

# Categorization in Distributed Morphology: A Split Analysis of Verbalization\*

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Distributed Morphology maintains that each morpheme consists of feature bundles. However, the issue of what features constitute categorizers such as *v*, *n*, and *a* has not yet definitely figured out. In this article, I focus mainly on the categorial feature matrix of *v* in verbalization. Presenting the well-known fact that while they share the inability to license structural Case with nouns and adjectives, passive participles differ with respect to the availability of *of*-insertion, I offer a split analysis of verbalization in which, implementing the system of Chomskyan categorial features ( $[\pm N, \pm V]$ ) under the framework of Distributed Morphology, the categorial features for verbs ( $[-N, +V]$ ) are analyzed to separately be located on distinct heads:  $[+V]$  on *v* and  $[-N]$  on Voice. Some consequences of the split analysis of categorization are discussed to account for the widely known differences between deverbal nominalization and verbal gerunds, and the possibility also is entertained of extending the split analysis to other major categories such as nouns, adjectives and prepositions.

**Keywords:** categorial feature, categorization, passive participle, little *v*, Voice, deverbal nominalization, verbal gerund, Distributed Morphology

## 1. Introduction

Distributed Morphology (DM) holds that one single generative engine is

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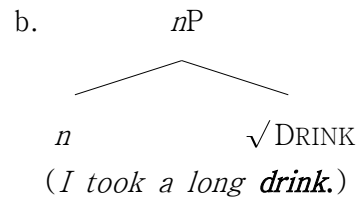
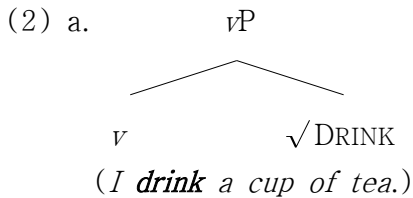
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responsible for both word formation and phrase formation (Hale and Marantz 1993, Marantz 1997). That is, morphological structure is isomorphic to syntactic structure. From this perspective, derivational morphology has no theoretical import, but instead corresponds to category–determining functional heads or categorizers such as *v*, *n*, and *a* (see Embick 2010, Marantz 2007), as given below.

(1) *Categorization assumption* (Embick and Marantz 2008: 6)

Roots cannot appear without being categorized; they are categorized by merging syntactically with category–defining functional heads.

An acategorial root  $\sqrt{\text{DRINK}}$ , for instance, becomes either a verb or a noun when merged with the categorizer *v* or *n*, respectively, as illustrated below (see, e.g., Chung 2009).

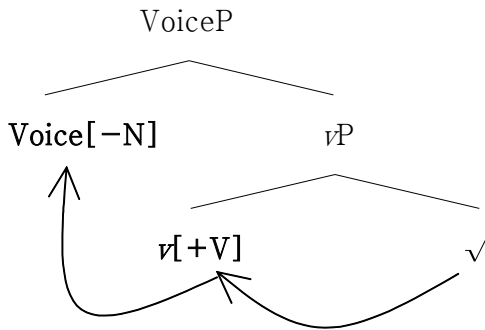


At this point, a non–trivial question concerning categorizers arises: under the DM framework in which each abstract morpheme in the tree diagram is a complex of features, what kind of feature(s) would categorizers such as *v*, *n*, and *a* be made up of? This is the key question that I address in this article, focusing mainly on the feature makeup of the categorizer *v*. It is true that in DM, the features of category–defining heads are understudied, as compared to other domains. Thus, it is this point where the present work makes a significant theoretical contribution: it explores what features categorizers bear to categorize an acategorial root.



categorization is associated with two separate loci. The [N] and [V] features in (3) are split into two distinct syntactic heads. Specifically, the loci of verbalization are  $\nu$  and Voice heads, and these work together to categorize the acategorial root into a verb, as illustrated below (see section 3 for detailed analysis).<sup>2,3</sup>

(5) *Two loci for verbalization*



Note that in (5), for verbalization, [+V] and [-N] are located on  $\nu$  and Voice, respectively, and the acategorial root undergoes movement whereby it becomes a verb.

