<table>
<thead>
<tr>
<th>某些化合物的英语用法</th>
<th>某些化合物的英语用法</th>
</tr>
</thead>
<tbody>
<tr>
<td>名称</td>
<td>名称</td>
</tr>
<tr>
<td>言語</td>
<td>言語</td>
</tr>
<tr>
<td>說明</td>
<td>說明</td>
</tr>
<tr>
<td>備考</td>
<td>備考</td>
</tr>
</tbody>
</table>
Coordinated Compounds in English and Morphological Parameter Setting*
Tatsuhiro Okubo

1. Introduction

A compound is a lexical unit that consists of two or more elements (Bauer (2001:695)). One of its characteristics is its referentiality. Although a compound is composed of more than one element, only one element is referential. According to Olsen (2000:898), the first constituent or the non-head of a compound has no referent distinct from that of the second constituent or the head. For example, the compound computer industry cannot refer to both a computer and an industry, but rather refers to an industry concerned with computers. Simply put, computer industry denotes a subtype of industries, but not a subtype of computers. In general, a constituent that is referential is identified with the head of a compound.

However, there are compounds all of whose constituents have their own referents. Bauer (2008) calls this type of compounds coordinated compounds. According to Bauer (2008:4), coordinated compounds are defined as “being a new unity made up of the whole of the two entities named.”¹ “New unity” in this statement means a new entity. A typical example of coordinated compounds is the Japanese compound oya-ko ‘parents and children’. In this compound, each constituent is referential and functions as a head. The compound is not a subtype of oya ‘parent’ or ko ‘child’. The other examples of coordinated compounds given in (1) are cited from Bauer (2008):

    b. Lezgian: kar-k’walax lit. job work ‘job, business’ (Haspelmath (1993:108))
    c. Mandarin: hòu-báo lit. thick thin ‘thickness’ (Li and Thompson (1981:81))

Each compound shown in (1) differs from each other with respect to types of the constituents. In (1a), the referent of the compound is a hypernym of its constituents. Vehicles are hypernym of a bus or a car. In (1b), each

---

* I am grateful for helpful comments to Yukio Hirose, Nobuhiro Kaga, Masaharu Shimada, Naoaki Wada, and Masaru Kanetani. I also express gratitude to Souma Mori, Ryohei Naya, and Teppei Otake for their careful reading of the entire manuscript. Needless to say, any remaining errors and shortcomings are my own.

¹ Bauer (2008) terms this type of compounds dvandvas. Instead of this term, I will use the term “coordinated compounds” for expository purposes.
constituent refers to similar things. The meaning of the first constituent *kar* ‘job’ is similar to that of the second constituent *k’walax* ‘work’. In (1c), the first constituent *hòu* ‘thick’ is an antonym of the second constituent *báo* ‘thin’. The compound as a whole denotes the scale of thickness and its constituents name the two ends of the scale. Although the meanings of the compounds in (1) are different from each other, what is important is that all of their constituents are referential.

Although coordinated compounds occur in genetically distinct languages as shown in (1), not every language allows coordinated compounds. For example, Shimada (2013) adopts Olsen’s (2001) analysis and argues that coordinated compounds are disallowed in English, contrary to Bauer (2008). Bauer claims that in English, *Austro-Hungary*, *Hewlett-Packard*, and *Aol-Time-Warner* are coordinated compounds. According to Shimada, these compounds are what Olsen (2001) calls pseudo-dvandvas. Pseudo-dvandvas have covert heads, so that the compound *Austro-Hungary* has the following structure:

(2)  

\[ \text{[Austro-Hungary [NATION]]} \]

‘[NATION]’ represents a covert head that means ‘nation’. The structure in (2) shows that *Austro-Hungary* modifies the covert head; that is, the compound means ‘a nation made of Austria and Hungary’. According to Shimada, pseudo-dvandvas are not coordinated compounds in the sense of Bauer (2008), who claims that true coordinated compounds are not embedded in a larger structure. Since the English coordinated compounds are all pseudo-dvandvas, English does not have coordinated compounds.

The fact that Japanese allows coordinated compounds, while English does not is associated with a morphological parameter on units of word formation. Taking into consideration the fact that Japanese uses a stem to create a word, while English uses a word to create a word, Shimada (2013:93-94) suggests that the presence or absence of coordinated compounds relates to the difference in units of word formation. This is summarized as in (3):

(3)  

Parametric variation for coordinated compounds

Stem-based languages like Japanese have coordinated compounds, while word-based languages like English do not have them.

---

2 For the more detailed information on Olsen’s analysis, see section 2.4.
This parameter is confirmed by the presence of coordinated compounds in Greek, which is one of the stem-based languages. As Ralli and Karasimos (2009) shows, Greek has coordinated VV compounds like *anigo-klino* lit. open-close ‘open-close’.

According to the parameter setting in (3), there are no coordinated compounds in word-based languages. However, there seem to be coordinated compounds in English:

\[(4) \text{ pick 'n' mix, rhythm 'n' blues, rock 'n' roll} \quad (OED^2)\]

Each compound in (4) consists of constituents that have the same categories. For instance, *rock 'n' roll* is made of the two nouns *rock* and *roll*. This categorial identity is necessary but not sufficient for identifying the compounds in (4) with coordinated compounds. What is more important is that the constituents of each compound in (4) have equal status with respect to headedness. For example, Collins COBUILD Advanced Learner’s English Dictionary 5th edition (*COBUILD*\(^5\)) defines the compound *rhythm 'n' blues* as ‘a style of popular music developed in the 1940’s from blues music, but using electrically amplified instruments’. This definition shows that *rhythm 'n' blues* is a new kind of music, but not a sub-type of blues as well as rhythm. For this reason, it seems to me that the compounds in (4) are coordinated compounds. Henceforth, I will call a coordinated compound that has the element ‘*n*’ “compounds of the *rock 'n' roll* type”.

