Coordinated compounds: Comparison between English and Japanese

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According to Bauer (2008), the coordinated compounds to be labeled with the term "dvandva" are much more limited than generally assumed. This paper reexamines what is taken as dvandvas in English and shows that English has no dvandvas. This conforms to the view in Arcodia et al. (2010) that dvandvas are common in Eastern languages, but not in Standard Average European languages. The classification and careful examination of Japanese dvandvas lead us to consider that cross-linguistic difference in existence of dvandvas can be attributed to stem-based morphological properties of languages.

Keywords*: coordinated compounds, dvandvas, null heads, semi-lexical categories*

1. Introduction

The complex word called compound has been analyzed and classified in a wide variety of ways in linguistics. This paper is also concerned with compounds, aiming to deepen our understanding of the nature of lexicon in human mind/brain and how the interaction between morphology and other fields is. Specifically, the compound expressing a coordination relation is focused on from a comparative point of view. Typical examples of this type of compound are given in (1) with English:

(1) a. *singer-songwriter*
b. *mother-child (relationship)*

The expression in (1a) means the person who is a singer and a songwriter and *a mother-child relationship* can be paraphrased into *a relationship between mother and child*, which suggests both hyphenated compounds in (1) have coordinative meanings.

As summarized by Bauer (2008: 2), the compound with coordinative meaning is called in various ways in the literature, such as coordinative compounds, copulative compounds, co-compounds, dvandvas, and so on. Bauer further points out that the same terminology is often applied to different types of the compound with coordinative meaning by different researchers. In this paper, I use the term "coordinative compound," following Bauer (2008), and adopt his helpful and insightful classification of coordinative compounds as a starting point of our discussion. I then attempt to reanalyze some type of the coordinative compounds discussed in Bauer (2008), and show that the generalization on the parametric variation of coordinative compounds made by Arcodia et al. (2010) is fundamentally correct. My analysis is based on the idea of semi-lexical categories developed to explain various phenomena in various languages by Emonds (2000), Cover (2008), among others. This might suggest that coordinate compounds are not special, but unmarked morphological products, as Olsen (2001) also states in other contexts. Finally, I make some comments on possible explanations of the parametric variation of coordinate compounds, especially a Western language/Eastern language distinction in coordinate compound licensing.

The paper is organized as follows: In section 1, I summarize Bauer's (2008) classification of coordinate compounds. In section 2, after introducing Arcodia et al.'s generalization, I turn back to Bauer's classification and point out some inconsistencies between their observations. In section 3, I show a possible way out of the inconsistencies, adopting the idea explored by Fanselow (1981), ten Hacken (1994), Emonds (2000), Olsen (2001), and so forth. I then take a fresh look at some of the coordinated compounds in Japanese as well as in English and group them into the different subtype of the coordinated compounds, weakening the tension between Bauer's classification and Arcodia et al.'s generalization. In section 4, as a final remark, I make brief comments on occurrence of Japanese coordinated compounds and their difference from that of English counterparts.

2. Bauer's (2008) classification

Bauer (2008) begins his discussion by pointing out that the coordinated compounds to be labeled with the term "dvandva" are much more limited than generally assumed. According to him, this terminology comes from the Sanskrit grammar but there are now so many types of compounds called dvandvas, though they are different in some respects from what was originally grouped as a dvandva in Sanskrit. Bauer identifies these compounds as belonging to other classes of coordinated compounds and provides a full and new classification of coordinated compounds. This is illustrated in Figure 1:

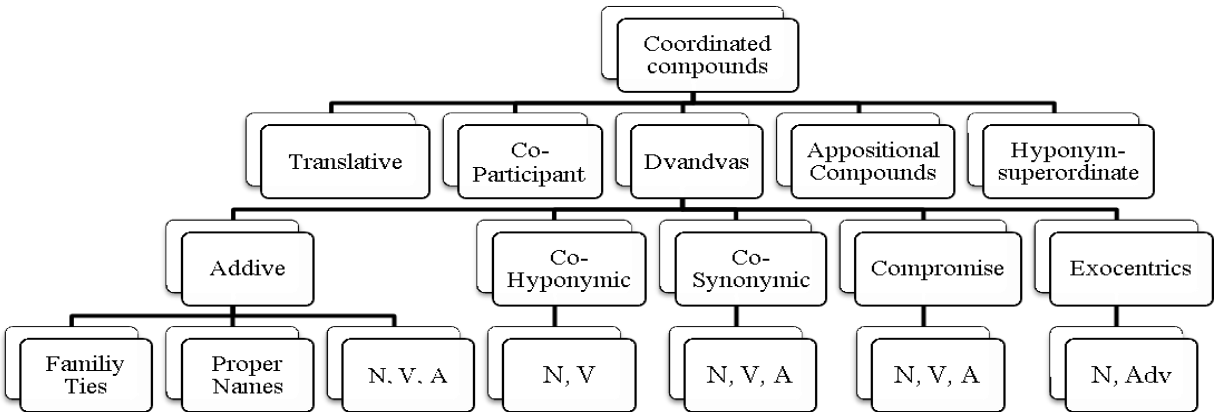

Figure 1 *Bauer's (2008) classification of coordinated compounds*

Bauer divides coordinated compounds into five types, Translative compounds, Co-Participant compounds, dvandvas, Appositional compounds and Hyponym-superordinate compounds. The example of each type is given in (2), cited from Bauer (2008):

(2) a. Translative compounds
London-Edinburgh (express)
b. Co-participant compounds
mother-child (relationship) (=(1a))
c. Dvandvas
oya-ko parent child 'parents and children' (Japanese)

d. Appositional compounds
singer-songwriter (=(1b))
e. Hyponym-superordinate compounds
oak-tree

The first two types in (2a) and (2b), Translatives and Co-Participants, are quite similar in that they both occur in embedded environments. *Singer-songwriter* is an Appositional compound, shown in (2d), in this classification. What should be emphasized here is that the familier examples of coordinated compounds in (1), *singer-songwriter* and *mother-child*, are not included in the set of dvandvas. Bauer excludes both types from the class of dvandas since they are semantically different from typical types of dvandvas. The semantic criterion for dvandvas Bauer (2008: 2) offers is that "the dvandva is understood as being a new unity made up of the whole of the two entities named." *Oya-ko* in (2c), the typical example of dvandvas in Japanese, for instance, means the union of parents (*oya*) and children (*ko*), each of which is referential. The other types of coordinated compounds, on the other hand, have different interpretations. First, consider *singer-songwriter*, which means a person who is a singer and a songwriter. This suggests that *singer-songwriter* is understood as an intersection of the set of singers and that of songwriters, but not the whole of the two sets. Likewise, the embedded types like *mother-child* are not understood as the whole of the sets of two constituents. The same reasoning is also applied to Hyponym-superordinate compounds like *oak-tree* given in (2e). *Oak-tree* means an oak, the subset of the tree, but not an union of the set of oaks and the set of trees. Showing that the coordinated compound to be distinguished from dvandvas have wrongly been included in the set of dvandvas so far, Bauer set up four additional classes for coordinated compounds.

