

A Distributed Morphology Approach to a Hybrid of a Phrase and a Word

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Abstract: So far, several perspectives on how syntax and morphology interact with each other have been proposed. This paper is based on one of the perspectives called *Constructionism*. This perspective allows us to consider that morphology is an interpretive component that receives and modifies inputs from syntax. Morphology is not a generative component; therefore, the component is not responsible for word formation. In Constructionism, the task is delegated to syntax, which also handles phrasal formation. The view of syntactic word-formation implies that no differences between words and phrases are observed. Based on this hypothesis, I will show that the fact that *the X 'n' Y construction* is a hybrid of a phrase and a word that supports the view of Constructionism. The construction in question undergoes deletion, which is one of the syntactic operations, whereas it has a naming function, which is one of the word properties. To explain this dual nature, I will adopt the framework of Distributed Morphology, one of the theoretical models of Constructionism, and argue that its phrasal property is derived from the featural similarity in the syntactic function between *and* and *'n'* and its word property is attributed to the interaction of Morphology with Encyclopedia.

Keywords: Single Engine Hypothesis, Morphology, Encyclopedia, a naming function

1. Introduction

In modern morphology, there are several views on the relationship between syntax and morphology. One view is that morphology takes an interpretive role, but not a role as another generative component. The component receives inputs from syntax and modifies the inputs when needed. I call this view of grammar as *Constructionism*, as per Fábregas and Scalise (2012). Morphologists with a Constructionist view regard syntax to be the only generative component, which means that words as well as phrases can be generated in syntax. Based on Arad (2003), let us call the view of syntax as the sole generative engine in the *Single Engine Hypothesis*.

- (1) The Single Engine Hypothesis
Syntax generates words as well as phrases.

The hypothesis implies that ideally, there are no syntactic differences observed between words and phrases. This implication is supported by works such as Harley (2009). She used phrasal structures to explain the composition of compounds like *truck driver* and *nurse shoe*. For example, *nurse shoe* contains *nP* structure, which is observed in phrasal syntax.

Input from syntax is interpreted not only by morphology, but also semantics-related components like LF. In Distributed Morphology, which is one of the models of Constructionism, the syntactic structure is sent to LF/Encyclopedia as well as morphology. LF/Encyclopedia converts the syntactic structure into some semantic representation. For example, in the case of *nurse shoe*, LF/Encyclopedia receives the two *nPs* *nurse* and *shoe* and interprets each *nP* as meaning “a person who cares sick people” and “a thing which wear on your feet,” respectively. If the semantics of a syntactic structure is interpreted by the post-syntactic component LF/Encyclopedia, as Distributed Morphology states, there should be no difference in the meaning between words and phrases.

However, this prediction is wrong with regard to a naming function. Shimamura (2014) argues that a naming function is one of the key differences between words and phrases. For instance, to refer to “a person who professionally plays judo”, you can say *judoist* or *judo expert*, but not say *an expert of*

judo. The reason behind this difference between words and phrases is that words have a naming function, but phrases do not.

The difference in naming function poses a question to Constructionism; that is, how do we explain the difference, yet maintain the Single Engine Hypothesis? In this paper, I aim to solve the problem, based on the framework of Distributed Morphology (Halle and Marantz, 1993, 1994; Embick and Noyer 2001, 2007; Embick and Marantz, 2008), one of the theoretical models of Constructionism.

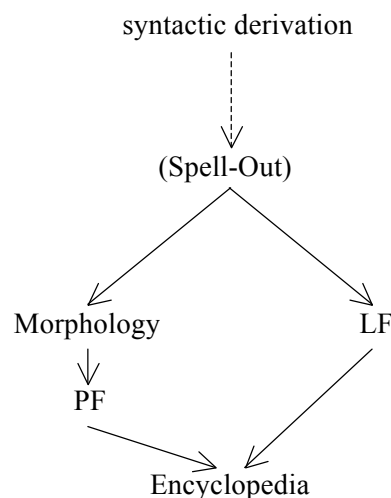
This paper is organized as follows: Section 2 briefly explains the grammatical system of Distributed Morphology. Section 3 shows that the system predicts the existence of expressions with both phrasal and compound properties. One of the candidates is the *X 'n' Y* construction, which is syntactically similar to the *X and Y* construction but semantically functions as a compound. The same section derives the phrasal properties between the two constructions from their feature composition. Furthermore, it also shows that the encyclopedic difference between *and* and *'n'* leads to the semantic difference between the two constructions. Section 4 concludes the paper.