It is not the case that the presence of the compounds in (4) immediately rejects the parameter in (3). Comparing the compounds in (1) with those in (4), it is found that the latter require the additional element ‘*n*’ between constituents. This element does not carry any meanings, as clearly shown in the meaning of *rhythm 'n' blues*. It only links *rhythm* with *blues* to form a compound. Ralli (2008) calls semantically empty elements that have this function linking elements. Considering that the compounds in (4), unlike those in (1), require the linking element, I would like to revise the parameter in (3) in the following way:

\[(5) \text{ Parametric variation for coordinated compounds (revised)}\]

Stem-based languages like Japanese create coordinated compounds without the aid of linking elements, while word-based languages like

---

3 According to Collins COBUILD Advanced Learner’s English Dictionary 5th edition, all of the expressions in (4) are compounds.
English have to use linking elements in order to create coordinated compounds.

This paper aims to prove this parameter by showing that compounds of the rock 'n' roll type are coordinated compounds in the sense of Bauer (2008).

The organization of this paper is as follows. Section 2 introduces the data and makes some comments on them. This section shows that the element 'n' stems from the conjunction and, and proves the wordhood of expressions made of two nouns and the element 'n'. Section 3 proves that the expressions are coordinated compounds in Bauer’s (2008) sense. Based on the discussion in section 3, section 4 aims to revise the morphological parameter proposed by Shimada (2013) and give two pieces of evidence for the revised parameter. Section 5 shows that the present discussion about coordinated compounds has implications for the framework of Distributed Morphology (Halle and Marantz (1993, 1994), Marantz (2001), Embick and Marantz (2008)). Section 6 concludes the paper.

2. Comments on Compounds of the Rock 'n' Roll Type

2.1. The Origin of 'n'

As mentioned in the previous section, the element 'n' of compounds of rock 'n' roll type functions as a linking element. One of the characteristics of the linking element is its formal recycled status; that is, a linking element borrows its form from another element. For example, the linking element -'s of woman’s magazine comes from the genitive case -'s. Moreover, parks department has the linking element -s, which stems from the plural inflection -s. Given the function of 'n' as a linking element, the same holds true for 'n'. Its form must be identical with another element. What is useful to consider this point is the definition of 'n' in OED². According to OED², 'n' is a contracted form of the conjunction and. This statement is supported by the fact that in COBUILD⁵, rock 'n' roll and rhythm 'n' blues are spelled as rock and roll and rhythm and blues, respectively.

The fact that 'n' comes from and is related to one of the other characteristics of the linking element; namely, the semantically empty property of linking elements. This is clearly shown in the German compound Liebes lied ‘love song’. In this compound, -s appears to be a plural or possessive morpheme, as is clear in the examples die Auto-s ‘the car-plural’ and meines Bruder-s ‘my brother-genitive’. However, Bauer (2009:346) points out that it is neither a plural nor a possessive marker because the plural form of Liebe is...
Liebe-n, while it is inflected as Liebe-ø for the possessive. For this reason, Bauer regards -s as a semantically empty linking element. Given this background, we have to consider whether 'n' is semantically empty or not. As we observed in the first paragraph of this section, 'n' is a contracted form of and. Note here that and is a functional item. The conventional wisdom about the functional item is that its semantic content is empty, in contrast to that of the lexical item. This means that 'n', which is associated with and, must be semantically empty. Its semantically empty nature is found in the meaning of rock 'n' roll. COBUILD\textsuperscript{5} defines rock 'n' roll as ‘a kind of popular music in the 1950s which has a strong beat and is played on electrical instruments’. It is clear from this definition that rock 'n' roll is not ‘rocking and rolling’ but ‘a kind of music’. As is shown in the meaning of rock 'n' roll, 'n' does not indeed carry any meanings.

2.2. Productivity

According to OED\textsuperscript{2}, compounds of the rock 'n' roll type are often used in commercial contexts, as shown in (6):\textsuperscript{4}

(6) 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

In (6), Dog n Suds, Cat 'n' Fiddle, and Sick-N-Twisted Brewery refer to the names of shops, Out 'N' About and In-N-Out Burgers the names of companies, and Dark 'n' Stormy, Big N' Tasty, and Big N' Toasted the names of products. The fact that compounds of the rock 'n' roll type are used to name things seems to imply the lexicalized status of the compounds. If compounds of the rock 'n' roll type were lexicalized expressions, their productivity might be very low.

However, this is not true, given that we can find many instances that seem to be compounds of the rock 'n' roll type in several websites. One sub-type of them is shown in (7).\textsuperscript{5, 6}

\textsuperscript{4} The element 'n' shows some variations including N, 'n, n', and n. Although these variations might be allomorphs of 'n', I will not pursue its implications here.
\textsuperscript{5} All examples are collected from http://allrecipes.com.
\textsuperscript{6} In section 2.3, I will justify the word status of expressions like ones in (7). I will use
(7) **Dish or Meal**
roasted beets ‘n’ sweets, Charleston shrimp ‘n’ gravy, steak N gravy,
easy mac ‘n’ cheese, baked peaches ‘n’ cream, eggs n’ fries, sausage ‘n’ kraut, guacamole ‘n’ cheese, oysters ‘n’ bacon

These expressions are collected from websites where there are recipes including pictures and directions. The total numbers of them are 155. They denote names of dishes or meals made out of food stuffs that constituents of the expressions mean. For example, *steak N gravy* refers to a dish or a meal cooked by using a steak and a gravy sauce (i.e. a steak with a gravy sauce). It is clear that the expressions are coordinated compounds in semantic terms. Recall that coordinated compounds denote “a new unity made up of the whole of the two entities named” (Bauer (2008:4)). Given this definition, *steak N gravy* can be regarded as a coordinated compound, because it denotes a new dish made with a steak and a gravy sauce.