Bauer also divides dvandvas into five subtypes, that is, the additive type, the co-hyponymic type, the co-synonymic type, the compromise type and the exocentric type, as illustrated in Figure 1. Typical examples of each type are given in (3), cited again from Bauer (2008):

(3) a. Additive type
(i) *eda-ha* branches leaves (Japanese)
(ii) *such-dukh* happiness sorrow (Punjabi)
b. Co-hyponymic
bas-kaar bus-car 'vehicles' (Punjabi)
c. Co-Synonymic
đường sá road street 'roads' (Vietnamese)
d. Compromise
north-east
e. Exocentrics
hòu-báo thick thin 'thickness' (Mandarin)

The additive types, such as *eda-ha* and *such-dukh* in (3a), are understood as the union or sum of the two sets, as mentioned above. Interestingly, it is possible that the constituents with opposite meanings are attached to form this type of dvandvas, as shown in (3aii). The co-hyponimic type compound denotes more abstract concepts than what each constituent denotes. The compound in (3b) means vehicle and what is denoted by each constituent is its subtype. The co-synonymic type is a compound made up of the constituents with the identical

meaning, contrasting with the additive type in (3aii). The compromise type in (3d) denotes a half-way point between the two sets. The exocentric type consists of the constituents denoting the opposite ends of a scale.

Bauer's classification excludes translative compoounds, co-participant compounds, appositive compounds and hyponym-superordinate compounds from the set of dvandvas. Under the view that compounds of the *singer-songwriter* type and *mother-child* type are not dvandvas, coordinated compounds to be labelled as dvandvas seem not to be braodly attested in English and in most of Western lanuages. This distributional tendency is clearly shown by the data given by Bauer. In classification and labelling, Bauer emphasizes the fact that many western languages do not have compounds equivalent to the linguistic expressions in Sanskrit which are originally identified as dvandvas.

3. Arcodia et al.'s (2010) generalization

Arcodia et al. (2010) also consider coordinated compounds from a comparative point of view. They focus on dvandas and appositional compounds, which they call co-compounds and hyponymic coordinating compounds, respectively, and which are repeated below:

(2) c. Dvandvas
oya-ko parent child 'parents and children' (Japanese)
d. Appositional compounds
singer-songwriter (=(1b))

Arcodia et al. (2010) characterize dvandvas as denoting superordinate-level concepts with the connection between their constituents being natural. In contrast, they define appositional compounds as expressing subordinate-level concepts with the connection between their constituents being rather accidental.

Arcodia et al. (2010) also put a special emphasis on their regional and typological difference. Compounds of a dvandva type are widely observed in languages spoken in East and South-East Asia like Mandarin Chinese, Vietnamese, Tibetan, Thai, Mongolian, Japanese, Korean, etc, while the distribution of appositional compounds are limited to Italian, French, English, German, Dutch, etc, which are spoken in Western and Central Europe, often called a Standard Average European (SAE) area. Concerning the typology of dvandvas and appositional compounds, Arcodia et al. (2010) provide an interesting generalization, which can be roughly stated as in (4):

(4) Dvandvas and appositional compounds do not coexist in the same language.

Put differently, dvandvas and appositional compounds show a complementary distribution in a language L. Based on the generalization in (4), we can summarize the distribution of dvandas and appositional compounds as follows:

(5)

	Dvandva (natural coordination)	Appositional (accidental coordination)
SAE	×	○
Asian languages	○	×

Turning to the observation in Bauer (2008), he claims that English actually has dvandvas, though the data is very limited. The followings are what Bauer characterized as English dvandvas:

(6) a. *Austro-Hungary, Aol-Time-Warner, Hewlett-Packard*
b. *northeast, blue-green*

According to Bauer's classification, the examples in (6a) and those in (6b) correspond to additive dvandvas and compromise dvandvas, respectively.[1] *Aol-Time-Warner*, for example, stands for a new company established based on the three companies Aol, Time, and Warner, keeping a separate reference to each of them. The compromise type is defined as denoting an intermediate point between the two parts, blue and green, for instance. He does not consider that the compromise type denote the intersection of the two sets. Bauer's observation thus suggests the possibility that the generalization (4) is not valid.

In fact, Arcodia et al. (2010: 192) state that the generalization (4) "is to be understood as a trend, rather than as an absolute universal", pointing out that Russian dialects having dvandvas often allow appositional compounds borrowed from standard Russian to appear. In the next section, I will investigate whether (4) should be characterized as a strict generalization or just a trend, looking at the coordinated compounds of the same type given in (6). Specifically, I am mainly concerned with English, one of the SAE languages, and Japanese, one of the Asian languages.

4. Reconsideration of Bauer's (2008) classification and Arcodia et al.'s (2010) generalization

To achieve the goal of this section, I first examine the status and properties of the English coordinated compounds classified as dvandvas in Bauer (2008). Next, I move on to the question of whether Japanese really lacks appositional compounds.

4.1. *Dvandvas in English*

As mentioned in the previous section, Bauer (2008) claims that English has additive type dvandvas and compromise type dvandvas. However, it seems to me that there is no strong reason to believe that they are truly dvandvas. Actually, the compromise type, which is repeated below, is often excluded from true dvandvas in previous studies, including Arcodia et al. (2010):

(6) b. *northeast, blue-green*

It is also suggested in ten Hacken (1994) that the compromise type is not dvandvas in Bauer's (2008) sense, based on data in Dutch:

(7) a. *grijsblauw* greyblue 'greyish blue'
b. *blauwgrijs* bluegrey 'blueish grey' (ten Hacken 1994: 129)

It is not that the compounds in (7) denote a half point of blue color and green color. (7a) and (7b) describe a kind of blue color and green color, respectively. It is highly likely that the compromise type is a normal compound involving attributive modification.