The article is structured as follows. Section 2 shows that passive participles behave like nouns and adjectives with respect to their inability to license

<sup>2</sup> See Arad (2005) makes a similar yet markedly different proposal in which "a root is verbalized [...] once it is associated with a  $\nu$  head, but it only becomes an actual verb once it has merged with the syntactic features that constitute verbs-voice [...], aspect (in some languages), tense, etc." (ibid. p. 40) It should be noted that there is a significant difference between Arad's analysis and the present split analysis: under the former, 'aspect' and 'tense' as well as 'voice' can be involved in verbalization, and no featural makeup of categorizers are discussed in any sense. Thus, Arad's analysis simply notes the positions involved with verbalization. In contrast, what is new and different under the present analysis is that categorizers make up of the complex of categorial features, [ $\pm$ N,  $\pm$ V], and those features are to be split into two different heads.

<sup>3</sup> This split analysis can constitute additional support for the separation of Voice and little  $\nu$ . This is not a novel point in the literature (see Alexiadou et al. 2006, Harley 2013, Kratzer 1996, Marantz 1997, Pytkäinen 2008, Sundaresan and McFadden 2016, and references therein).

structural Case, and that only the latter capitalize on *of*-insertion. Section 3 presents another asymmetry in which passive participles differ from perfect/past participles in structural Case licensing. The split analysis of categorization given in (5) above is offered to explain the aforementioned differences involving passive participles and other categories. Section 4 extends the split analysis to account for the difference between deverbal nominalization (*Martians' colonization \*(of) the Earth*) and verbal gerunds (*Martians' colonizing \*(of) the Earth*). Section 5 concludes the article by touching upon the possibility of an extension of the current analysis to other major categories such as adjectives and prepositions.

## 2. Passive Particles as “Neutralized” Verbs

### 2.1 *Of*-insertion in NPs and APs and its Failure in Nominal and Adjectival ECM

Let us consider the following examples concerning inherent Case in English NPs and APs.

- (6) a. my proof \*(of) the theorem (Chomsky 1995: 104 (295a, b))  
b. proud \*(of) John (Chomsky 1981: 49 (4i, ii))

According to Chomsky 1981 and 1995, given that in English, only the [-N] categories are Case-licensors, the noun *proof* and the adjective *proud* in (6) employ *of*-insertion, a sort of Last Resort by which to license inherent Case, to avoid the Case filter (Chomsky 1981), since they both lack [-N]. This categorial feature-based explanation, however, poses empirical problems with nominal and adjectival ECM constructions, as shown below (Chomsky 1995, p. 103 (271, 288) and p. 104 (292a, b) emphasis eliminated).

- (7) a. \*my proof (of) John to be here  
 b. \*I am proud (of) Bill to be here

While *of*-insertion salvages the NPs, *the theorem* and *John* in (6) above, which would otherwise violate the Case Filter, the same rescue does not take place in (7). This contrast led Chomsky (1995) to propose that inherent Case licensing is associated with  $\theta$ -marking, as given below.

- (8) Inherent Case is assigned by  $\alpha$  to NP only if  $\alpha$   $\theta$ -marks NP.  
 (ibid. p. 104)

From (8), the sharp contrast between (6) and (7) follows straightforwardly. In (6), *proof* and *proud*  $\theta$ -mark their complement NPs, *the theorem* and *John*, respectively, and, as such, *of*-insertion is available. In (7), in contrast, the noun and adjective at stake do not  $\theta$ -mark the ECM-ed NPs, *John* and *Bill*, because the latter are not the complements  $\theta$ -marked directly by the former. Rather, what is  $\theta$ -marked is the entire infinitival ECM clause. As a consequence, *of*-insertion is not available in such nominal and adjectival ECM constructions in (7) (Chomsky 1995: 104). Note that *of*-insertion is available only when the category lacking [-N]  $\theta$ -marks its complement NP.

## 2.1 Another Case of the Unavailability of *Of*-insertion: the English Passive

While the categorial feature-based account coupled with theta theory has a systematic range of empirical coverage, as Chomsky (1995) points out, there emerges a non-trivial counterexample of the passive. Consider the following examples.