### 2.3. The Word Status of Compounds of the Rock ‘n’ Roll Type

As mentioned in section 1, the most important criterion for coordinated compounds is a double-headed property. Compounds of *rock ‘n’ roll* type thus have to be double-headed if they are real coordinated compounds. In fact, expressions in (7) show that their constituents are referential. For example, *steak N gravy* refers to a steak with a gravy sauce, which means that the constituents of the compound are referential. It is clear that the expressions in (7) can be regarded as coordinated compounds in semantic terms.

However, one might argue against it by claiming that the expressions are phrases rather than compounds; a phrase derived by merging two nouns with the conjunction *and*. To confirm the compound-hood of the expressions, we need some criteria for determining whether the expressions in (7) are compounds or "expressions” instead of “compounds” to refer to them in this subsection.


8 According to my informant, the element ‘n’ of the expressions in (7) is a contracted form of *and*. This insight implies that the expressions are compounds of the *rock ‘n’ roll* type. For the justification of their word status in formal terms, see section 3.

9 The element ‘n’ of the expressions in (7) might be semantically empty, because it allows a wider range of interpretations than *and*. If it had the same meaning as *and*, all of the expressions in (7) would mean ‘X and Y’. This holds true for some compounds, but other compounds show different meanings from them. For example, *oysters ‘n’ bacon* refers to ‘oysters wrapped in bacon,’ but not ‘oysters and bacon,’ which indicates that ‘n’ does not convey any meaning corresponding to that of *and*.
not. One of the criteria is syntactic agreement. If the expressions are compounds, then they must be single complex words. A single complex word in subject position agrees with a verb and as a result of this agreement, the verb is inflected for singular, as is clearly shown in the contrast (8a) and (8b):

(8) a. Hatred and evil are their opposite. (COBUILD5)
b. Still no tunes, but a straw poll reveals that the audience is American and that road The Oh Do I Have To are big on the college circuit. (COBUILD5)

In (8a), hatred and evil is a coordinated phrase composed of the referential nouns hatred and evil, which agrees with a copular verb. As a result of this agreement, the verb is inflected for plural. Straw poll in (8b), in contrast, is a nominal compound whose non-head straw has no referentiality, and agrees with the verb reveal. As a result of this agreement, the verb is inflected for singular.

If the expressions in (7) had the same status as the phrase in (8a), they would have to be inflected for plural. However, this is not the case, as shown in (9):

(9) a. Beans ’n Greens is a simple and hearty dish that cooks in no time thanks to the pressure cooker. (http://www.recipelion.com/Pressure-Cooker-Recipes/Beans-n-Greens#5usHBF0dfYwy6u8b.99)
b. Paprika Potatoes ’n’ Beans is a side dish that serves 4. (https://spoonacular.com/Paprika-Potatoes-n-Beans-379215)
c. Beans ’n franks is a quintessentially American dish in which hot dogs are cut up and cooked in the same sauce used to make baked beans. (http://eatmywords365.com/tag/national-beans-n-franks-day/)

As shown in (9), the subjects agree with the verbs and these verbs are inflected for singular, which means that the subjects have the status of compounds.10, 11

10 According to my informant, many expressions like the ones in (7) agree with a verb in plural. In his idiolect, beans-n-franks takes a plural form of a verb. One possibility is that there is a plural morpheme in the underlying structure and the compound as a whole is plural. However, the morpheme is deleted because of haplology. Thanks to Ryohei Naya for pointing out this possibility.

11 Olsen (2001:304) points out that a sub-type of the coordinated phrases agrees in singular with a verb, as shown in (i):
2.4. **Classification**

In this subsection, I introduce compounds of the *rock 'n' roll* type that I collected and classify them into three types in terms of the presence or absence of modifiers and ones embedded in a larger structure.

First, the compounds without modifiers are shown in (10):

(10) steak N gravy, eggs n' fries, sausage 'n kraut, guacamole 'n cheese, bubble 'n' squeak, oysters 'n' bacon, beans-n-franks, greens 'n' beans, steak 'n' bake, cookies 'n' yogurt, catfish 'n' chips, eggs 'n' taters, spaghetti 'n' meatballs, peaches 'n' cream, asparagus 'n' vinaigrette, ham 'n' cheese melts, sausage 'n' sauerkraut, chicken N biscuits, chicken 'n' chips, beans 'n' greens, blueberries 'n' dumplings, chops 'n' kraut, spaghetti 'n' meat sauce, sweet corn 'n' peppers, chicken 'n' peppers, black-eyed peas 'n' pasta

This type of compounds is the simplest one of the three types in that they are formed by merging nouns alone. For example, *steak N gravy* is composed of the two nouns *steak* and *gravy*. The numbers of constituents of such compounds are not limited to just two. There are compounds composed of three constituents, as shown in (11):

(11) paprika potatoes 'n' beans, rosemary peas 'N' squash, veggie ham 'n' eggs, lemon chicken 'n' rice, ramen pork 'n' peppers, nacho mac 'n' cheese, mushroom steak 'n' linguine, Swiss angel hair 'n' asparagus

---

(i) a. The owner and (the) editor of the Daily Post were members of the club.
   b. The owner and (the) editor of the Daily Post was members of the club.