Turning to (6a), repeated here, these examples also seem to belong to compounds other than dvandvas:

(6) a. *Austro-Hungary, Aol-Time-Warner, Hewlett-Packard*

Olsen (2001) points out that Fanselow's (1981) analysis of the German compounds called 'pseudo-dvandvas', given in (8), can be applied to English compounds like (6a):

(8) *Baden-Württemberg*

According to Olsen (2001: 284), Fanselow (1981) posits "a rule interpreting (8) as the smallest x (x = a federal state in Germany) that has 'Baden' and 'Württemberg' as its parts." It is obvious that (8) falls into the additive type in Bauer's classification. (6a) and (8) should thus be treated in the same way. In fact, Olsen attempts to explain English counterparts following Fanselow (1981). She assumes that *Time Warner* is interpreted as the smallest x (x = a company, a worker's union, etc.) consisting of the parts 'Time' and 'Warner'

I would like to propose here that "the smallest x" realized in the interpretation by Fanselow's rule is really present in the morphological structure in the compounds of (6a) type. More concretely, *Time Warner* has the following structure:

(9) [Time-Warner [e]]

In (9), *e* signifies the phonologically null head of the compound, modified by *Time Warner*.

The existence of the null head is well motivated if we consider Japanese counterparts. In Japanese, the head often takes an overt form, as in:

(10) a. *taimu waanaa-sha*
Time Warnar corporation 'Time-Warner'
b. *hyuuretto pakkaado-sha* 'Hewlett-Packard'
Hewlett Packard corporation

In these examples, the overt morpheme *-sha* (社) attaches to *taimu waanaa* and *hyuuretto pakkaado*, forming compounds. It can be identified as a head, because it satisfies the right-hand head rule and has the meaning of corporation. The Japanese morpheme *-sha* is characterized as an overt counterpart of *e* in (9), guaranteeing the meaning expressed by 'x'.

In Japanese, names of organizations, including companies, ministries, and banks, are often marked with overt forms like *-sha* (社) 'corporation,' *-shoo* (省) 'ministry,' *ginkoo* (銀行) 'bank,' and so forth, and they are all expected to be overt realizations of 'x'. In fact, like the morpheme *-sha*, the morphemes *-shoo* and *ginko* function as heads within the names of organizations established through the reform and merger of organizations:

(11) a. *Tokyo-Mitsubishi-UFJ ginkoo* 'Bank of Tokyo-Mitsubishi-UFJ'
b. *Koosee-Roodoo-shoo*
Welfare-Labour Ministry 'Ministry of Health, Labour and Welfare'

(11a) is the name of the Japanese bank created through the merger of Bank of Tokyo, Bank of Mitsubishi and Bank of UFJ. (11b), on the other hand, is the name of the Japanese ministry created through the merger of Ministry of Welfare and Ministry of Labour.

Here there arise a few questions. What is the exact status of the covert head *e* in (9) and its overt counterpart like *-sha*? Is the covert head really possible? Extending the analysis developed by Emonds (1985) to the examples under discussion, I propose here that the covert head *e*, *-sha*, *-shoo* and *ginko* in (9) to (11) are a kind of a semi-lexical category. According to Emonds, in addition to normal lexical categories of N, A, V and P, there are semi-lexical or grammatical categories of N, A, V and P. While the lexical categories have purely semantic features, semi-lexical categories lack them and only bear syntactic features. Emonds identifies *self, one, people, thing, place, reason, time, way, etc.* as potential semi-lexical Ns. My answer to the question of what the covert head *e* in (9) is is that it is one of the semi-lexical Ns. The morphemes *-sha*, *-shoo* and *ginko* in (10) and (11) are also semi-lexical Ns.[2] From a semantic viewpoint, it is quite natural to assume that they are all semi-lexical categories lacking pure semantic features. The covert head *e*, *-sha*, *-sho* and *ginko* in the relevant examples refers to no specific entity, conforming to the properties of semi-lexical categories. For example, it is not that *-sha* in *taimu wanaa-sha* itself refers to the company called Time Warner. Rather the whole name *taimu wanaa-sha* refers to the relevant company.

It should be noted here that the existence of covert types of semi-lexical categories has already been pointed out in the literature. Kayne (2003) considers the structure of a noun phrase like *few books* in (12a), involving modification by the quantifiers *several, few* or *many*, and proposes that it contains NUMBER, the phonetically null counterpart of the noun *number*, modified by the quantifier, as illustrated in (12b):

(12) a. *John has few books*
b. *John has few NUMBER books*

Extending Kayne's analysis, Corver (2008) argues that the German possessive construction in (13) contains the covert counterpart of the noun *persoon*, signified as PERSON, as in (13b):

(13) a. *We kwamen Anna's tegen*
we met Anna-s PRT
'We met Anna.'
b. $[_{DP}$ D $[_{Pos}$P Annaj $[_{Pos}$ -s [NP PERSON t_j]]] (Corver 2008: 17)

As illustrated by the English translation, (13a) means that we met Anna. Corver analyzed (13a) as a hidden possessive construction involving the silent semi-lexical category.

Corver provides several pieces of evidence suggesting that the covert semi-lexical category can occur in the possessive construction in German. One of the arguments is based on exchangeability between overt and covert semi-lexical categories. Cover observes that the overt counterpart of *PERSON* can occur, as in[3]:

(14) Jan *gaf mij informative over [Anna's persoon]*
'Jan gave me information about Anna' person' (Corver 2008: 19)

According to Corver (2008: 19), the expression *Anna's persoon* in (13) "is an indirect way of referring to the individual Anna." In short, *Anna's persoon* and *Anna* have the same meaning and function, with *persoon* making no contribution to the whole meaning of *Anna's persoon* as a semantically contentful word. He thus considers that *persoon* in (13) is an overt realization of the semi-lexical category *PERSON*. He further explores the possibility of the existence of other null semi-lexical categories, such as PLACE, TIME and WAY:

(15) a. *I met her at my uncle's.*
b. *Ik kom dinsdags altijd later thuis* (Dutch)
I come Tuesday-s always later home
'On Tuesday, I always come home later.'
c. *Jan zwom op zijn hondjes* (Dutch)
Jan swam at his dog-s
'Jan swam in a dog-like way.' (Corver 2008: 22)

It is possible to analyze the italicized NPs in (15a-c) as containing the null semi-lexical categories, PLACE, TIME and WAY, respectively.