- (9) a. \**e* was killed (of) John (Chomsky 1981: 54 (14–16))  
 b. \*it is believed (of) Mary (Chomsky 1995: 105 (297))

The standard account of the passive in English is that the surface subject,

base-generated in object position, undergoes movement to subject position because the passive verb cannot license structural Case (Chomsky 1981, 1995, Jaeggli 1986). But then, in (9), why is it that *of*-insertion is not an option available for *John* and *Mary*? Under (8), this option should be expected because, like the noun *proof* and the adjective *proud* in (6), the passive participle *believed* does  $\Theta$ -mark its complement NP. However, the unavailability of *of*-insertion in the English passive indicates that in this respect, passive participles differ from nouns and adjectives. In other words, as Chomsky (1981, 1995) points out, passive participles are not verbs ( $[-N, +V]$ ) or adjectives ( $[+N, +V]$ ). Thus, Chomsky (1981: 55) concludes that passive participles are “neutralized  $[+V]$  categor[ies] with no marking for the feature  $[N]$ ” (1995: 105). Consequently, there emerges a three-way distinction, as given below.

- (10) a. verb =  $[-N, +V]$   
       b. passive participle =  $[+V]$   
       c. adjective =  $[+N, +V]$

Passive participles differ from verbs in that the former lack the feature specification for  $[N]$ , such that only the latter can license structural Case. In addition, they differ from adjectives in that *of*-insertion is available for the latter only. Given this,  $\alpha$  in (8) turns out to be a  $[+N]$  category to which nouns and adjectives, but not passive participles, belong. Note that passive participles are “neutralized” categories in that they bear only  $[+V]$  with no marking of  $[N]$ .

### 3. A Split Analysis of Verbalization

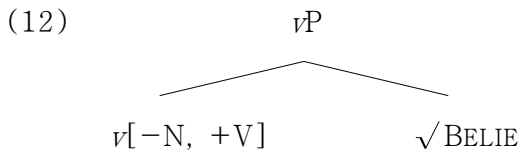
#### 3.1 Two Loci for Verbalization: $\nu$ and Voice

Let us now turn our attention to categorization under the DM framework (Hale and Marantz 1993, Marantz 1997). As shown in (1), repeated here as (11), roots are acategorial, and are categorized by combining with categorizers such as  $\nu$ ,  $n$ , and  $a$  (see Embick 2010, Marantz 2007).

(11) *Categorization assumption* (Embick and Marantz 2008: 6)

Roots cannot appear without being categorized; they are categorized by merging syntactically with category-defining functional heads.

Although extensive research has been carried out on DM, to the best of my knowledge, no previous study has seriously tackled the issue of categorization under the categorial features system given in (3) above.<sup>4</sup> The standard DM assumption of categorization is that since they are the only component being responsible for categorization, it should be the categorizers alone that bear the categorial features. For example, the categorial features for verbs ( $[-N, +V]$ ) should be located on the categorizer  $\nu$  and nowhere else. As illustrated in (12) below, when merged with the  $\nu$  containing  $[-N, +V]$ , the root  $\sqrt{\text{BELIE}}$  is categorized as a verb.



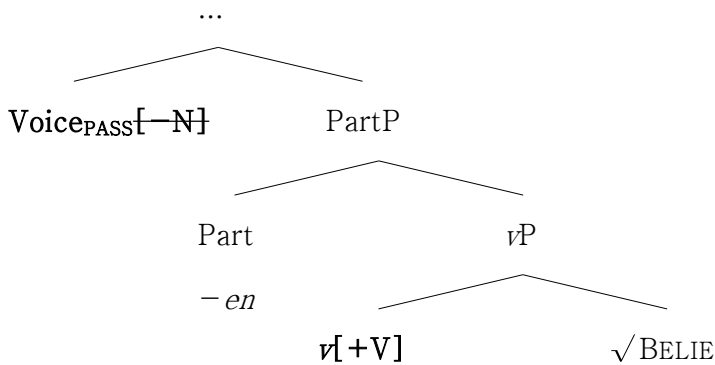
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<sup>4</sup>Panagiotidis (2011) argues that categorizers bear "distinctive LF-interpretable" categorial features [N] and [V], with no positive/negative value assigned, unlike the Chomskyan system in (3), whereby the interpretive perspectives are imposed on the roots: "sortal" for nouns and "extending-into-time" for verbs (see *ibid.* and 2015 for details).