In (ia), *the owner* and *the editor* are referential, so that the whole noun phrase functions as plural. In contrast, the same expression in (ib) is singular, because *the owner* and *the editor* together refer to one entity. I am not sure whether the data in (ib) is related to the data in (9). However, it is clear from the comparison of the two that the expressions in (9) cannot be formed in the same way as that in (ib) because the former can agree in singular with a verb although all of their constituents are referential. One possibility to explain the difference between (9) and (ib) is that unlike the compounds in (9), the coordinated phrase in (ib) has phonologically null nouns like *ONE* and it modifies them, as shown in (ii).

(ii) [ONE [the owner and the editor]]

The structure in (ii) is interpreted as ‘one who is the owner and the editor’. In the structure, *ONE* is the head, so that a verb must agree with the empty noun. For this reason, the copular verb in (ib) is singular.
For example, *paprika potatoes 'n' beans* consists of the three nouns *paprika*, *potatoes*, and *beans*.

Second, the compounds with modifiers are listed in (12):

(12) roasted beets 'n' sweets, Charleston shrimp 'n' gravy, easy mac 'n' cheese, baked peaches 'n' cream, grandma's chicken 'n' stuffing, mustard greens 'n' beans, Almanzo's fried apples N onions, coconut rice n' peas, sauteed greens n' shrooms, creamy beef 'n' noodles, baked beans n' bacon, sweet-and-sour noodles 'n' pork, hot ham N cheese, grilled peaches 'n' berries, buttery carrots 'n' onions, creamy potatoes 'n' peas, green beans 'n' celery, Easter bunnies 'n' chicks, julienned carrots 'N' onion, baby carrots 'n' broccoli, roasted peppers 'n' cauliflower, quicker barbecued chicken 'n' rice, country pork 'n' sauerkraut, creamy sprouts N noodles, spicy pecans N cranberries, snappy peas 'n' mushrooms

In this type of compounds, there are modifiers observed in front of them. For example, *roasted* of the compound *roasted beets 'n' sweets* modifies the compound *beets 'n' sweets*.

Third, the compounds embedded in the larger structure are given in (13):

(13) rise 'n shine juice, fruit 'n' honey granola, pork-n-beans cake, peaches 'N cream pie, ham 'n Swiss biscuits, his-n-hers cocktails, sweet 'N sour meatballs, great 'n easy gazpacho, fruit n' nut sandwich, cookies 'n' creme fudge, blueberries n' cheese squares, cool 'n easy pie, pretty peaches 'n' pound cake, blue cheese 'n' fruit tossed salad, bacon 'n' onion carrots, peaches n' cream mousse pie

In this type, coordinated parts are embedded in larger compounds. For example, *fruit 'n' honey granola* consists of the non-head *fruit 'n' honey* and the head *granola*. In this paper, I will omit this type even if the non-heads themselves have coordinated structure and, moreover, the constituents of the non-heads seem to be referential. The reason is that coordinated compounds may not be embedded in a larger structure, as Olsen (2001) and Shimada (2013) point out.

As mentioned in section 1, Olsen (2001) argues that the constituents of the non-heads of compounds like *Tennessee-Arkansas game* are referential because of their heads. For instance, the head *game* of *Tennessee-Arkansas game* is a relational nominal that requires its arguments to stand in the 'between' relation.
to the head. Due to this head, the interpretation ‘a game between Tennessee and Arkansas’ is obtained. According to Olsen, this type of compounds is not real coordinated compounds.

Given Olsen’s analysis, it turns out that the compounds in (13) are not real coordinated compounds. This is because the compounds have heads, and these heads function as relational nominals requiring their constituents to stand in the ‘made of’ relation. For example, *Fruit 'n' Honey Granola* is ‘a granola made of fruit and honey.’ The referentiality of *Fruit 'n’ Honey* of the compound is obtained by the function of the head *Granola*, which means that *Fruit 'n’ Honey* is a kind of pseudo-dvandvas. The same holds true for the other compounds in (13). This is the reason why I omit compounds listed in (13).

To summarize, examples of the first and second classes are shown in the following table.