Interestingly, the diagnostic based on the exchangeability mentioned above provides the evidence for the presence of [e] in compounds of the type (9). Besides the expression *Hewlett-Packard*, the following expression is also found in a web search:

(16) *Hewlett-Packard <u>Company</u>*

What (16) shows is that *company* can attach to *Hewlett-Packard*. Given the parallelism between *Hewlett-Packard* and *Hewlett-Packard Company*, *company* in (16) is a kind of semi-lexical category, and can thus be considered to be an overt realization of *[e]* in (9), supporting the analysis proposed.

Note also that the diagnostic provides the further evidence that Japanese has a covert semi-lexical category. Japanese verbs often resist nominalization with the inflected form *-i-* called 'renyookei' (an adverbial form), which is signified as INF in the gloss of the examples, unless they attach another element, forming a complex word:

(17) a. **kuw-i*
eat-INF 'eating'
b. *oo-guw-i*
much eat-INF 'eating too much'

This may indicate that inflected Japanese verbs cannot occur independently. However, there is a case in which it looks as if Japanese verbs occur independently in the adverbial form:

(18) *hasir-i*
running-INF 'the way of runing'

Chae (2010) correctly points out that (18) means the way of running, not just the event of running, as the Japanese translation indicates. This leads him to conclude that the covert element meaning the way is present in (18), modified by *hasiri*. The structure of (18) is thus really as follows:

(19) *hasir-i [e]*

Under the view adopting the notion of semi-lexical categories, Chae's insight is accounted for by considering that null semi-lexical categories are involved in nominalization of Japanese verbs. In (18), for example, the covert counterpart of the semi-lexical WAY occurs as a head of the complex word. In other words, (18) is a compound. This analysis is supported by the fact that the overt element *-kata*, meaning 'the way', can occur as in (20):

(20) *hasir-i-kata*
running-inf way
'the way of runing'

The existence of covert semi-lexical categories is thus empirically supported by Japanese data again.[4]

Turning to the question of whether a phonetically null head is possible or not, remember that Emonds (2000: 100) points out

> Since Universal Grammar decrees that heads are obligatory, they are the expected constituents within a given domain, both for language learners and language users. Consequently, (if UG is innate), language is better designed if heads are less salient than arguments, because the presence of the latter is not predictable on general grounds. … In fact, within compounds structurally obligatory heads may even be silent, while arguments may not be.

A head is recoverable in nominal structures even if it lacks phonetic contents, since it is an expected element, in contrast to a non-head. I thus take the position that the nominal structures containing null semi-lexical categories as heads are not problematic at all.[5]

Given that the expressions in (6), repeated here, are formed with the covert semi-lexical categories functioning as heads, there arises a further question of what kind of morphological units the modifiers are:

(6) a. *Austro-Hungary, Aol-Time-Warner, Hewlett-Packard*

Their structures assumed here are as follows, with NATION and COMPANY being covert semi-lexical categories (see note 5):

(21) *[Austro-Hungary [NATION]], [Aol-Time-Warner [COMPANY]],*
[Hewlett-Packard [COMPANY]]

Under this analysis, *Austro-Hungary, Aol-Time-Warner* and *Hewlett-Packard* are never counted as dvandvas in Bauer's (2008) sense. They are all embedded as co-participants and translatives are.

Olsen (2001) observes the semantic properties of co-participants and translatives in detail. It is thus expected that examination of the semantic nature of *Austro-Hungary*, *Aol-Time-Warner* and *Hewlett-Packard* along the lines of Olsen (2001) provides the evidence for or against the analysis proposed here. First, consider the following example:

(22) *Tennessee-Arkansas game*

According to Olsen (2001: 298), the semantic relationship between the co-participant *Tennessee-Arkansas* and the head *game* is 'between' relation, as the paraphrase in (23) suggests:

(23) *game between Tennessee and Arkansas*

The similar semantic relationship is also observed in the following examples:

(24) predator-prey battles, shark-human encounters

Olsen (2001: 298-302) also gives the examples in which other semantic relations are identified between co-participants and heads. In *bread/bagel split* and *doctor-patient gap*, the separation is denoted, whereas the notion of the connection is relevant to examples like *dinosaur-bird link, Utah-Arizona border, morphology-phonology interface, A.O.L-Time Warner merger*, and so on. In *man-wife team* and *electron-positron pair*, on the other hand, the relational meaning of 'made up of' holds between the co-participants and the heads, as shown by the paraphrases *a team made up of a man and his wife* and *a pair made up of an electron and a positron*. Co-participants thus occur in embedded forms in nominal constructions, establishing some kind of semantic relation with heads. In this respect, *Austro-Hungary*, *Aol-Time-Warner* and *Hewlett-Packard* can be motivated to be classified as co-participants. It can be said that *Hewlett-Packard* and the covert head *COMPANY*, for example, have an appositive relationship. *Hewlett-Packard* stands for the company called or named *Hewlett-Packard*. Likewise, *Aol-Time-Warner* means the company named *Aol-Time-Warner* and *Austro-Hungary* is a nation of the name *Austro-Hungary*. In other words, *Austro-Hungary*, *Aol-Time-Warner* and *Hewlett-Packard* behave in a parallel fashion as appositives of the covert semi-lexical categories, leading us to the conclusion that they are a kind of co-participants.

Summarizing this subsection, it has been proved that the English coordinated compounds which Bauer (2008) regards as dvandvas are not dvandvas but co-participants and that English has no dvandvas. This means that English strictly obeys Arcodia's (2010) generalization in (4) in that dvandvas and appositional compounds do not coexist in the same language.

4.2. *Appositional compounds in Japanese*

In the preceding subsection, Arcodia's (2010) generalization is examined based on the data from SAE. In this subsection, I carefully consider the generalization from the side of Asian languages. In particular, I am concerned with the existence and non-existence of appositional compounds in Japanese. It is generally assumed that Japanese has dvandvas, whereas it lacks appositional compounds. I would like to claim, however, that Japanese do have appositional compounds as well as dvandvas.