But this raises empirical difficulties with passive participles. Suppose that in passive verbal structure like the one shown in (13) below, the root  $\sqrt{\text{BELIE}}$  combines with the categorizer  $\nu$ , which in turn merges with Part(iciple).<sup>5</sup> The fact that only adverbial, and not adjectival, modification is possible (*Mary was believed sincerely/\*sincere*) diagnoses the presence of  $\nu$ , as is usually assumed. That is, passive participles are emphatically verbal, which means that they are involved with the verbalizer  $\nu$ . Given this, if  $[-N]$  and  $[+V]$  were both located solely on the verbalizer, as in (12) above, structural Case should be expected to be available in the passive because of  $[-N]$ , contrary to fact.

(13) *Passive participle*



However, they are not full-fledged verbs due to their inability to license structural Case. This led Chomsky (1981 and 1995) to propose, as noted above, that they are “neutralized” verbs, i.e., they bear only  $[+V]$ , lacking  $[-N]$ . Given this, the standard view of DM that the verbalizer alone contains  $[-N, +V]$ , as in (12), is untenable. Therefore, the reasonable assumption would be that the verbalizer has only  $[+V]$  and does not specify  $[N]$ , as illustrated in (13). From this, the “neutralized” property of passive participles follows straightforwardly.

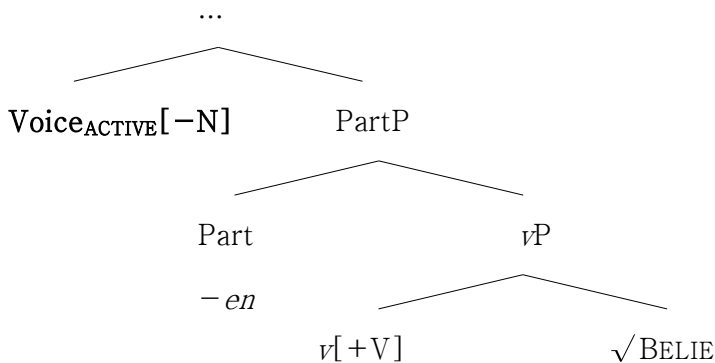
Recall, however, that unlike passive participles, structural Case is available

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<sup>5</sup> See e.g., Embick 1997, 2000, 2010 and Basilico 2008 for treatments of participles under DM.

with past/perfect participles; *they have believed her*. Under the present analysis in which the verbalizer  $v$  bears only [+V], this suggests that there needs to be another locus that contains [-N] that is responsible for Case. Let us suppose that a Voice head (Voice<sub>ACTIVE</sub>) is the one in charge: it bears [-N], as illustrated in (14). Unlike in the passive, Voice<sub>ACTIVE</sub> introduces an external argument and is also responsible for accusative Case (deriving Burzio's Generalization). Thus, it is plausible that the [-N] feature responsible for accusative Case correlates with a verbal head responsible for introducing an external argument.

(14) *Past participle*



It is important to notice that in (14), it is not the case that the categorizer alone participates in verbalization. Rather, [-N] and [+V] are each split on separate loci: Voice<sub>ACTIVE</sub>[-N] and  $v$ [+V]. Note that verbalization is associated with two loci containing [-N] and [+V] separately, and, in addition, one of the most significant consequences from this split analysis is that it adds independent support for the separation of little  $v$  and Voice (see footnote 3 above).