<table>
<thead>
<tr>
<th>EXAMPLE</th>
<th>REFERENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steak N Gravy</td>
<td>a steak with a gravy sauce</td>
</tr>
<tr>
<td>Eggs n’ Fries</td>
<td>French fries with scrambled egg</td>
</tr>
<tr>
<td>Sausage ’n’ Kraut</td>
<td>sausage slices in sauerkraut</td>
</tr>
<tr>
<td>Guacamole ’n’ Cheese</td>
<td>guacamole with cheese</td>
</tr>
<tr>
<td>Bubble ’n’ Squeak</td>
<td>a mixture of cold cooked cabbage and potato</td>
</tr>
<tr>
<td>Oysters ’n’ Bacon</td>
<td>oysters wrapped in bacon</td>
</tr>
<tr>
<td>Beans-n-Franks</td>
<td>baked beans and sliced frankfurters</td>
</tr>
<tr>
<td>Greens ’n’ beans</td>
<td>a salad of greens and beans</td>
</tr>
<tr>
<td>steak ’n’ bake</td>
<td>a baked potato and slices of sirloin steak</td>
</tr>
<tr>
<td>cookies ’n’ yogurt</td>
<td>creamy fruit yogurt and chocolate chip cookies topped with a mixture of berries</td>
</tr>
<tr>
<td>Roasted Beets ’n’ Sweets</td>
<td>roasted beets and roasted sweet potatoes and roasted sweet onions</td>
</tr>
<tr>
<td>Baked Peaches ’n’ Cream</td>
<td>baked peaches with vanilla ice cream</td>
</tr>
<tr>
<td>Sauteed greens n’ shrooms</td>
<td>sautéed greens and sautéed mushrooms</td>
</tr>
<tr>
<td>creamy beef ’n’ noodles</td>
<td>sautéed beef with cream and noodles</td>
</tr>
<tr>
<td>baked beans n’ bacon</td>
<td>baked beans and baked bacon</td>
</tr>
<tr>
<td>sweet-and-sour noodles ’n’ pork</td>
<td>noodles and pork sautéed with sweet-and-sour sauce</td>
</tr>
<tr>
<td>Hot Ham N Cheese</td>
<td>baked ham and cheese sandwiches</td>
</tr>
</tbody>
</table>
The number of each class’s examples are 10. Each class is separated by the blank line. The upper section contains compounds made of two nouns, while the lower section contains compounds made of adjectives and nominal compounds. What the compounds refer to are described in the right column. The next section proves the status of the compounds listed in (14) as coordinated compounds.

3. **The Double-Headed Nature of Compounds of the Rock ’n’ Roll Type**

As discussed in the previous section, the compounds listed in (14) are double-headed in semantic terms. However, one might argue against their double-headed status because there are no formal tests to confirm it. In this section, I will conduct two formal tests; one is modification by adjectives and the other is the visibility of each constituents to proforms.

3.1. *Modification by Adjectives*

First, I would like to show that each constituent of the coordinated compound can be modified by adjectives in front of the compound. Let us take the Japanese coordinated compound *oyako* as a typical example of it:

(15) **ririsii oyako** lit. manly parent-child ‘manly parent and manly child’

It is well known that constituents of compounds do not allow modifications by adjectives. For example, we cannot say *expensive watch maker* ‘maker of expensive watches’ (Giegerich (2009:183)). By contrast, the coordinated compound *oyako* in (15) allows the modification of the internal constituent *oya*. Internal modifications are one of the characteristics of the coordinated compound.

Based on this formal criterion, compounds of the *rock ’n’ roll* type in question have to allow internal modifications if they are coordinated compounds. Their status of coordinated-compound-hood is justified by the following data:

(16) **creamy potatoes ’n’ peas**

According to my informant, the adjective *creamy* can modify each constituent,
so that the compound refers to ‘creamy potatoes and creamy peas’.

3.2. The Visibility of Each Constituent to Proforms

Second, I would like to show that each constituent of a compound in question is referential, by using proforms. According to Kageyama (2009:515), one of the characteristics of coordinated compounds is that their constituents can function as antecedents of anaphors, as shown in (17).\[12\]

\[(17) \text{Huu}-\text{hu}-\text{wa} \tagai_{i,j}-\text{o} \quad \text{hagemasita.} \]

\[[\text{husband-wife}]-\text{topic} \quad \text{each.other}-\text{accusative} \quad \text{cheered} \]

‘The husband and wife cheered each other up.’

Kageyama claims that each constituent of the Japanese coordinated compound *huuhu* becomes an antecedent of the anaphor *tagai*, which requires two referents.

Bearing this test in mind, let us confirm the status of a compound in question as a coordinated compound by the following data:

\[(18) \]

\[a. \quad \text{To make a delicious steak}_i \ 'n' \text{ gravy}_j, \text{ the quality of both}_{i,j} \text{ must be as good as possible.} \]

\[b. \quad \text{To make a delicious roasted beets}_i \ 'n' \text{ sweets}_j, \text{ the quality of both}_{i,j} \text{ must be as good as possible.} \]

What I intend to determine for the examples in (18) is whether the proform *both* refers to both constituents of the compounds, that is, whether *both* in (18a) refers to *steak* and *gravy*, and that in (18b) *roasted beets* and *sweets*. If the sentences in (18) are acceptable, it means that *steak N gravy* and *roasted beets ’n’ sweets* are coordinated compounds. My informant judges the sentences to be acceptable, which means that the compounds are coordinated compounds. Moreover, he mentions that the anaphor *each* can also refer to all of the constituents of the compounds although the sentences become a bit strange. This judgement also supports the view of compounds in question as coordinated compounds.\[13\]

\[12\] There are no indices in Kageyama’s original example. I use them for expository purposes.

\[13\] Given the presence of various types of coordinated compounds as shown in (1), Ryohei Naya points out the possibility that the test in question is applied only to the subtype of coordinated compounds. To pursue this possibility, more research on compounds of the *rock ’n’ roll* type is needed, so that I just mention it here.
In sum, we have observed that the compounds in (14) are coordinated compounds in Bauer’s (2008) sense. Bauer (2008:2) suggests that coordinated compounds are defined as “being a new unity made up of the whole of the two entities named.” The compounds in question can be regarded as a new unity because they denote names of dishes or meals. Bauer (2008:4) also suggests that one of the characteristics of coordinated compounds is “that the two elements have equal standing in respect to headedness, at least in semantic terms.” This characteristic is found in the compounds of the rock ’n’ roll type. The constituents of the compounds listed in (14) are referential, which means that the compounds are coordinated compounds in semantic terms. Moreover, this section has revealed that the compounds are coordinated compounds in formal terms, by showing that each constituent of a coordinated compound can be modified by an adjective and can function as an antecedent of a proform.

