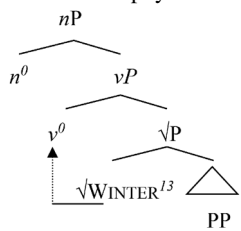
The derivation in (23) would produce *winterization* with its stem-conditioned nominalizer *-ation*. A stem-conditioned allomorph can occur in these constructions because the whole complex head [$\sqrt{}$WINTER + v^0 + n^0 + k^0] is visible at Vocabulary Insertion. Essentially, n^0 can to see its morphophonological context at VI, which it cannot do when head movement has not occurred. This account explains both the stem-conditioned cases like *winterization* and ROOT-conditioned cases where the v^0 is null or not present (i.e., *destruction, growth, marriage*).

We can compare this derivation to the one I propose for gerunds, which lack the higher movement-inducing k^0. Because no movement into n^0 occurs in gerunds, Vocabulary Insertion views each of the relevant terminals independently of the others (akin to Lasnik's (1995) Enlightened Self Interest). Allomorphy is not possible in this circumstance because the ultimate morphophonological environment is not visible, as seen in the structure of a nominal gerund in (24):

(24) Non-allomorphy in Nominalization[13]



The n^0 will always be realized by *-ing* in such a structure because at the point of Vocabulary Insertion the ROOT/stem and the n^0 are not visible to each other. This particular point allows for some unification between the analysis argued for here and Embick's (2010) analysis. In the structure in (24) the relevant heads would be in different phases. However, as we see throughout the paper, the analysis of these constructions can be accomplished entirely without reference to phases. For this analysis, I assume that conditioned VI requires the conditioned elements to be incorporated via head movement. Because phases are the domains for many syntactic operations, including cyclic movement (Uriagereka 1999, Chomsky 2000, 2001, 2008, Legate 2003, Boeckx and Grohmann 2007, Gallego 2010), an overlap between regularity and phases is predicated by my analysis. However, unlike Embick's (2010) account, being within the same cyclic domain is not the only necessary precondition for irregularity; incorporation must occur as well. Admittedly, this proposal does require the introduction of an additional functional *k* head above *n*P.

4.1 *–ing* and stress

A reviewer observes that there are successful phase-based analyses of word-level stress (see Marvin 2002, Samuels 2009, Lowenstamm 2010). A full review of these analyses is beyond the scope of this paper. However, I view them as largely compatible with the analysis proposed here. My analysis does not show that word

[13]Movement of the $\sqrt{}$ROOT into v^0 in these structures is irrelevant to the current analysis.

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internal phases do not exist, only that their presence or absence alone cannot account for regular and irregular morphology.

Of course, the n^0 *-ing* and the ROOT/stem are eventually joined. I claim that this occurs through a version of Local Dislocation (Embick and Noyer 2001, Embick and Marantz 2008, Embick 2007a, 2007b). The details of this analysis will be discussed in the next section.

In both (23) and (24) there is nothing special about the n^0. The n^0 in a derived nominal differs from the one found in a nominal gerund only in that its morphophonological content is determined purely by the syntactic environment that surrounds it. In this sense, a core insight of Embick (2010) is preserved, though the machinery deriving it is different.

Support for this approach is found in Chomsky and Halle (1968) and Marvin's (2002) discussion of the phonological properties of gerunds. Chomsky and Halle note that gerunds and derived nominals differ with respect to the presence or absence of /ə/ before word final sonorants. Derived nominals lack /ə/ while gerunds have it.

(25) hinder /hindər/

a. hindrance /hindrans/ [derived nominal]

b. hindering /hindəriŋ/, */ hindriŋ/ [gerund]

(modified from Marvin 2002: 35)

However, *-ing* does not always behave like the gerund *-ing*. Some instance of *-ing* do not co-occur with /ə/:

(26) twinkling /twinkəliŋ/ 'the event of twinkling' [gerund]

(27) twinkling /twinkliŋ/ 'a short instant' [nominal]

(modified from Marvin 2002: 36)

Marvin analyses this difference via a phase-based approach. When /ə/ is present, there is a phase head intervening between the nominalizing *-ing* and the ROOT and when /ə/ is not present, there is no intervening phase. Marvin argues that presence of the intervening phase triggers spellout of the ROOT, which then requires /ə/ phonologically. Marvin's analysis shares a lot conceptually with Embick's (2010) approach and thus faces the same problems distinguishing nominal gerunds and derived nominals outlined above.