It should also be noted that under the current split analysis, the difference between passive and past/perfect participles is only apparent. It is ascribed to Voice, rather than to Part(iciple). Only Voice<sub>ACTIVE</sub> bears [-N] and, hence, only past/perfect participles license structural Case. Given an implicit external

theta–role in the passive, however, it is reasonable to assume that Voice<sub>PASS</sub> is syntactically present, yet distinct from Voice<sub>ACTIVE</sub> introducing an external argument (Embick 1997 and Kratzer 1996)<sup>6</sup>. From this perspective, ‘Case absorption’ in the passive is relegated to the absence of [–N] on Voice<sub>PASS</sub>. Thus, the fact that passive participles are “neutralized” verbs follows from the split of [–N, +V] into two distinct loci, with no marking of [N] in Voice<sub>PASS</sub>.

### 3.2 Interim Summary

Thus far we have seen that passive participles behave similarly to nouns and adjectives in their incapability to license structural Case, but differently in the inapplicability of *of*–insertion. This is ascribed to the split of categorial features of [N] and [V] onto distinct syntactic loci. It is of importance that in categorization of DM, the categorial features and/or values are not referred to,<sup>7</sup> and that the view that the categorizer *v* is the only locus for [–N, +V] fails to account for the unavailability of *of*–insertion in the English passive. I have presented a split analysis of categorization in which verbalization is associated with two distinct syntactic heads: *v*[+V] and Voice[–N].

Below, I show how the split analysis of verbalization put forward above works well for the difference between deverbal nominalization and verbal gerunds.

## 4. Some Consequences: Deverbal Nominalization and Verbal Gerunds

A non–trivial contrast between deverbal nominalization and verbal gerunds emerges with respect to Case licensing. As shown below, in the former,

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<sup>6</sup> See Ahn 2001 for adjectival passive participles in English.

<sup>7</sup> See e.g., Baker 2003 and Panagiotidis 2015 for a critical review of the utilities of the categorial features and/or values.

structural accusative Case is not licensed, whereas in the latter, it is available.

(14) *Deverbal nominalization*

- a. Martians' colonization **\*(of)** the Earth
- b. the Chevy workers' generation **\*(of)** the Lumina
- c. the syntactician's verification **\*(of)** the initial hypothesis

(15) *Verbal gerunds*

- a. Martians' colonizing **\*(of)** the Earth
- b. the Chevy workers' generating **\*(of)** the Lumina
- c. the syntactician's verifying **\*(of)** the initial hypothesis

Another crucial contrast between both constructions involves interpretation of possessives. Non-agentive as well as agentive possessives are possible in deverbal nominalization, as illustrated in (14) above and (16) below.

- (16) a. **last year's** mobilization of the troops  
b. **this year's** generation of the Chevy Lumina  
c. **yesterday's** verification of the initial hypothesis

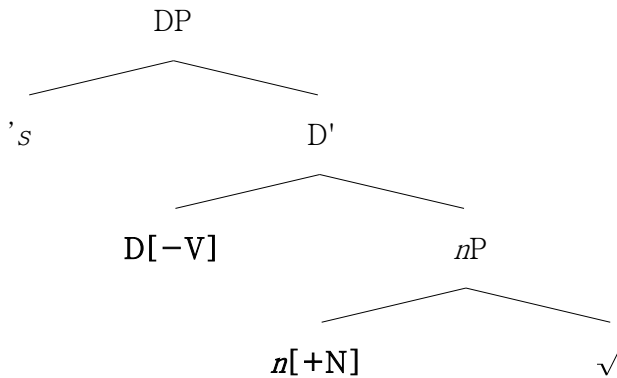
In contrast, non-agentive possessives are not licit with verbal gerunds, as shown below.

- (17) a. **\*last year's** colonizing the Earth  
b. **\*this year's** generating the Chevy Lumina  
c. **\*yesterday's** verifying the initial hypothesis

Before jumping into explanation for the observation made in (14–17), let us first consider categorization of nominalization under the current analysis put forth here since deverbal nominalization and verbal gerunds are nominal in distribution. A detailed discussion of the extension of the split analysis into nominalization is beyond the scope of the article. For present purposes, I make brief remarks concerning nominalization under the present analysis.

If the current split analysis of verbalization is on the right track, nominalization also should be involved in two separate loci: the categorizer *n* and a *f*-morpheme *c*-commanding it. Suppose, then, that the heads involved are *n* and D, as illustrated below.