Before discussing Japanese data, let us summarize the semantic patterns denoted by appositional compounds in English like *poet-actor* which are observed by Olsen (2001: 295-197). According to Olsen, appositional compounds describe people in terms of their

professions. In addition, their professions are in most case related to media, science or art. The followings are a part of lists given by Olsen (2001: 295-296):

(25) a. Film/TV/Stage:
writer-director, producer-writer, actor-author
b. Music:
singer-guitarist, singer-songwriter, dancer-singer
c. Journalism/Writing
editor-publisher, novelist-professor, poet-historian
d. Science:
scientist-investor, astronomer-author, scientist-business consultant
e. Art:
artist-photographer, artist-waitress, salesman-artist
f. Other:
philosopher-physician

She also points out that the name of a profession is combined with a characteristic activity or another property of the intended entity:

(26) a. Profession + Characteristic Activity
screenwriter-volunteer, actor-bodybuilder, patriot-poet, playwright-activist, singer-spy, songwriter-producer-arranger-friend
b. Profession + Property
diplomat-playboy, architect-prophet, poet-drunkard, actor-friend, producer-boyfriend (Olsen 2001: 296)

Olsen thus observes that as in the case of dvandvas, appositional compounds also have their intrinsic semantic properties.

On the basis of Olsen's observation on the semantic aspects of appositionals, we can investigate whether Japanese allows the combinations of the nouns denoting the relevant professions or the combinations of those nouns and a characteristic or a property intrinsic to the intended individual. If such a combination is observed even in Japanese, we can conclude that Japanese has appositional compounds. It seems to me that the Japanese compounds in (27) fall into the same category of the compounds in (26):

(27) a. *koomuin-rannaa* public servant-runner
b. *kyooin-borantia* teacher-volunteer
c. *shufu-gakusee* housewife-students
d. *noomin-sakka* farmer-writer
e. *sakka-tomodati* writer-friend

Assuming that they falls into the appositional type, I take the position that Japanese do have appositional compounds.

One might wonder whether the compounds in (27) are normal right-headed compounds and whether *koomuin-rannaa* in (27a), for example, means just a kind of runner. However, if the expressions in (27) were dubious as examples of appositionals, the same question could be addressed to English appositionals. Olsen (2001) and Arcodia et al. (2010) observe that

the order of the constituents of appositional compounds in principle is reversible in English and Italian, respectively, which they think is the evidence that there is no head in appositionals. Interestingly enough, they simultaneously observe that it is often the case that the particular ordering of the constituents is preferred. Actually, they do not attribute the phenomena to the headedness of the appositionals, but to the pragmatic reason. Anyway, I assume here that (27) and English appositional compounds have the same status in morphology.

4.3. *Typology of coordinated compounds*

Sections 4.1 and 4.2 show that English has no dvandva compounds and that Japanese do have appositional compounds. The occurrence and non-occurrence of dvandvas and appositional compounds in English and Japanese are summarized as follows:

(28)

	Dvandva	Appositional
English	×	○
Japanese	○	○

The typological difference shown in (28) is not consistent with Arcodia et al.'s (2010) generalization that dvandvas and appsotional compounds do not coexist in the same language. English shows behaviors conforming to the generalization, but Japanese does not. From a typological point of view, what should be considered seriously is thus the occurrence and non-ooccurrence of dvandvas, if we accept the summary in (28). A typological difference is not found in the occurrence of appositional compounds. It is a dvandva that is concerned with the typology. In the rest of this paper, I will present a classification of dvandvas based on Japanese data and explore the possiblity to attribute the difference between English and Japanese in occurrence of dvandvas to their morphological propoerties.

5. Japanese dvandvas and morphological boundness

In this section, I classify Japanese dvandvas, a bit modifying Bauer's (2008) classification. and make some comments on why dvandvas can occur in Japanese, but not in English. Before going into the discussion about the classification, let me summarize the usage of a Chinese character Kanji in Japanese writing systems, since it gives us a clue to deepen our understanding of Japanese word formation systems.

5.1. *Kanji in Japanese*

It is well known that a Chinese character called Kanji is used in Japanese writing systems. Kanji bears information on its form, sound and meaning. For instance, the kanji character given in (29a) as an example has the sound /san/ and the meaning 'mountain', as shown in (29b):

(29) a. 山

b. Form :山, Sound: /san/, Meaning: 'mountain'

Kanji is thus characterized as a logogram, conveying both semantic and phonological information. Interestingly, as stated in Shibatani (1990: 126), " a character such as 山 'mountain' was read both as san, Chinese reading, and as yama, Japanese reading. This practice of reading Chinese characters both in the Chinese way and the Japanese way persists even today". In short, kanji has a property of dual pronunciation. The kanji in (29a) can be pronounced in a Sino-Japanese way as /san/ or in a native way as /yama/. Sino-Japanese pronunciation is called *on-yomi* and native pronunciation *kun-yomi*. (30) represents a case of a verb:

(30) a. 登 'climb' (V)
b. /to/: Sino-Japanese pronunciation (*on-yomi*) → bound form for compounding
c. /nobor-u/: native pronunciation, adoption of a sound of the Japanese word with the same meaning (*kun-yomi*) → free form in the conclusive

The pronunciation /to/ is *on-yomi* and /nobor-u/ is *kun-yomi*.

It should be noted that *on-yomi* represents a bound form, while *kun-yomi* represents a free form. Shimada and Nagano (2011) argues that kanji is a representation of a lexeme and that the *on-yomi* and *kun-yomi* of a kanji correspond to stems of a lexeme, expressing the same meaning and showing a complementary distribution.

Both of *on-yomi* and *kun-yomi* function as stems for compounding. *On-yomi* stems are involved in Sino-Japanese compound formation, as shown in (31a), while *kun-yomi* stems are involved in native compound formation, as shown in (31b):

(31) a. *to-zan* (登山) climb-mountain 'mountain climbing'
→ Sino-Japanese compounds
b. *yama nobori* (山登り) mountain climbing 'mountain climbing'
→ Native compounds

Again note that *on-yomi* is a bound form, as shown in (32), in which *san*, meaning mountain, is excluded as an independent object:

(32) *Taroo-ga* {yama/*san}-ni {nobot-ta/*to-ta}.
-Nom mountain-Dat climb-Past
'Taro climbed a mountain.'