4. A Morphological Parameter on Units of Word Formation and Compounds of the Rock ’n’ Roll Type

In section 1, I reviewed Shimada (2013), who argues that English, unlike Japanese, does not have coordinated compounds. Shimada’s claim is based on the morphological parameter in (19), which is repeated from (3):

(19) Parametric variation for coordinated compounds
    Stem-based languages like Japanese have coordinated compounds, while word-based languages like English do not have them.

However, it was clear from the discussion in section 3 that English has coordinated compounds if the linking element ‘n’ is used. Considering this fact, I would like to revise the formulation in (19), as shown in (20), repeated from (5):

(20) Parametric variation for coordinated compounds (revised)
    Stem-based languages like Japanese create coordinated compounds without the aid of linking elements, while word-based languages like English have to use linking elements in order to create coordinated compounds.

According to this formulation, word-based languages as well as stem-based
languages can create coordinated compounds, if linking elements are used.¹⁴

The justification of this morphological parameter is beyond the scope of this short paper. However, there are languages that support the presence of the parameter. One of them is Portuguese. Portuguese belongs to word-based languages. According to Rio-Torto and Ribeiro (2009:281), it has two types of coordinated compounds: one is a coordinated compound with the explicit copulative operator *e*, as in (21a), and the other is a coordinated compound without the operator, as in (21b). The relevant data are given in (21):

(21)  a. sal e pementa lit. salt and pepper ‘salt-and-pepper’  
     b. trabalhador-estudante lit. worker student ‘student worker’  
     (Rio-Torto and Ribeiro (2009:281))

In (21a), the copulative operator links *sal* with *pementa*, forming the coordinated compound *sal e pementa*. By contrast, *trabalhador-estudante* in (21b) does not have the operator. The compound in (21b) appears to be a counterexample to the parameter in (20) because it appears to be a coordinated compound without a linking element, which may not be allowed in word-based languages. However, it is clear from the meaning of the compound that the compound refers to a person who is a student and a worker, but does not refer to two persons who are a worker or a student, respectively. By contrast, the compound in (21a) denotes a condiment made of salt and pepper. It corresponds to the coordinated compound *sio-kosyou* ‘salt and pepper’ in Japanese. The fact that the same expression as that in (21) exists in genetically different stem-based languages like Japanese illustrates that the compound in (21a) is a coordinated compound. Assuming that this is correct, I would like to regard the compound as a coordinated compound. Its presence is correctly predicted by the morphological parameter in (20), because Portuguese is one of the word-based languages (cf. Rio-Torto and Ribeiro (2009)).

I would like to close this section by showing that Russian, one of the languages that are both stem-based and word-based, creates coordinated compounds made of two words without any additional elements, while the

¹⁴ My informant points out that *creamy* of *creamy potatoes* *’n’* *peas* can modify only the first constituent *potatoes*. Note that the Japanese coordinated compound *oyako* does not allow the modification of *oya* alone. The difference between the two languages might be related to the presence or absence of linking elements. Japanese can productively create coordinated compounds without using linking elements, while English uses linking elements to form coordinated compounds. The difference in modification between the two languages hence provides indirect evidence for the parameter variation in (20). However, it is not clear at present what kind of mechanisms yields the difference in modifications.
language uses an additional element that corresponds to *and* in English to form a coordinated compounds made of two words. According to Benigni and Masini (2009:180), the following compounds are coordinated compounds in Russian:

\begin{align*}
(22) & \quad \text{a. kuplja-prodaža lit. buying-selling ‘buying and selling/contract of sale’} \\
& \quad \text{b. druž’ja-prijatelji lit. friends-friends ‘friends’}
\end{align*}

The referent of the compound in (22a) stands in a superordinate relationship to the meaning of the parts, while the compound in (22b) consists of two synonymous nouns. Russian belongs to stem-based languages, because it usually uses stems to create compounds. Thus, the parameter in (20) correctly predicts that the language can create coordinated compounds without using any linking element.

Although the presence of coordinated compounds without linking elements indicates that Russian is one of the stem-based languages, there is a coordinated compound with the conjunction marker *и*, which indicates the word-based status of Russian, as shown in (23):

\begin{align*}
(23) & \quad \text{plot’i krov’ lit. flesh-and-blood ‘flesh and blood’} \\
& \quad (\text{Benigni and Masini (2009:177)})
\end{align*}

This compound has the conjunction *и* that corresponds to *and* in English. Although Benigni and Masini do not mention the label of the compound, I would like to consider it to be a coordinated compound, given that the compound appears to correspond to the coordinated compound *ti-niku* ‘blood and flesh’ in Japanese.