(18) *Two loci for nominalization*

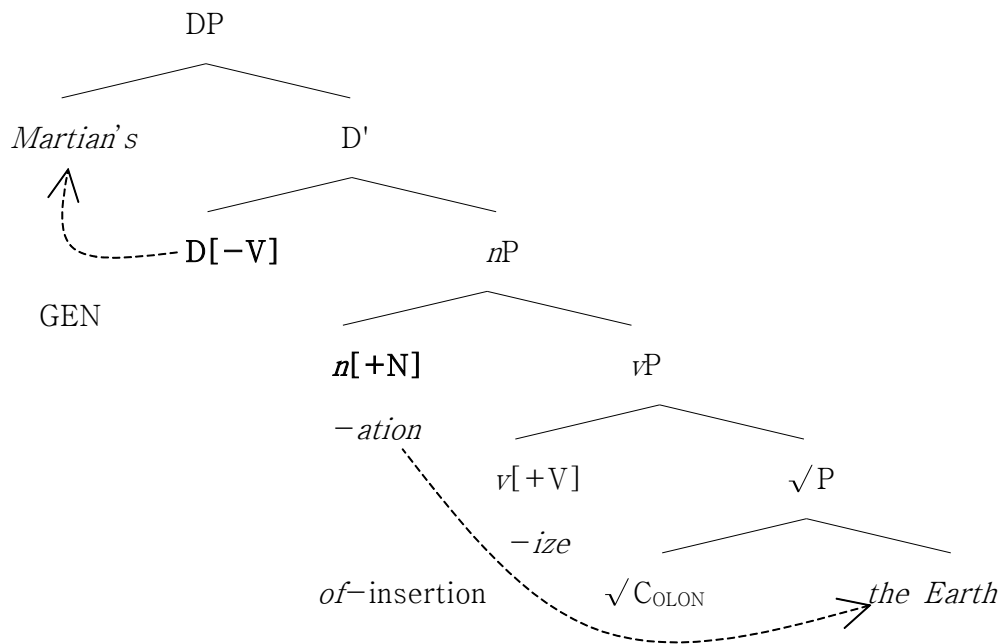


Abney (1987: 78–85) argues that the genitive Case marker in English is not a spell-out of determiner (*'s*-as-determiner) but rather a Case marker (*'s*-as-case-marker). That is, it is not in D but in SpecDP. In addition, he (*ibid.*, p. 195) proposes that D is filled by a null AGR, which licenses genitive Case. Following Abney, let us suppose that in (18), the genitive phrase occupies SpecDP, and that [+N] is in *n* and [-V] is in D. As concerns genitive Case, Chomsky (1981 and 1995) takes the Case to be a kind of ‘contextual’ (or non-structural) Case, which means that there is no syntactic licenser for the Case, but the Case at stake is licensed in a certain syntactic environment. Under (18) relying on Abney 1987, however, it is the categorial feature [-V] that is responsible for genitive Case, as [-N] is for accusative Case. Among the most important advantages of the present analysis is subsume both types of Case, accusative and genitive, under “structural” Case licensing and categorial features system drawing on [-N] or [-V], respectively. In this light, genitive Case is no longer an exception of

contextual Case, but falls under a natural class with other structural Case.

Let us now see how the current split analysis explains the contrast between deverbal nominalization and the verbal gerunds shown in (14–17). (19) is the structure for deverbal nominalization.

(19) *Voice-free structure for deverbal nominalization*<sup>8</sup>



Since it is usually assumed in DM that every piece of morphology must have a syntactic terminal node (see, e.g., Harley 2009), there is a *v* head present in the tree for those verbs in (20) due to the verbal affixes, *-ize*, *-ify*, and *-ate*.

(20)  $\sqrt{-v}$

a. colon-ize, categorize, economize, recognize

<sup>8</sup> This analysis can be extended to so-called nominal gerunds or "mixed nominalization" in Chomsky's (1970) terms, as shown below.