In addition, *on-yomi* stems of verbs, like *to* in (31c), cannot be inflected, though they are bound forms. Bearing these fundamental properties of kanji, let us move on to the dvandvas in Japanese in the next subsection.

5.2. *Dvandvas in Japanese*

As illustrated in section 2, Bauer (2008) divides dvandvas into five types: additives, co-hyponyms, co-synonyms, compromises and exocentrics. Remember, however, that compromises seem to fall under the normal right-headed compound, as is suggested by ten Hacken (1994) with Dutch data like *grijsblauw* 'greyish blue' and *blauwgrijs* 'blueish grey', in which the right constituents seem to function as heads. Assuming that there is no compromise type of dvandvas but following Bauer (2008) for the most part, I propose to

group together additive dvandvas, exocentric dvandvas and co-hyponymic dvandvas, referring to them as *pairing types*. Dvandvas are thus divided into pairing type and co-synonymic types.

Typical examples of pairing types are given in (33), and they are written in kanji as well as in alphabets, since kanji represents a lexeme and makes it easy to identify the constituents of compounds:

(33)	a. *me-hana*	(目鼻)	eye nose	*kun-reading*
	b. *in-shoku(-suru)*	(飲食する)	drink eat(-do)	*on-reading*
	c. nak-i-sakeb-u	(泣き叫ぶ)	weep-LE-cry-Pres	*kun-reading*
	d. *koo-dai(-da)*	(広大だ)	spacious-large(-Cop)	*on-reading*

Pairing types typically consist of the composites bearing an similar meaning. (33a) is a type of N-N compound with *kun*-reading. (33b) and (33c) consists of Vs, though the constituents are read in *on*-yomi in (33b) and in *kun*-yomi in (33c). The parts of the compound in (33d) are adjectives.[6] Note that though (33b) is a V-V compound, it behaves as a noun, unless the light verb *-suru* is attached to it to derive *in-shoku-suru*. This means that *in-shoku* is a verbal noun (VN), which has verbal properties as well as nominal properties. It is pronuounced in *on*-reading, that is, a Chinese style. The morphemes read in *on*-reaing are not inflected, even if they are verbs. The light verb *-suru* is necesary for them to behave as full verbs and show verbal inflections. In fact, the stems of V-V dvandvas are VNs in most cases. The compounds in (33a), (33c) and (33d) do not pose such a problem, inheriting categorial types from their composites.[7]

In contrast, the pairing types in (34) are made up of the constituents with the opposite meaning:

(34)	a. *kyo-dai*	(兄弟)	elder brother-younger brother	*on-reading*
	b. *shoo-hai*	(勝敗)	victory-defeat	*on-reading*
	c. *kat-i-make*	(勝ち負け)	victory-LE-defeat	*kun-reading*
	d. *choo-tan*	(長短)	long-short	*on-reading*

(34a) is a type of N-N compound. (34b) and (34c) are made up of verbs, while the constituents are adjectives in (34d). Unlike the compounds in (33), those in (34) are all nominals. The paring types with their constituents having opposite meanings are always nouns.[8] It should also be noted that the co-hyponymic reading and the exocentric reading attributed to co-hyponymic dvandvas and exocentric dvandvas in Bauer (2008) are possible for pairing types. I assume here that these interpretations become possible as a result of conceptualization. *Me-hana* "eye and nose**"** in (33a) can convey the meaning of looks or features. *Choo-tan* "long or short**"**, in (34d), often means the concept of length.

The constituents of additive types, exocentric types, co-hyponimic types in Bauer's classification seem to represent similar meanings or opposite meanings. More specifically, the constituents in these dvandvas, though different in meaning, can be regarded as denoting entities, properties or concepts belonging to the same set. As for *me-hana* "eye and nose" in (33a), for example, it can be said that *me* and *hana* belong to the same set in the sense that both means a part of a face. The same holds of the parts of the compounds in (34). Though they consist of the constituents of opposite meanings, they can be grouped under the same

concept. Both victory and defeat, for example, are a result of a match. It is thus quite natural to classify additive types, exocentric types, co-hyponimic types into the same group as pairing types. I futher divide paring types into two subtypes here, calling pairing types in (33) and (34) *similative pair types* and *alternative pair types*, respectively.

I give below additional examples of both similative pair types and alternative pair types, with words in *kun-yomi* underlined:

(35) Similative pair types

a. N-N types

oo-bee (欧米) 'Europe & America', *futsu-doku* (仏独) 'France & Germany'
san-ga (山河) 'mountain & river', *yama-kawa* (山川) 'mountain & river'
rai-u (雷雨) 'lightning & rain' fuu-setsu (風雪) 'wind & snow'
sei-un (星雲) 'star & cloud' shin-rin (森林) 'forest & grove'

b. V-V type

shi-choo(-suru) (視聴する) 'look & listen'
ken-bun/mi-kiki(-suru) (見聞する／見聞きする) 'look & listen
cho-jyutsu(-suru) (著述する) 'write & tell'
cho-saku(-suru) (著作する) 'write & create'
ki-jyutu(-suru) (記述する) 'write & tell'
kyoo-jyu(-suru) (教授する) 'teach & give (lessons)'
omow-i-egaku (思い描く) 'think & picture'

c. A-A types

bi-jyaku(-da) (微弱だ) 'subtle & weak' *jaku-shoo(-da)* (弱小だ) 'weak & small'
kyoo-dai(-da) (強大だ) 'strong & big' *sei-ryoo(-da)* (清涼だ) 'clear & cool'
noo-koo(-da) (濃厚だ) 'deep & thick' *jyuu-koo(-da)* (重厚だ) 'heavy & thick'
nan-jyaku(-da) (軟弱だ) 'soft & weak' *kyoo-ko(-da)* (強固だ) 'strong & hard'