However, Marvin's insight that /ə/ is present because the affix *-ing* is not visible to phonological insertion is captured by the present analysis. Recall that at the point of phonological realization (VI) in the present model, *-ing* has still not been inserted. Thus, the phonological interface responsible for the phonological information associated with the Root is unaware of any affix and produces a form that can be pronounced without an affix (i.e., with /ə/).

4.2 An alternative to *k*P

The advantage of the *k*P analysis proposed here is that it nicely relates the (ir)regularity properties and the argument structure properties. The disadvantage is that there is not yet any other independent motivation for it. An alternative noted both

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in review and by other commentators would be to have flavours of *n* (Folli and Harley 2005) with the properties associated with *k* in the above discussion essentially being the flavour of the derived *n*. The advantage of such an approach would be that it eliminates the need for an additional projection.

However, there is an obvious disadvantage: prespecifying the features of *n* may be a backdoor way to reintroduce lexically marked regular/irregular distinctions. Throughout the rest of the paper, I will continue to follow the previously outlined *k*P-based analysis. However, the account is fully compatible with the alternative approach should that be preferred.

4.3 Deriving regularity

Regardless of the particular derivational approach taken, it is clear that a derivational account of nominalization can also account for the regularity of the morphology associated with the particular construction. Derived nominals involve incorporation of the ROOT into n^0 and thus allow for irregular morphology. Nominal gerunds do not involve incorporation; therefore their nominalizers and ROOTs are invisible to each other.

5. Distinguishing lowering and local dislocation

The analysis of non-allomorphy in gerunds provided in the previous section stated that the completely regular morphology of these constructions is due to the lack of head movement of the ROOT into n^0. Of course, n^0 and the ROOT must meet at some point before pronunciation because they are pronounced together. This can be accomplished through post-syntactic movement.

Post-syntactic lowering analyses have a long history in generative syntax. Chomsky (1957) introduced such an analysis for the English tense system. Versions of this proposal have been periodically revived and further developed (Emonds 1976, Halle and Marantz 1993, Bobaljik 1994, Embick and Noyer 2001). All of these analyses share the following philosophy expressed by Bobaljik(1994: 26): the relation between a head and its affix "need not in all cases be derived in the syntax or the lexicon".

However, if we consider gerunds and tense side by side, a major difference is readily apparent. While gerunds are completely regular, there is allomorphy in the English tense system. For obvious reasons, deriving English tense allomorphy through overt head movement of V to T is not an option. Embick's (2010) cyclic head account could capture the tense facts without requiring such movement. However, the analysis offered in the previous section would seemingly predict either total regularity or overt head movement; neither prediction is accurate.

To solve this problem, I appeal to Embick and Noyer's (2001) account of post-syntactic movement operations. Embick and Noyer distinguish two forms of post-syntactic lowering: Lowering and Local Dislocation. In their analysis, Lowering precedes Vocabulary Insertion while Local Dislocation follows it. Such an analysis can easily be used to capture regularity effects. If Local Dislocation follows VI,

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then the phonological forms of the inserted items must be determined independently of each other. Regular phonological processes and restrictions may still apply, but idiosyncratic/irregular morphology is impossible. In Embick and Noyer's (2001) account, English tense is an example of Lowering, while English comparatives and superlatives involve Local Dislocation.

Accounts of Local Dislocation do not explicitly specify under what conditions Lowering is expected and when Local Dislocation is expected. I propose that Lowering occurs when the relevant head contains an uninterpretable feature, and Local Dislocation occurs when the head has only interpretable features.[14] I assume that the *-ing* found in nominal gerunds contributes only category information (generally true of *n*). This is in line with discussions of the functional properties of *-ing* found in Alexiadou, Iordăchioaia and Soare (2010) and Punske (2012) respectively. Because category information is relevant to LF, we can assume that category features are interpretable. Given that this is all that *-ing* contributes, its place in the derivation follows.