2. The Grammatical System of Distributed Morphology

2.1 Grammar

Let us first clarify the grammatical architecture that I rely on. The architecture is schematized as the following:

(2)



(cf. Harley and Noyer, 2003; Embick and Marantz, 2008)

Distributed Morphology is a sophisticated version of a morpheme-based approach. The minimal unit is a morpheme. As already mentioned in section 1, Distributed Morphology takes a view of Constructionism; as such, words are built in syntax. Given that the minimal unit of syntax is a terminal node, a morpheme in Distributed Morphology corresponds to a terminal node. A morpheme/terminal node undergoes syntactic operations like Merge and Agree. As a result of the syntactic operations, some syntactic structure is built.

The syntactic structure is sent to Morphology and LF. The former component modifies the received structure. It changes the structure into phonological forms or exponents, as shown in section 2.2. The phonological forms undergo suprasegmental modification by PF. LF is relevant to structural semantics of the structure. For example, the semantic information of syntactic categories is related to the component.

The outputs of PF and LF reach Encyclopedia, where meanings that cannot be read off from syntactic structures are computed. For instance, *dog* is “a furry, four-legged animal that is very cute, friendly to humans, often barks, and so on.”

2.1.1 Building Blocks

In the theory, every word is built in syntax every time. Each word is composed of a set of morphemes. As mentioned above, a morpheme is a terminal node. There are two types of morphemes. Considering that syntax manipulates formal features to create some syntactic structure, Distributed Morphologists regard some morphemes to consist of formal features. According to Embick and Noyer (2007), these morphemes are called *functional morphemes*. These features are relevant to the computation of syntax, Morphology, and LF. They include formal features such as [person], [pl], and [def]. In addition to these ordinary features, there are functional morphemes with a category-assigning function. They are called *categorizers*. The primary function of categorizers is to give lexical categories such as N, V, and A to the category-neutral morphemes called *Roots*, the phonological and semantic cores of words. Roots do not have any functional features. Syntax manipulates functional morphemes and Roots to build some syntactic structure. For instance, the nominalizer *n* is merged with $\sqrt{\text{DOG}}$ to give a nominal category to the Root. Given the two types of terminal nodes, *dog* and *dogs* have the following structures.

- (3) a. $\text{dog: } [n \ \sqrt{\text{DOG}}]$
b. $\text{dogs: } [\text{NumP } [n \ \sqrt{\text{DOG}}] \text{ Num}_{[\text{pl}]}]$

The noun *dog* is composed of *n* and $\sqrt{\text{DOG}}$. If we add the number feature [pl] to the structure, *dogs* is obtained.

The two types of morphemes do not have exponents. They need to be realized somewhere. For that reason, Morphology plays the role of realizing those morphemes, as briefly mentioned in section 2.1. In addition, the component has an operation to combine several distinct morphemes together. The next section will show the details of those morphological operations.

2.2 Morphological Operations

2.2.1 Vocabulary Insertion

One of the important features of the framework is the separation of sounds from structures. Sounds are provided to a morpheme when a syntactic structure is sent to Morphology. The operation that assigns an exponent to a morpheme is called *Vocabulary Insertion*. It refers to *Vocabulary*, which is the storage of *Vocabulary Items*. A Vocabulary Item is a pair of a set of features of functional morphemes or Roots and an exponent. For instance, the Vocabulary Items that are relevant to *dog* and *dogs* are shown as follows:

- (4) a. $\sqrt{\text{DOG}} \leftrightarrow \text{dog}$
b. $n \leftrightarrow -\emptyset$
c. $[\text{pl}] \leftrightarrow -s$

For example, Vocabulary Insertion searches through Vocabulary to find Vocabulary Items referring to $\sqrt{\text{DOG}}$. After it finds the Vocabulary Item in (4a), it replaces the Root with the exponent *dog*. The same procedure applies to the other Vocabulary Items in (4b) and (4c).