What the compounds in (22) and (23) imply is that Russian has two ways to create coordinated compounds. One is direct attachment of two words, as shown in (22). The other is using a conjunction that connects two words, as shown in (23). What is peculiar to the Russian coordinated compounds involved is that their constituents are words, but not stems. At the present stage, I have no idea of why words are used in creating coordinated compounds. However, it is clear that Russian can form coordinated compounds by using a conjunction, since it is a word-based language as well as a stem-based language. Presumably, the hybrid nature of the language is responsible for coordinated compounds made of words.
5. Implications for Distributed Morphology

So far, we have observed that English has coordinated compounds and the morphological parameter in (20) relates to the presence or absence of coordinated compounds in languages. We also have observed that constituents of compounds of the rock 'n' roll type in question are referential, so that we can refer to them by using proforms like both, as shown in (24a):

(24)  a. To make a delicious steak, N gravy, the quality of both must be as good as possible. (= (18a))

b. Ann and I write to each other every week. (Swan (2005:171))

This behavior of the coordinated compound is reminiscent of a coordinated phrase. It is well known that conjuncts of a coordinated phrase are referential and can then be coreferential with proforms, as shown in (24b). This similarity between the two constructions suggests that coordinated compounds such as (24a) have phrasal status in addition to word status. The question is how to explain the double function of compounds of the rock 'n' roll type. In this section, I will show that the present discussion about coordinated compounds has implications for the framework of Distributed Morphology (Halle and Marantz (1993, 1994), Marantz (2001), Embick and Marantz (2008)).

5.1. Coordinated Compounds and the Single Engine Hypothesis

In section 3, we observed that compounds of the rock 'n' roll type are coordinated compounds. This was corroborated in semantic and formal terms. In formal terms, each constituent of the compound is referential, as shown in (24a). As discussed in section 3.2, the proform both can refer to the two constituents of each compound in (24a). This fact shows that constituents of a coordinated compound are a Determiner Phrase (DP). If so, a coordinated compound is formed by merging two DPs. Taking this into account, the presence of coordinated compounds cannot be predicted in terms of an approach viewing that word formation is performed in a component different from syntax, which is called Lexicalism. In Lexicalism, a word is formed in the word formation component, while a phrase is formed in syntax. Hence, a compound, a sub-type of a word, is created in the word formation component. If this approach were correct, there would be no compounds composed of DPs. However, this is not the case. An immediate question is what a mechanism allowing coordinated compounds is.

The fact that compounds of the rock 'n' roll type show syntactic behaviors
supports the Single Engine Hypothesis, one of the leading hypotheses in Distributed Morphology. The hypothesis states that syntax is the only generative component and not only phrases but also words are then created in the same way (cf. Arad (2003), Embick and Noyer (2007)). According to this hypothesis, compounds are created in syntax, so that compounds showing syntactic behaviors are theoretically predicted. One of such compounds is a coordinated compound. DPs are created in syntax. They must be allowed to be constituents of a compound if compounds are formed in syntax. The presence of coordinated compounds supports the Single Engine Hypothesis.

The Single Engine Hypothesis leads us to assume that both words and phrases are formed in syntax. This assumption raises a question of how we distinguish a word from a phrase. In the next subsection, I will deal with this problem in relation to the structure of compounds of the rock ’n’ roll type.

5.2. The Structure of Compounds of the Rock ’n’ Roll Type

5.2.1. The Structural Parallelism between Coordinated Compounds and Coordinated Phrases

We have observed in sections 2 and 3 that coordinated compounds in question and coordinated phrases (&Ps) similarly behave in two points. One is that the constituents of the two expressions are DPs and the other is that the two expressions include conjunction markers. In this paper, considering these similarities, I suggest that the two expressions have coordinated structure, as shown in (25).

(25)

\[
\begin{array}{c}
\&P \\
\& \ \& \\
\& \ \& \ \& \\
\& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\
\& \ \& \ \& \ \& \ \& \\

\end{array}
\]

The structure is derived as follows. First, the functional head &, a source of and or ’n’, merges with DP_2 to form &’. The resultant structure &’ is merged with DP_1 to form &P. Let us show sample structures of the owner and (the) editor and steak N gravy, respectively.
As clearly shown in (26b) and (27b), there are no differences between their structures. If so, the question is what a mechanism that distinguishes a compound from a phrase is. This problem will be solved in the following subsections.

5.2.2. Morphology and the Distinction between a Compound and a Phrase

In this subsection, I would like to show the mechanism which formally distinguishes a coordinated compound from a coordinated phrase. To this end, let us review Embick and Marantz’s (2008) analysis of comparative adjectives.

Given the Single Engine Hypothesis introduced in section 5.1, structures of words are, in some cases, identical with those of phrases, if structures of the two constructions are composed of the same set of features. One of such cases is English comparatives. According to Embick and Marantz (2008:45), the comparative has the following structure:
In (28), the head Deg(ree) is related to a gradable interpretation and its form becomes -er or more and the parentheses around XP indicate that the status of the than-clause is irrelevant here. The Root in the structure moves to a, but not to Deg. This means that differences between synthetic comparative forms like smarter and analytic comparative forms like more intelligent cannot be explained by the presence or absence of movement of Roots. If the structure of the synthetic form were the same as that of the analytic form, every adjective would have both forms. However, this is not correct, as clearly shown in the contrast between (29) and (30):

(29)  a.  more/most intelligent  
     b.  smarter/smarterest
(30)  a.  *intelligent-er/*intelligent-est  
     b.  *more smart/*most smart

(Embick and Marantz (2008:44))

As (29a) and (30a) show, intelligent takes an analytic comparative form, while as (29b) and (30b) show, smart takes a synthetic comparative form. It appears to be difficult to explain the difference, maintaining the structure in (28). However, Embick and Marantz (2008:46) solve the puzzle by proposing the following rule:

(31)  Local Dislocation for comparatives  
      Deg^Adjective → [[Adjective]Deg]  
      where Adjective has the relevant phonological properties

According to Embick and Marantz, (31) is a morphological operation that affixes Deg to an adjective when these two elements are adjacent in linear order and the phonological properties of the adjective, e.g. the number of syllables, are
appropriate for the rule. Hence, if the rule applies to the structure in (28), the synthetic form is obtained and if it does not apply, the analytic form is obtained. The contrast between (29) and (30) is thus captured at morphology, the post-syntactic component that is on the side of PF. Morphology interprets and modifies syntactic structure.