These results are exactly in line with Panagiotidis' (2015) theory of category assignment (building on Déchaine 1993 and Baker 2003) which holds that categorial features are LF-interpretable. [N] features force a sortal[15] interpretation and [V] features force an "extending-into-time perspective" at LF (Panagiotidis 2015: 84).

This analysis is in line with the Embick and Noyer data. Following Panagiotidis (2015), the requirement that V and T meet in the derivation is due to an uninterpretable feature on T, which must be filled by a feature on V (see also Pesetsky and Torrego 2006, among others, for discussion). Under this approach, uninterpretable features must be checked before Vocabulary Insertion, but whether such features trigger raising in narrow syntax or Lowering is subject to specifications in the featural make-up of the functional items that vary cross-linguistically. Lowering would be a Last-Resort morphosyntactic operation to repair features that should have been eliminated by head movement but were not.

By contrast, comparatives and superlatives are purely semantic features and are thus interpretable. Clearly, the interpretability of features forms a natural divide between Lowering and Local Dislocation. Assuming that category assignment is also interpretable, the regularity facts follow from the Local Dislocation analysis.

Evidence for the interpretable status of the feature or features associated with *-ing* comes from the acquisition of *-ing*, coupled with Radford's (2000) observation that interpretable features are acquired before uninterpretable ones (see also van Gelderen 2008). It has long been noted that progressive *-ing* is acquired quite early in L1 acquisition of English. Brown (1973) found that out of the 14 morphemes he analysed *-ing* was the first to be acquired. Kuczaj (1976: 24) also found that *-ing* was "the 'easiest' of the inflections and verb forms studied [in his study]". Roeper's (1982) study on the acquisition of English gerunds showed that children

[14]Substituting "valued" for "interpretable" should give the same results for an analysis based on Pesetsky and Torrego (2006).

[15]Baker (2003) also proposes a sortal interpretation for [N]; Panagiotidis diverges from Baker in the details of the interpretation of sortality. This difference is not relevant to the present discussion.

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between three and five already display a complex understanding of gerunds and are sensitive to the differences between verbal and nominal gerunds.[16]

While the evidence is not direct, the acquisition evidence definitely suggests that *-ing* realizes an interpretable feature in its various syntactic functions in English. This analysis has a number of benefits. Following Radford (2000), interpretable features are also easier to acquire. Regularity itself also plays a role in acquisition. Under the view advocated here, these two facts are connected in a principled way. Complete regularity and interpretable features are strongly associated with each other.

It is worth reiterating that the present analysis does not posit differences in the n^0 associated with nominal gerunds and that associated with derived nominals. In both constructions the n^0 contains interpretable features (category) and does not trigger head movement itself. What distinguishes the constructions is the presence of a higher k^0 in derived nominals. This projection, which is the locus for Case assignment to the internal arguments of derived nominals, does contain uninterpretable features.

One potential problem with adopting the Local Dislocation proposal for English gerunds (both nominal and verbal) is the apparent fact that adjuncts can intervene between the nominalizer and the ROOT.[17]

(28) The Romans' –~~ing~~ quickly destroying the city….

For Embick and Noyer, Local Dislocation strictly requires immediate adjacency; the fact that the n^0 can seemingly cross over the adjective/adverb in the preceding examples should classify this movement as Lowering because Lowering does not require immediate adjacency. But if such movement is Lowering, it would be pre-VI and the explanation of the regularity effects would disappear.

Embick and Noyer's evidence for an immediate adjacency requirement comes from intervention effects of adverbs in comparative/superlatives, illustrated in (29)–(30).[18]

[16]We can contrast the early development of gerunds with the notably later development of derived nominals. Tyler and Nagy's (1989) study of English derivational morphology suggests that the acquisition of derived nominal suffixes continues into at least eighth grade. Sixth-grade students were found to make overgeneralization errors with derivational suffixes in that study. Such results are not limited to English: Ravid and Avidor (1998) found that acquisition of Hebrew derived nominals starts around age 8 and is not complete until age 15. I know of no studies comparing derived nominals and gerunds directly, but the trends are obvious.

Such evidence is inevitably tied up with issues of frequency and regularity. For instance, Slobin (1973: 205) notes that "rules applicable to larger classes are developed before rules relating to their subdivisions, and general rules are learned before rules for special cases." A full discussion of these factors is well beyond the scope of this paper, but it is worth noting that other factors may be relevant to the acquisition of gerunds.