2.2.2 Morphological Merger

Another way to convert a syntactic structure into a morphological structure is through *morphological merger*. Morphological merger is an operation that changes the relationship between two distinct terminal nodes. Consider the following syntactic structure and Vocabulary Items:

- (5) a. $[_{\text{XP}} [_{\text{X}} [_{\sqrt{\text{VP}}} \sqrt{\text{Y}} [\dots]]]]$
b. $\text{X} \leftrightarrow -x$
c. $\sqrt{\text{Y}} \leftrightarrow \text{Y}$

The syntactic structure in (5a) represents that the functional morpheme X is combined with \sqrt{P} including \sqrt{Y} as its head. The morphemes undergo Vocabulary Insertion at Morphology, where X is realized as the suffix *-x* and \sqrt{Y} as Y. In general, affixes including suffixes cannot stand on their own. They need free morphemes that act as hosts. The dependency relation between affixes and their hosts is established by the movement of affixes to the hosts at Morphology. In (5), the suffix *-x* moves to the host Y in order to meet its phonological need. What is important here is that the distinct morphemes are combined to be the one complex morpheme.

Siddiqi (2009) and Okubo (2017) extend morphological merger to compounding. For example, Siddiqi explains nominal compounds, such as *rats-infested*, by applying morphological merger. On the other hand, Okubo considers genitive compounds, such as *women's magazine*, to be derived at Morphology, although Okubo does not use the term. Based on their analysis, I assume that morphological merger is used to derive a compound at Morphology. I also assume with Harley (2009) that a complex morpheme including more than one Root is qualified as a compound at Morphology and Encyclopedia.^[1]

2.3 *The Interaction between Morphology and Encyclopedia*

As shown in 2.1, LF interprets a syntactic structure and gives a structural-semantic representation to Encyclopedia. Encyclopedia is based on the representation and interprets the semantics of Roots. However, as Roots have no clues for Encyclopedia to identify them, the question, then, is how Encyclopedia interprets Roots.

The problem is solved by the interaction of Morphology with Encyclopedia. As shown in 2.2.1, Roots are provided their exponents at Morphology. In addition, the exponents go to Encyclopedia, as shown in (2). This enables Encyclopedia to use the exponents of Roots to identify their semantics. For example, $\sqrt{\text{DOG}}$ is realized as *dog*, and this exponent can be used to choose its semantics.

Considering the fact that Encyclopedia refers to the exponents of Roots in order to compute their semantics, I assume that it is possible for exponents other than those of Roots to be helpful in determining encyclopedic meanings.

3. Deriving a Hybrid of a Phrase and a Word

The previous section showed that Morphology can modify syntactic structures when required. Given that a syntactic structure is separately sent to LF and Morphology, the modifying role of Morphology implies that a certain mismatch between form and meaning is allowed. One of the predictions from this is that there are expressions with a hybrid of a phrase and a word. LF interprets a syntactic structure as a phrasal unit, whereas Morphology changes it to a word unit. In addition, considering that Encyclopedia receives inputs from both LF and Morphology, I suggest that such hybrid units express meanings composed of phrasal and word meanings. In the rest of this section, I will demonstrate that English has a certain expression with phrasal and word properties.

3.1 *The X 'n' Y Construction*

3.1.1 *Syntactic Similarities between X and Y and X 'n' Y Constructions*

One of the expressions that show both phrasal and word properties is the *X 'n' Y* construction. The hybrid nature is emphasized if it is compared with the *X and Y* construction.

- (6) a. Cream and Roll
b. Cream 'n' Roll

The two expressions differ only in the connectors. In (6a), *and* links *cream* and *roll*, whereas in (6b), *'n'* links them. I will henceforth call the former type of expressions *X and Y* and the latter *X 'n' Y*. According to COBUILD^{5th}, the linker *'n'* is a reduced version of *and*. Given the fact that *and* connects

phrasal elements to produce larger phrasal elements, the definition implies the syntactic similarity between the two types. This implication is supported by two syntactic facts:

- (7) a. bananas and peaches and cream shake
- b. bananas 'n' peaches 'n' cream shake
- (8) a. bananas, peaches, and cream shake
- b. bananas peaches 'n' cream shake

The common wisdom about *X and Y* is that *and* can be used repetitively and deleted with the exception of its final manifestation, as shown in (7a) and (8a), respectively. Likewise, (7b) and (8b) respectively demonstrate that the repetitive usage of 'n' is allowed and that every 'n' with the exception of the final manifestation may be omitted. Moreover, the data in (7b) and (8b) show that the linker can connect plural noun phrases. These syntactic similarities illustrate that 'n' comes from *and* and indicate that *X 'n' Y* as well as *X and Y* have a phrasal status.