Along the lines of Embick and Marantz (2008), I propose that the distinction between a coordinated compound and a coordinated phrase is made in morphology. After the syntactic structure in (25) is built, it is sent to morphology. This component interprets the input structure and determines whether a compounding operation applies to the structure or not. If compounding applies to the structure, coordinated compounds like \textit{steak N gravy} occur, while if the process does not apply to it, coordinated phrases like \textit{the owner and the editor} occur.\textsuperscript{15}

5.2.3. Encyclopedia in Distributed Morphology and Coordinated Compounds

The solution to the problem of the dual nature of the coordinated compounds in question raises another problem. If there is no structural distinction between coordinated phrases and coordinated compounds and if the distinction is made in morphology, which is on the side of PF, it is too late for LF or the CI interface to interpret the structure as coordinated compounds because LF does not interact with PF. There is thus no distinction in meaning between the two constructions. This conclusion seems to be supported by the fact that the coordinated compound shares the same referential status with the coordinated phrase. However, the two constructions are slightly different in meaning, since the coordinated compound, but not the coordinated phrase, functions as a naming unit. The question is how to capture their similarity and difference in meaning.

To answer this question, I would like to introduce the model of Distributed Morphology, which is proposed by Harley and Noyer (2003:465). Their model is illustrated as in (32).\textsuperscript{16}

\textsuperscript{15} The exact formulation of the compounding operation and the nature of its driving force are beyond the scope of this paper.

\textsuperscript{16} The model in the original text is more complex than the one in (32). It shows information about when morphosyntactic features like [Det] and [Past] are introduced to the derivation and when phonological forms are assigned to syntactic structures. These information are not necessary to solve the puzzle and are then omitted here. To be precise, morphology precedes PF, but in (32) I lump them together for expository purposes.
Based on this model, a syntactic structure built in syntax is sent to both PF and LF, as illustrated by the arrows. On the PF side, terminal nodes in the structure are assigned phonological expressions, while on the LF side, structural relations like quantifier scope are computed. After the syntactic structure is thus interpreted, both outputs from PF and LF are interpreted at the Conceptual Interface, where non-linguistic knowledge are assigned to the outputs by the component Encyclopedia. This process is indicated by the broken arrow. What is important here is that the output from PF is also interpreted at the Conceptual Interface, unlike the grammatical model of Chomsky (2000, 2001). This means that PF processes can affect meanings, even though indirectly.

Given this background, let us explain how the coordinated compound is distinguished from the coordinated phrase. First, the structure of coordinated compounds and phrases is formed in syntax, as discussed in the previous section. Second, it is transferred to PF and LF. On the LF side, there is no operations that change meanings of the structure. On the PF side, the structure is interpreted by morphology and as a result, the morphological operation compounding applies to the structure. By this operation, all of the constituents of the structure are lumped together in one terminal node. In Distributed Morphology, one terminal node corresponds to one word (Embick and Marantz (2008:6-7)). The resultant structure is therefore regarded as a complex word. Third, this complex word is sent to Conceptual Interface and there, it is interpreted as a naming unit if there is something in the world that the word can refer to. For example, the word unit steak N gravy is sent from PF to Conceptual Interface and at this interface, the word is interpreted as a naming unit because there is a dish in the word that is made of a steak and a gravy sauce.
As shown in (32), both outputs of PF and LF are interpreted together at the Conceptual Interface. This system allows a naming unit to match with outputs of LF. As a result of this matching, a word whose constituents are referential, that is, a coordinated compound, occurs.\textsuperscript{17}

In contrast to the derivation of coordinated compounds, there is no compounding operation for coordinated phrases. If no compounding operation applies to the structure at morphology, two separate terminal nodes occur. This means that there are two words or a phrase. This phrase is sent to Conceptual Interface and there, it is associated with the output of LF. As a result of this matching, a coordinated phrase occurs.

6. Conclusion

Coordinated compounds are the compounds whose constituents are referential (cf. Bauer (2008)). According to Shimada’s (2013) proposal, they are found in stem-based languages, but not in word-based languages. However, this paper showed that even English, one of the word-based languages, can create coordinated compounds by using linking elements. Moreover, we observed that the other word-based languages Portuguese and Russian form coordinated compounds by using conjunctions. The revised parameter proposed in this paper predicts that even word-based languages can create coordinated compounds by using linking elements. To verify the parameter, we have to await future research.

REFERENCES


\textsuperscript{17} One might ask a question of why compounding occurs. One possibility is that the linking element ‘n’ triggers the operation. Embick and Marantz (2008) distinguishes morphemes that directly attach to Roots from those that attach to existing words. The former is called morphemes in root domain and the latter is called those in outer domain. Okubo (2014) argues, based on this distinction between morphemes, that linking elements are classified into those in root domain and those in outer domain. If his classification of linking elements and the present analysis are correct, it turns out that the linking element ‘n’ occurs in outer domain since it is a morpheme that attaches to existing words. Given this statement, the generalization is that compounding at morphology occurs if a linking element in outer domain exists. To verify this generalization is beyond the scope of this paper.


Doctoral Program in Literature and Linguistics
University of Tsukuba
e-mail: okubo.tatsuhiro@gmail.com