(36) Alternative pair types

a. N-N types

sa-yuu/hidari-migi (左右) 'left & / right' *ji-ta* (自他) 'self & other'
koo-shi (公私) 'public & private' *ai-zoo* (愛憎) 'love & hate'
yume-utsutsu (夢現) 'dream & / reality' *shin-shin* (心身) 'mind & body'
kon-jyaku (今昔) 'present & past' *son-eki* (損益) 'loss & profit'

b. V-V types

shin-tai (進退) 'proceed &/ retreat' *koo-boo* (攻防) 'attack & defend'
yom-i-kaki (読み書き) 'read & write' *sei-shi* (生死) 'live &/ die'
syutsu-nyuu (出入) 'go out & go in' *de-iri* (出入り)'going out & going in'
kai-hei (開閉) 'open & close' *tai-shaku* (貸借) 'lend & borrow'

c. A-A types

en-kin (遠近) 'far &/ near' *koo-tei* (高低) 'high &/ low'
kyoo-jyaku (強弱) 'strong &/ weak' *sin-sen* (深浅) 'deep &/ shallow'
sei-daku (清濁) 'pure & muddy' *sin-kyuu* (新旧) 'new & old'
hin-pu (貧富) 'poor &/ rich'[N] *nan-i* (難易) 'difficult &/ easy'

Next let us look at co-synonymic dvandvas in Japanese:

(37) Co-synonymic types

a.	*to-chi*	(土地)	land-land	*on-reading*
b.	*hi-kaku(-suru)*	(比較する)	compare-compare-do	*on-reading*
c.	*tob-i-haner-u*	(飛び跳ねる)	jump-LE-jump-Pres	*kun-reading*
d.	*kyo-dai(-da)*	(巨大だ)	huge-huge(-Cop)	*on-reading*

Co-synonymic types consist of the constituents bearing an identical meaning, as shown by the English glosses. In *tochi*, given in (37a), for example, both *to* and *chi* mean land, with the derived compound also meaning land. As the description by kanji clearly indicates, *to-* is an *on-yomi* stem of a lexeme meaning land and *-chi* is also an *on-yomi* stem of another lexeme meaning land. The same holds of the data from (37b) to (37d). The meanings of the constituents in each dvandva are identical. The dvandva in (37b) consists of *on-yomi* stems of a verb. (37c) is an example involving *kun-yomi* stems of a verb. The constituents in (37d) are an adjective in *on-yomi*. Co-synonimic types are thus characterized as dvandvas made up from repeating different lexemes with an identical meaning. Other examples belonging to the co-synonymic type are given in (38):

(38) a. N-N types

ba-sho (場所)	place-place		*ka-sen* (河川)	river-river
jyu-moku (樹木)	tree-tree		*ha-roo* (波浪)	wave-wave
ten-kuu (天空)	sky-sky		*ka-jitu* (果実)	fruit-fruit
yu-shi (油脂)	oil-fat		*shin-tai* (身体)	body-body
hi-fu (皮膚)	skin-skin		*moo-hatsu* (毛髪)	hair-hair
doo-ro (道路)	road-road		*ka-chi* (価値)	value-value

b. V-V types

soo-zoo(-suru) (創造する)	create-create
gaku-shuu(-suru) (学習する)	learn-learn
ki-boo(-suru) (希望する)	hope-hope
kyoo-gaku(-suru) (驚愕する)	surprise-surprise
shin-kan(-suru) (震撼する)	shake-shake
son-zai(-suru) (存在する)	be-be
oo-too(-suru) (応答する)	answer-answer
kaku-toku(-suru) (獲得する)	gain-gain

c. A-A types

shin-sen(-da) (新鮮だ)	new-new
doo-too(-da) (同等だ)	equal-equal
kan-sei(-da) (閑静だ)	quiet-quiet
ki-myoo(-da) (奇妙だ)	strange-strange
ei-kyuu(-da) (永久だ)	long-long
an-i(-da) (安易だ)	easy-easy
sai-bi(-da) (微細だ)	minute-minute
bi-sai(-da) (微細だ)	minute-minute

One of the characteristics of co-synonymic types is that the categorical status of the composites is inherited to the resulting compounds in principle. N-N types are always nouns, V-V types in *on-reading* do not resist attachment with the light verb *-suru*, and A-A types always take a kind of adjectival form often called Nominal Adjective attached with the copula *-da*. In addition to the semantic reason related to the relationship between constituents, there are morphosyntactic reasons to distinguish between pairing types and co-synonymic types. The classification presented here is thus supported morphosyntactically as well as semantically.

5.3. *Remarks on cross-linguistic variation of dvandvas*

Finally, I make a brief discussion on why dvandvas can occur in Japanese, but not in English. Arcodia et al. (2010: 182) observe that dvandvas "show a strongly areally determined distribution", and attribute the cross-linguistic variation in the existence of coordinated compounds including dvandvas and appositional compounds to what limits their distribution to the particular area, the "areal feature" of each language in Arcodia et al.' (2010: 192) term, rather than to the parameter setting. Though their typological approach is worth pursuing, a careful examination of Japanese dvandvas offers another possible approach to tackle this comparative issue.

Let us take a look at the Japanese dvandvas again given in the preceding subsection. It is easily realized that many of them are in *on-yomi* pronunciation. Given that *on-yomi* is applied to bound forms in Japanese, many of Japanese dvandvas consist of bound forms with *on-yomi* pronunciation. This strongly suggests that dvandva formation is related to boundness. Even the compounding in *kun-yomi* pronunciation, as in (33c) or (37c), repeated here as (39a) and (39b), respectively, can be considered to be a case involving bound stems if we analyze it in such a way that the sound *-i-* attached to a verbal stem is a linking element:

(39) a. *nak-i-sakeb-u* (泣き叫ぶ) weep-LE-cry-Pres *kun-reading*
b. *tob-i-haner-u* (飛び跳ねる) jump-LE-jump-Pres *kun-reading*

The priority of boundness for dvandva formation might be reduced to the Bare Stem Constraint explored by Ralli and Karasimos (2009), which states that in stem-based languages like Greek, "the bond between the two constituents of a compound word is better guaranteed if the first stem is as bare as possible" (Ralli 2009: 457). Ralli (2008) characterizes Chinese as well as Greek as stem-based languages, though they are different in the presence and absence of paradigmatic inflection and linking elements. Considering that both Greek and Chinese allow dvandvas, I assume here that dvandvas are derived based on inflectional stems in Greek, while they are derived based on compounding stems in Chinese. If we take the dual pronunciation of kanji seriously, we are led to conclude that both types of dvandva formation are observed in Japanese. *Kun-yomi* dvandvas like (40a) corresponds to the Greek type, whereas *on-yomi* types like (40b) correspond to the Chinese type:

(40) a. *nak-i-sakeb-u* (泣き叫ぶ) weep-LE-cry-Pres *kun-reading*
b. *hi-kaku-suru* (比較する) compare-compare-do *on-reading*

Though my idea presented is rather rough and needs the further investigation, it seems possible to reduce the cross-linguistic difference in existence of dvandvas to morphological

properties of each language related to the system of Universal Grammar. I also find the morphological approach suggested here plausible and promising, considering that Greek, one of the Western languages and one of the stem-based languages, has dvandvas.