[17]This discussion assumes that the adjectives/adverbs are dominated by the n^0. If they are not, then these examples pose no problems.

[18]Embick (2007a, b) offers further clarification to these examples and explains several exceptional examples which are derived through scope effects. Fundamentally, the analysis remains the same. The remarks I offer here apply to Embick (2007a, b).

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(29) Mary is the mo-st amazingly smart person…

(30) *Mary is the *t* amazingly smartest person…

(Embick and Noyer 2001: 565)

If we assume that adjectives and adverbs may intervene between ROOTs and their nominalizers, then these examples cast immediate doubt on the Local Dislocation analysis of English gerunds. Why should gerunds be privileged in their ability to move past modifiers? The solution to this problem is actually quite simple. I claim that the above examples are not evidence of an adjacency restriction *per se;* rather they reveal the morphophonological nature of Local Dislocation.

There is a confound in examples like (29) and (30): adverbs are potential hosts of comparative and superlative morphology. Though such modification is normally of the *more*/*most* type, some adverbs, albeit marginally, can bear comparative/superlative morphology.

(31) Might easiliest harbour in? Thou blessed thing![19]

(32) She turned around most quickly/quickest/???quickliest

Regardless of the acceptability of forms like *easiliest,* the fact that adverbs can have *more*/*most* modification is evidence of their potential ability to host the comparative/superlative morphology. The fact that they are generally unable to is likely due to the phonological size restrictions that drive *more*/*most* in the adjectival system and thus irrelevant to their potential as hosts.

With this is mind, the explanation for why (30) is unacceptable can be further refined from the intervention of any lexical item to the intervention of a potential morphological host[20] of the dislocated item. This is still fundamentally different from Lowering because the search is morphophonological and not syntactic, but strict adjacency is not necessarily required.

The benefits of this approach are seen in explaining why deverbal adjectives in *-ing* cannot co-occur with nominal gerunds while other adjectives are permitted.

(33) The quick destroying of the city…

(34) *The baffling destroying of the city[21]…

(35) The baffling destruction of the city…

If we assume that Local Dislocation is a single computation over a non-hierarchical string then the ROOT $\sqrt{BAFFLE}$ is closer to both of the *-ing* suffixes, since it is a

[19]Shakespeare, *Cymbeline,* Act IV, Scene II.

[20]A reviewer notes that even this explanation seems too syntactic to be a PF operation. I agree that this proposal might require some revision to how we view PF. However, as formulated here the operation is not sensitive to syntactic information. The stranded morphology is only looking for a legitimate morphophonological host. It is also worth reiterating that this modification is required only if we assume that adjective/adverbs can intervene between the nominalizer and the root, an assumption that may be false.

[21]This example could be subject to other explanations such haplological dissimilation (c.f. Nevins 2012) or some version of Ross's (1972) "Doubl *-ing*" constraint.

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potential host. Both *-ing* suffixes will attempt to attach to the closer ROOT, creating an illegitimate morphological object.

The Local Dislocation analysis captures the regularity of gerunds because morphological merger is a post-VI operation in these constructions and thus irregular morphology is not possible. It also captures the fact that deverbal adjectives and gerunds cannot co-occur through the competition of potential nearest hosts. However, it does force us to have a more morphologically aware version of Local Dislocation, which some may find objectionable. This modification may not be necessary provided that *-ing* and the ROOT can be made adjacent. In nominal gerunds, this would be straightforward. However, it becomes more problematic for verbal gerunds. It is possible, though implausible, that regularity in verbal gerunds is derived independently of regularity of nominal gerunds.

In the next section, we see how the analysis can explain the seemingly unrelated fact that nominal gerunds can occur with results and particles while derived nominals cannot.