3.1.2 The Naming Function of the X 'n' Y Construction

However, there is an argument that maintains a key difference between the two expressions; that is, the construction *X 'n' Y* evokes a fascinating meaning than the construction *X and Y*. The same argument insists that *X 'n' Y* is more appealing than *X and Y*. This suggests that expressions that use 'n' functions as the name of something can attract people's attention. Shimamura (2014) argues that expressions with a naming function correspond to a compound. Based on this work, the construction *X 'n' Y* can be considered a compound. The compound status of the *X 'n' Y* construction is supported by the fact that it can be used to name various things.^[2]

- (9) a. Shop: Dog n Suds, Cat 'n' Fiddle, Sick-N-Twisted Brewery
 - b. Company: Out 'N' About, In-N-Out Burgers
 - c. Product: Dark 'n' Stormy, Big N' Tasty, Big N' Toasted
- (Okubo, 2015, p. 59)

The data in (9) show that the construction in question is used to name shops, companies, and products. For example, *Dark 'n' Stormy* is the name of a cocktail made with dark rum and ginger beer.

With respect to its way of naming something, the construction in question is different from subordinative compounds like *nurse shoe*. We can say that a nurse shoe is a type of shoes, but Cream 'n' Roll is, for example, neither a type of cream nor a type of roll. In other words, the *X 'n' Y* construction is a compound without heads (or a double-headed compound). Such double-headed compound is called coordinative compounds. The constituents of a coordinative compound are equally important from the semantic point of view. To clarify the semantics of coordinative compounds, let us take *mac 'n' cheese*, which is shown in (10), as an example.

(10)



(<http://everydaydishes.com/simple-food-recipes/stovetop-mac-n-cheese/>)

From this picture, one might say that *mac 'n' cheese* is a type of macaroni. However, it is traditionally considered as a casserole but not as macaroni or cheese. The two ingredients are definitely required for the dish. For example, if we get rid of *mac* or *cheese* from the dish *mac 'n' cheese*, we cannot call it *mac 'n' cheese*. It is no longer a type of casserole. This is in stark contrast to subordinative compounds. For example, if we get rid of *nurse* from *nurse shoe*, the remaining part still refers to a shoe. The fact

that *mac 'n' cheese* is neither a kind of macaroni nor cheese means that the dish is completely new. A new dish stimulates a person's curiosity and appetite. Therefore, a new dish induces people to think that it is delicious.^[3]

In sum, the *X 'n' Y* construction has both phrasal and word properties. Formally, it looks like a phrase; however, semantically, it looks like a compound. This is one of the form-meaning mismatches. The next section deals with this issue.

3.2 *The Derivation of the X 'n' Y Construction*

3.2.1 *The Feature Composition of And and 'N'*

In this paper, I assume that coordination semantics is encoded in the feature [AND]. This feature syntactically functions as a connector of two elements.

$$(11) \quad [_{\&P} X/XP [\& Y/YP]]$$

The denotations 'X/XP' and 'Y/YP' represent that syntax ignores the formal difference between words and phrases. The functional head & denotes the [AND] feature. The syntactic structure in (11) is sent to LF and Morphology, respectively. Given that the coordination semantics is essential for the semantics of *and* and *'n'*, these two elements might be the realizations of the feature. If this is correct, a question is raised concerning the difference in feature composition between the two elements. In Distributed Morphology, Vocabulary Items that are exactly the same do not exist because if there were such Vocabulary Items, Morphology would not be able to decide the best one. Hence, *and* and *'n'* respectively should have a different feature composition, although they are similar in the coordination function. If this is so, how do we deal with this problem?

A clue to this problem is the presence of linking elements. A linking element is defined as a morphological marker connecting constituents of a compound. Taking the compound status of the *X 'n' Y* construction into consideration, I claim that the linker is one of the linking elements. My claim might be supported by the comment of Joseph Emonds, which was cited by Scalise and Fábregas (2010, fn. 8), that it is possible to consider the linker to be a linking element. With respect to the feature contents of a linking element, Okubo (2014) regards that a linking element is the realization of the [EPP] feature. This feature is semantically empty and functions as glue to link two syntactic elements. Based on Okubo's claim, I argue that *'n'* is the realization of the [EPP] feature, but not the [AND] feature. The Vocabulary Items relevant to *and* and *'n'* are thus as follows:

$$(12) \quad \begin{array}{ll} \text{a.} & [\text{AND}] \leftrightarrow \text{and} \\ \text{b.} & [\text{EPP}] \leftrightarrow \text{'n'} \end{array}$$

The vocabulary item in (12a) shows that *and* is the realization of [AND], whereas that in (12b) shows that *'n'* is the realization of [EPP].