(i) Belushi's mixing of drugs and alcohol

- b. indic-ate, termin-ate, gener-ate, vibr-ate
- c. cul-ify, horr-ify, just-ify, cert-ify

Given this, it is reasonable to assume that deverbal nominalization includes the verbalizer in the tree. However, accusative Case is unavailable, as in shown (14) above. As such, the structure should lack Voice[-N] being responsible for the Case. From this Voice-free structure, the interpretation of agentive and non-agentive possessives is well explained as well. It is possible that the possessive relation encompasses various relations (*John's picture*–*John* can be an agent or a theme), and, therefore, the interpretation of possessives is captured independently of a Voice projection. That is to say, SpecDP can host a range of interpretations of possessives, as opposed to SpecVoice, which restricts itself solely to agentives.

In contrast, the availability of Case in verbal gerunds indicates the presence of [-N], which under the current split analysis, resides in the Voice head. Thus, the relevant structure is given in (21) below.

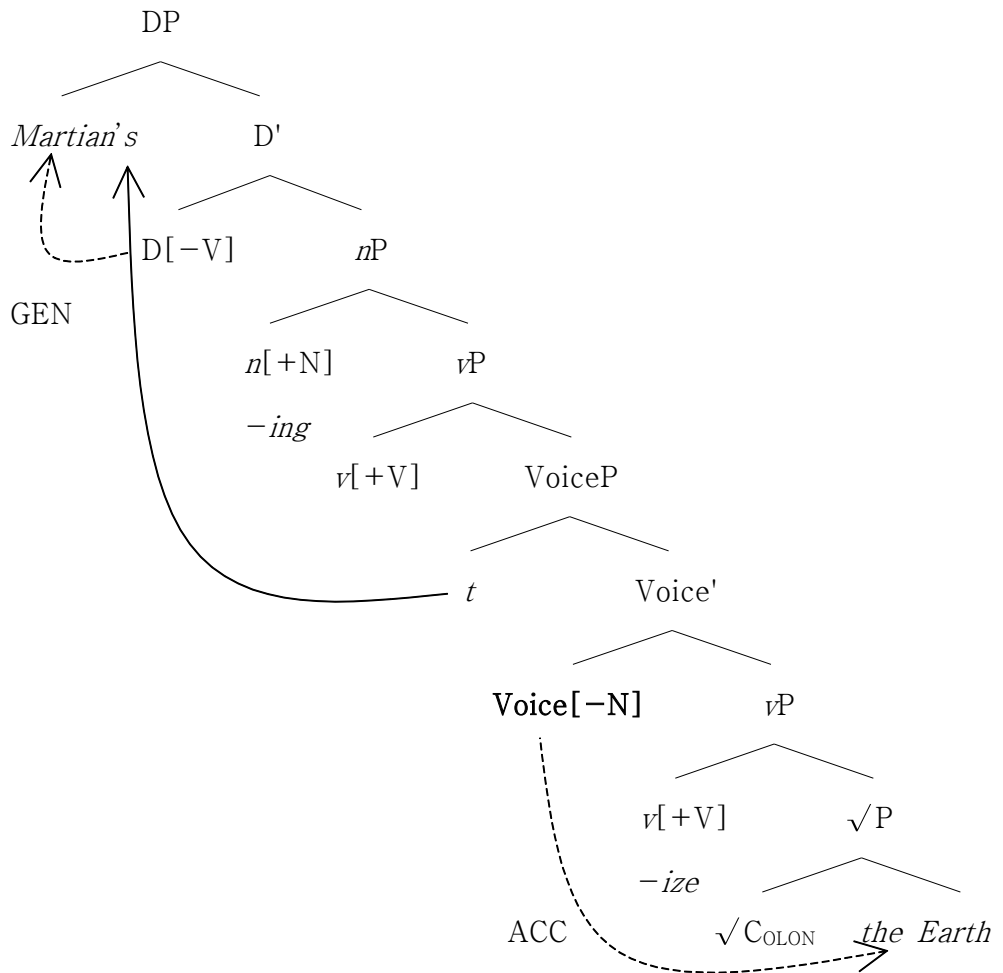
Deverbal nominalization and verbal gerunds have a *v* in the tree due to the overt verbal morphology. However, they are not patterned similarly in Case licensing (see (14–15) above). This difference, I argue, is explained by the presence/absence of Voice[-N]. In (21), the head under discussion allows us to account for Case licensing and, furthermore, the fact that only agentive possessives are possible with verbal gerunds, as in (17) above. Note that verbal gerunds differ from deverbal nominalization with regard to the presence/absence of the Voice head, which is the locus of [-N] responsible for the Case at stake and agentive interpretation of possessives.