6. Head movement and the particle-nominalization generalization

Nominal gerunds and derived nominals externally exhibit major distinctions in the types of events permitted (Pesetsky 1995, Marantz 1997a, Harley and Noyer 2000, Alexiadou, Sichel (2010), Alexiadou, Iordăchioaia and Soare 2010). Sichel (2010) notes that derived nominals allow only simple events while nominal gerunds permit a larger set of event types, including resultatives. This pattern can be seen in the following examples, modified from Sichel (2010).[22]

(36) *John's explanation (away) of the problem (away)

(37) John's explaining (away) of the problem *(away)

(38) The running thin of the pavement

(39) The barking awake of the neighbours

Sichel argues that the differences are due to the available event-structure in the two constructions. If the differences are due to event-structure differences, then the constructions with the more complex events must have more complex syntactic structures (Borer 2005, Ramchand 2007). Nominal gerunds can host larger, more complex events in contrast with derived nominals, which cannot:

> "English derived nominals are restricted to single, simple, events, while ING-OF gerunds can also host complex events, in particular, lexical causatives and augmented events of various types" (Sichel 2010: 160–161).

[22]In Sichel's work, the result does not intervene between the noun and the object. The judgements are reported as:

(i) the running of the pavement thin

(ii) the barking of the neighbours awake

However, I have found strong preference for the examples given in (37)–(39).

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However, there are reasons to believe that whatever restricts the presence of particles or results in derived nominals, it is not related to event structure. Incorporated particles are found in derived nominals in German:

(40) ***auf-****nehm-en* ~ ***Auf-****nahm-e*
up-take-V up-take-N
record recording

(modified from Zeller 1997)

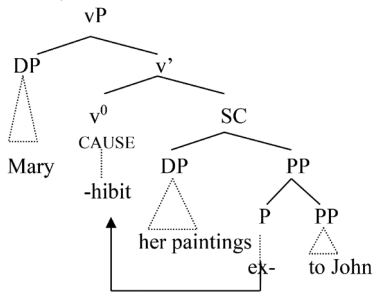
Following Harley (2008), English may exhibit identical behaviour to German with respect to particle incorporation in derived nominals in most Latinate verbs. Harley analyses the prefixes in Latinate verbs as particles that undergo mandatory incorporation. This analysis was based on cooccurrence restrictions on Latinate verbs with dative shift (due to the lack of P_{HAVE}), other particles, and result states. These constructions are disallowed because the position that P_{HAVE}, the particle, or the result would occupy is already occupied by the prefix.

(41) dispose (*up) – disposal

(42) incise (*off) – incision

(43) complete (*up) – completion

(44) Harley's Latinate Verb Structure



In Harley's analysis the prefixes *dis-, iN-* and *coN-* are all particles with morphological requirements inducing mandatory incorporation. If we adopt this analysis, then English Latinate verbs appear to behave exactly like German in derived nominal contexts.

However, it remains true that particles are generally disallowed in English derived nominal contexts remains.[23] Particles are permitted in nominal gerunds, but not in derived nominals, as shown below.

[23]A reviewer notes that examples like (40) through (43) may not pose a significant challenge to Sichel's analysis because they may not involve event complexity in the temporal sense. Sichel argues that the restriction on particles and restrictions on external arguments (Pesetsky 1995, Marantz 1997b, Harley and Noyer 2000, others) in derived nominals are tied to the lack of complex temporal events in the construction. The question is then whether the examples here are temporally complex.

However, without repeating Harley's (2008) analysis entirely, it is clear that the prefixal particles in examples (40) through (42) occupy the same structural position as the particles that are banned in derived nominals. Thus, for this analysis, the question of temporal complexity is

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(45) marriage (*off) of his daughters (*off) vs.
marrying (off) of his daughters (*off)

(46) explanation (*away) of the issue (*away) vs.
explaining (away) of the issue (*away)

We can note the following facts about particles in nominal contexts. First, it appears that particle incorportation is mandatory in nominal contexts (see Harley and Noyer 1998, Harley 2009 for a potential explanation).

(47) The repairman's continuous turning on of the lights [drove the electric bill way up this month]

(48) *The repairman's continuous turning of the lights on [drove the electric bill way up this month]

Second prefixal particles are permitted both in derived nominalization and in nominal gerunds (i.e., Latinates (41)–(43), while non-prefixal particles are permitted only in nominal gerunds, as in (45) and (46). This fact, coupled with the earlier analysis of (ir)regularity via head movement, is sufficient to explain this generalization.