6. Summary

In this paper, based on the classification of coordinated compounds presented by Bauer (2008) and the typological generalization proposed by Arcodia et al. (2010), I have examined coordinated compounds in English and Japanese, mainly focusing on dvandvas in Bauer's sense. I have argued that English lacks dvandvas and that the coordinated compounds taken as dvandvas should be classified as co-participant compounds modifying covert semi-lexical categories. I have also classified Japanese dvandvas into two main categories, pairing types and co-synonymic types. On the basis of the morphological properties of Japanese dvandvas, I have pointed out the possibility to explain the cross-linguistic difference in the existence of dvandvas from a purely morphological point of view, contrasting with Arcodia et al. (2008), who explore the typological explanation.

References

ARCORDIA, Giorgio. F., GRANDI, Nichola, WÄLCHLIi, Bernhard. 2010. Coordination in compounding. In SCALISE, S., VOGEL, I. *Cross-disciplinary issues in compounding*. Amsterdam: John Benjamins. 2010, pp. 177-197.

BAUER, Laurie. 2008. Dvandvas. In *Word structure*. 2008, vol. 1, no. 1, pp. 1-20.

CHAE, Seong Sik. 2010. Nihongo no dooshiren'yookeimeishi ni kansuru ichikoosatsu (A note on Japanese nouns in adverbial forms of verbs). In *Nihonbunka kenkyuu* (Studies on Japanese culture). 2010, vol.36, pp. 487-509.

CORVER, Norbert. 2008. On silent semi-lexical *person*. In *Lingue e linguaggio*. 2008, vol. 7, no. 1, pp. 5-24.

EMONDS, Joseph. 1985.*Towards a unified theory of syntactic categories*. Dordrecht: Foris.

EMONDS, Joseph. 2000. *Lexicon and grammar: The English syntacticon*. Berlin: Mouton de Gruyter.

FANSELOW, Gisbert. 1981. *Zur Syntax und Semantik der Nominalkomposition*. Tübingen: Niemeyer, 1981.

KAYNE, Richard. 2003. Silent years, silent hours. In DELSING, L.-O., FALK, C., JOSEFSSON, G., SIGURÐSSON, H.A. *Grammar in focus: Festschrift for Christer Platzack*. Lund: Wallin and Dalholm, 2003, pp. 209-229.

KAYNE, Richard. 2007. Several, few and many. In *Lingua*. 2007, vol. 117, no. 5, pp. 832-858.

OLSEN, Susan. 2001. Copulative compounds: a closer look at the interface between syntax and morphology. In BOOIJ, G.E., MARLE, J. *Yearbook of morphology 2000*. Dordrecht: Springer, pp. 279-320, 2001.

RALLI, Angela. 2008. Compound markers and parametric variation. In *Language typology and universals*. 2008, vol. 61, no. 1, pp. 19-38.

RALLI, Angela. 2009. IE, Hellenic: Modern Greek. In LIEBER, R., ŠTEKAUER, P., *The Oxford handbook of compounding*. Oxford: Oxford University Press. 453-463, 2009.

RALLI, Angela, KARASIMOS, Athanasios. 2009. The Bare-Stem Constraint in Greek compound formation. In *Gengo Kenkyu*. 2009, vol. 135, pp. 29–48.

SHIBATANI, Masayoshi. 1990. *The languages of Japan*. Cambridge: Cambridge UP, 1990.

SHIMADA, Masaharu, NAGANO, Akiko. 2011. *Zi*-nouns in Japanese and related issues. In *Studies in Language and Literature: Language*. 2011, vol. 59, pp. 75-106.

TEN HACKEN, Puis. 1994. *Defining morphology: A principled approach to determining the boundaries of compounding, derivation, and inflection*. Hildesheim: Georg Olms, 1994.

Notes

[1] Arcodia et al.(2010) exclude the compromise type as well as the appositional type from the set of dvandvas.

[2] Emonds argues that the boundness of morphemes and the lexicality of categories do not correlate at all. Functional elements can be free or bound. Likewise, lexical elements and non-lexical elements can be realized as free or bound morphemes. Shimada and Nagano (2011) also argue for the independence of boundness of lexicality under the lexeme-based approach.

[3] Kayne (2007: 834) observes that the overt counterpart of NUMBER really exists, as shown as follows:

(i) (?) John has the fewest number of books of anybody I know.

[4] (17a) becomes more acceptable if it is interpreted as the way of eating, but not just the event of eating. In the case where this intended reading is allowed, the null element WAY must be present.

[5] I assume that the structure of *Austro-Hungary* types in (6a) also contains the null semi-lexical category like COUNTRY. In fact, it is overtly realized in Japanese, as in:

(i) oosutoria-hangarii teikoku
Austro Hungary country 'Austro-Hungary'

[6] The A-A dvandva is attached with the copulative *-da*, though the conclusive form of adjectives is *-i*. Note that the A-A dvandva is pronounced in *on-reading*. Since the morphemes read in *on-reading* cannot be inflected, the copula *-da*, to be inflected, is inserted in the A-A dvandva.

[7] *nak-i-* in (33c) is an inflected adverbial form of the verb *nak*. Since *nak-i-sakeb-u* is a compound, I regard the element *-i-* as a linking element. The left constituents of Japanese V-V compounds in *kun-yomi* always take inflected adverbial forms. This means that the linking element *-i-* always occurs in Japanese V-V compounds in *kun-yomi*. I discuss this matter in section 5.3.

[8] Bauer (2008) and Arcodia et al. (2010) make the same observation.

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