This subsection shows the difference in feature composition between *and* and *'n'*. Although they have featural differences, there is a similarity in their coordination function. The function of *and* is derived from the feature [AND], whereas that of *'n'* is from [EPP], which has the function of linking two syntactic elements. The two features are introduced in syntax and similar in linking function. It is this similarity that causes similar syntactic behaviors between *X and Y* and *X 'n' Y* constructions. The next section discusses the difference in the naming function between the two constructions.

3.2.2 *Deriving a Naming Function of the X 'n' Y Construction*

As shown in section 3.1.2, the two constructions in question vary in the presence or absence of a naming function; the *X 'n' Y* construction, unlike the other one, can be used to name something new. One might attribute the differentiation between the two constructions to the difference in their feature composition. The connector *'n'* includes [EPP], and it might be the crucial factor of the naming function of the *X 'n' Y* construction. However, as mentioned in the previous subsection, the feature does not carry any semantic load. Because it is invisible to LF/Encyclopedia, how do we derive the naming function of the construction?

A key factor for the naming function is the interaction of Morphology with Encyclopedia. As shown in section 2.3, the exponents of Roots are relevant to Encyclopedia in that the component consults them to interpret their meanings. The relationship between the morphemes and Encyclopedia implies that phonological shapes make semantic impacts. Given this background, I assume in this paper that the phonological difference between *and* and *'n'* causes the semantic difference between *X and Y* and *X 'n' Y* constructions. I specifically assume that the *X 'n' Y* construction, unlike the *X and Y* one, is interpreted in Encyclopedia as a compound unit semantically; that is, it is interpreted as a unit with a naming function. Let us illustrate this by using *Cream 'n' Roll* as an example. There are two different types of input to Encyclopedia: one is the input from LF, and the other is from Morphology/PF. The former input indicates that *Cream 'n' Roll* includes a coordinate structure. Both *cream* and *roll* are equally important in semantic terms. The input from Morphology/PF demonstrates that the two elements are linked by the connector *'n'*. At the component, a morphological merger occurs to combine the two nouns and the linker into one unit, which means that the resultant unit corresponds to a compound in phonological terms. Encyclopedia receives the output and starts identifying the semantics. The component consults the connector *'n'* and searches its semantic item to identify the semantics of the unit *X 'n' Y*. The linker semantically ensures the compoundhood of the construction. Unlike the construction, *and* of *X and Y* does not have such semantic effects. Hence, it cannot be used to name something.

4. Conclusions

Modern morphologists take some view when they analyze morphological phenomena. One of the adopted views is *Constructionism*. This view supports that syntax is the only generative component and that morphology just modifies the syntactic structure. Based on the framework of Distributed Morphology, one of the models of Constructionism, the present paper explained the hybrid nature of the *X 'n' Y* construction. This construction is considered as an expression with phrasal and compound natures. Syntactically, it behaves the same way as the phrasal construction *X and Y*. On the contrary, it semantically acts as a compound in that it names something new. In this paper, I aimed to explain these apparently contradicted properties of the *X 'n' Y* construction. First, the syntactic similarity between the two constructions is attributed to the similarity in the functions of [AND], which *and* realizes, and [EPP], which *'n'* realizes. The two features combine two syntactic elements. Second, the naming function of the *X 'n' Y* construction is derived from the interaction of Morphology and Encyclopedia. Encyclopedia consults the exponents that were sent from Morphology in order to determine the semantics of an expression. In this paper, I argued that there is a semantic item of *'n'* in Encyclopedia and it states that an expression with the linker semantically corresponds to a compound.

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Notes

[1] A compound is defined by Harley (2009, p. 130) as “a word-sized unit containing two or more Roots”.

[2] The linker has various forms including *n*, *'n'*, *N*, *N'*, and *'N'*. I do not know whether there are any differences among the forms.

[3] With respect to subordinative compounds like *coastal town* and *women's magazine*, Okubo (2017a, 2017b) proposes that a focus projection yields their naming functions and argues that discourse-related features are relevant to compounding in English. Specifically, his proposal is based on É. Kiss' (1998) claims on identificational focus. According to É. Kiss, identificational focus has two functions: the

function of creating a subset of something and the function of the exhaustive set of the subsets. Okubo emphasize the former function and demonstrates the relevance of it to subordinative compounds. For details, see Okubo (2017a, 2017b).

[4] However, linking elements in general are defined as meaningless linkers; therefore, they are not in line with the semantics of 'n'.

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