According to the Mirror Principle (Baker 1985), morphological ordering and syntactic ordering must match. This principle is a natural consequence of the syntactic treatment of morphology in a theory like DM. However, both derived nominals and nominal gerunds appear to violate this principle if we assume that the particle is incorporated. Particle incorporation happens before any movement to the nominalizing head, but the morphological ordering (predicted by left-adjunction) would be Root-nominalizer-particle.

What distinguishes derived nominals from nominal gerunds is the derivational step where the nominalizer and ROOT meet. Derived nominals have undergone obligatory head-movement forming a complex head of at least[24] [$\sqrt{}$ROOT + PART + n^0 + k^0]. The derivation for such a structure is given below:

somewhat irrelevant. There is a compelling reason to assume that the prefixes occupy the same position as the particles. A ban on event structure that targets some but not all particles (with the preserved particles having predictable morphological properties) would be quite puzzling.

This discussion is not meant to refute Sichel's overall analysis. Rather, the goal is to show that the presence or absence of particles in derived nominals cannot necessarily be tied to event size and can be more easily explained via morphological restrictions.

Sichel's claims about external argument restrictions are largely irrelevant to the overall discussion here. Sichel reports that indirect causes can be the subjects of nominal gerunds but not derived nominals. This distinction is illustrated below.

(i) The war's separation of the young couple…

(ii) The war's separating of the young couple…

Sichel reports (i) as ungrammatical and (ii) as improved. I do not share these judgements. While neither is ideal, I have a preference for (i). Other linguist native speakers of American English have confirmed this judgement. This suggests that there is not a clear division in acceptable external arguments between nominal gerunds and derived nominals.

[24]The presence or absence of a null v^0 is irrelevant to this analysis.

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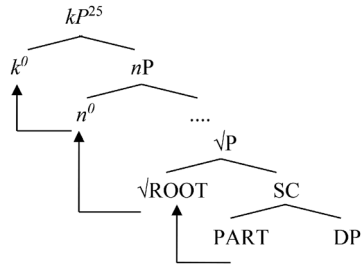
(49) Derivation of a nominalized particle construction (take 1)



Under standard views of head movement, namely Travis's (1984) Head Movement Constraint, head movement proceeds cyclically. A raising head cannot skip any intervening heads. Thus in the structure above, though the Root is moving into k^0, the Root must stop in n^0 as it raises. Following Matushansky (2006), I assume that all instances of head movement necessarily entail morphological merger.

This account can explain why prefixal particles (German, English Latinates), but not non-prefixal particles (non-Latinate English) are permitted in derived nominals. When non-prefixal, the particle prevents the merger of the $\sqrt{}$ROOT and the n^0; this is a direct consequence of the movement in the derivation in (49). Since the particle itself is not a legitimate attachment site for the nominalizer, a legitimate morphological object cannot be created in this scenario.

(50) **marry-off-age* :: Root-part-nom

(51) **marriage off* :: Root-nom-part

Prefixal particles do not interfere with the morphological merger of the ROOT and the n^0, so such constructions are predicted to be possible. This result is borne out:

(52) *Auf-nahm-e* :: part-Root-nom

(53) *in-cis-ion* :: part-Root-nom

Unlike derived nominals, nominal gerunds do not have any restrictions on the types of particles that can occur with them. We might expect that particles in nominal gerunds should form the same illicit morphological structure; however, their acceptability is proof that they do not. The grammaticality of these constructions is a natural consequence of the Local Dislocation analysis offered as an explanation for the regularity of these forms.

Unlike derived nominals, the nominalizer in nominal gerunds does not join the ROOT until after vocabulary insertion. Because Local Dislocation is primarily a morphophonological process and non-prefixal English particles are phonologically

[25]I am assuming that the structure of particle incorporation is the same whether the particle appears before or after the root and that order is determined by the morphological properties of the given element at VI (this is in line with Harley 2008). However, prefixal particles may also be analysed via left-adjunction (see den Dikken 1995). The particular analysis of prefixal particles adopted is irrelevant to the overall discussion. Regardless of how the particle prefixes, when it does, it does not block the nominalizer from attaching.