## 5. Concluding Remarks

So far I have offered a split analysis of categorization under the DM framework in which, as summarized in (23) below, categorization is involved in

two separate loci. Under the categorial feature system in (3) above, thus, the [N] and [V] features are split onto two distinct syntactic heads; categorizers and f-morphemes. With regard to verbalization, it is proposed that [-N] is on Voice<sub>ACTIVE</sub> and [+V] is on *v*.

(21) *Structure for verbal gerund*

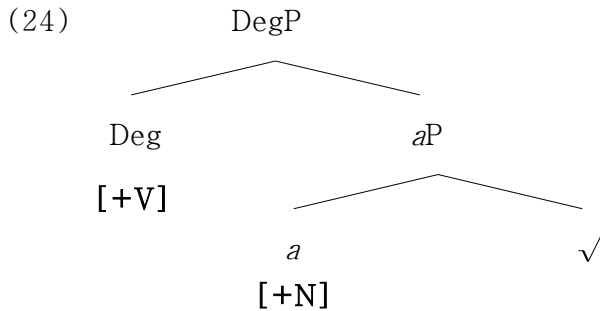


(23)

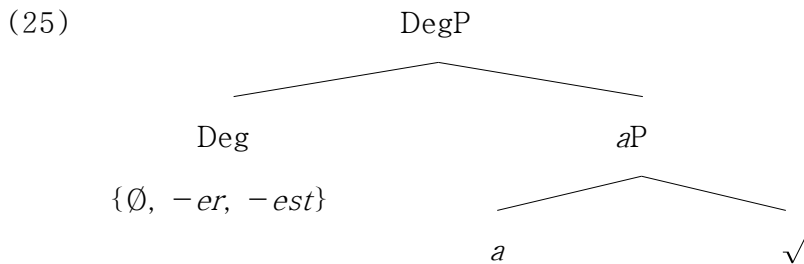
Verbs	$v[+V]$	Voice <sub>Active</sub> [-N]
Passive participles	$v[+V]$	Voice <sub>Passive</sub> [-N]



Before concluding this article, it is worth briefly entertaining the possibility of an extension of the split analysis to adjectives and prepositions. First, for adjectives, suppose that the two functional heads involving adjectivization are *a* and Degree, as illustrated below<sup>9</sup>.



As shown in (25) below, Deg is the locus for three degree forms of adjectives; positives, comparatives, and superlatives (see, e.g., von Stechow 2008, Matushansky 2013, Lee 2005). It can be expounded as zero for positives, *-er* for comparatives, and *-est* for superlatives.



As with prepositions, it remains controversial whether they are functional or lexical categories. Since, in DM, categorization is only involved with ‘lexical categories’ or l-morphemes such as verbs, nouns, and adjectives (Harley and Noyer 1997), I remain agnostic on this issue. However, it seems to be worth entertaining the possibility of the extension to prepositions. Sveninuous (2007) proposes the “Split-P hypothesis” in which *p*, analogous to Voice for

<sup>9</sup> It is an empirical question which head is associated with which feature.

verbalization, introduces external arguments (“Figure”) and P, analogous to the categorizer  $v$ , takes internal arguments (“Ground”). If his Split–P hypothesis is correct, what is relevant for the present discussion is that very likely there are two loci that participate in categorization into prepositions as well. This is a rough roadmap extending the current split analysis of categorization under DM. I leave the full development of it for future work.

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Examples in: English  
Applicable Languages: English  
Applicable Level: Tertiary

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