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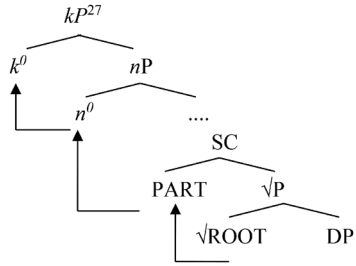
independent items (even when syntactically incorporated), the presence of an incorporated particle does not interfere with the morphological merger of the nominalizer and the ROOT/stem.[26]

Punske (2013) argues that the structural properties of the Latinate particles are different from (most) other English particles in that they are structurally higher and the particle selects the ROOT (not the other way around). This structural relationship explains why they are prefixes along with a battery of other properties.

(54) Derivation of a nominalized particle construction (take 2)



Thus, following Punske's (2013) analysis of Latinate particle constructions we have a relatively straightforward way to distinguish between particle constructions that can be derived nominals and those that cannot: if the particle selects and embeds the ROOT, then they may participate in derived nominalization. If the ROOT selects the particle, then they may not.

7. Conclusions

By adopting a modified Local Dislocation analysis of English gerunds, a number of diverse facts can be explained. First, the fact that gerunds are highly regular while derived nominals are not follows readily from the different syntactic enviroments of these two constructions. Derived nominals have a higher *k*P that induces cyclic head movement. Because of this movement, the ROOT/stem and the n^0 are part of a single complex head at Vocabulary Insertion. Under such an arrangement, idiosyncratic contextual allomorphy is possible. By contrast, gerund-affixes attach to their hosts only after Vocabulary Insertion. Under such conditions, only regular phonological processes can apply because the ultimate morphosyntactic context is invisible to the insertion process.

[26]Note that the ungrammaticality of examples like (50) and (51) is something of a morphological accident. If a particle is prefixal, it can co-occur with an idiosyncractic nominalizer. I set aside the question of what determines when a particle will be prefixal or not.

[27]I assume that the structure of particle incorporation is the same whether the particle appears before or after the root and that order is determined by the morphological properties of the given element at VI (this is in line with Harley 2008). However, prefixal particles may also be analyzed via left-adjunction (see den Dikken 1995). The particular analysis of prefixal particles adopted is irrelevant to the overall discussion. Regardless of how the particle prefixes, when it does, it doesn't block the nominalizer from attaching.

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This creates two distinct ways of deriving regularity within a theory like DM. Construction-wide regularity, like that found in gerunds, occurs because morphological merger follows Vocabulary Insertion and the processes that create irregular forms (Readjustment Rules or suppletion via fusion) cannot occur because the context is unavailable and/or fusion is impossible if head-incorporation has not occurred. Regularity in constructions with irregular forms (e.g., English tense) is derived through elsewhere processes standard to DM.

This analysis also captures the particle/result facts discussed in Sichel (2010). Sichel notes that derived nominals cannot occur with particles or results while nominal gerunds can. Sichel argues that this was due to event-structure differences between the two constructions; however, that analysis is problematic since there are examples of particles in derived nominals (German, English Latinates). I showed how these effects could instead be tied to the same syntactic processes that derive the regularity facts in English nominalization. Since particles and results must incorporate in nominalization, the movement into n^0 creates an illegitimate morphological object unless there is a mismatch in the position of affixation between the n^0 and the particle/result, as seen in German and English Latinates. Because derived nominals involve movement into n^0, Sichel's generalization can be explained morphosyntactically. In contrast, nominal gerunds do not involve overt movement, and the availability of particles and results is expected.

The analysis also provides a neat division between head movement and Lowering, on the one hand and Local Dislocation on the other. Local Dislocation is argued to be a process that applies only to terminals with interpretable features. This approach could yield significant results in the connections among regularity, interpretability and acquisition. If this account is on the right track we should expect to find significant overlap between interpretability and regularity throughout the world's languages. Though it is important to recall that regularity is not a necessary consequence of interpretability; contextual allomorphy is possible for a fully interpretable item if a higher head with uninterpretable features triggers cyclic movement through the interpretable head. This is the case with n^0 in derived nominals.

The analysis offered here maintains the fundamental insight of Embick (2010) that (ir)regularity is a property of syntactic locality. Unlike Embick's account, however, this distinction is created through movement rather than through the presence or absence of cyclic heads. Nonetheless, this analysis is not meant as a rebuttal to Embick's program; the idea that cyclic heads play a role in determining morphological regularity is well supported in other areas. Whatever that role is, movement must also be involved in a fundamental way.

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