# Dvandva Compounds and Obligatory Contour Principle

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## 1. Introdution

It has been observed that languages may have dvandva compounds (also known as copulative compounds, co-compounds, coordinate compounds and coordinating compounds), which have two heads rather than one. In this paper, I will discuss the problems of dvandva compounds in terms of Obligatory Contour Principle (OCP). In section 2, I briefly review the types and typology of dvandva compounds. In section 3, I argue whether dvandva compounds observe OCP or not in the world's languages. Section 4 devotes to theoretical implications of dvandva compounds and OCP. Section 5 concludes the discussion.

## 2. Types and typology of dvandva compounds

In this section, I briefly illustrate some of the previous studies on dvandva compounds in order to show their types and typology.
Jespersen (1949: 142) defines copulative compounds as in (1).

(1) AB means A plus B: *Schleswig-Holstein* consists of two districts, Schleswig and Holstein (copulative compounds).

Jespersen (1949: 147) calls copulative compounds type three and describes that this type of compounds "is very sparsely represented in English, the only true instances being names of countries and districts: *Austria-Hungary, Alsace-Lorraine, Scheswig-Holstein.*"

Plag (2003: 146) gives two kinds of copulative compounds (or dvandva compounds) as shown in (2).

(2) a. singer-songwriter
science-explorer
poet-translator
hero-martyr
b. the doctor-patient gap
the nature-nurture debate
a modifier-head structure
the mind-body problem

Plag calls the compounds in (2a) appositional compounds and those in (2b) coordinative compound. Appositional compounds refer to one entity and coordinative compounds denote two entities that stand in a particular relationship with regard to the following noun.

It is noteworthy that Plag (2003: 147) shows the example (3) in order to argue that English compounds generally have right-hand head.

(3) There are many poet-translators/*poets-translator/*poets-translators in this country.

A plural suffix *-s* attaches to the right-hand word and not to the left-hand word. This test for headedness cannot be applied to the coordinative compounds in (2b) because prenominal modifier cannot be plural in English, as shown in (4).

(4) Those hugs helped bridge the doctor-patient/*doctors-patient/*doctor-patients/*doctors-patients gap

However, it seems clear that each word in coordinative compounds is the head from their meaning (e.g. *doctor* and *patient* in *the doctor-patient gap*). Note again that all the coordinative compounds are prenominal modifiers.

Olsen (2001) investigates copulative compounds that correspond to appositional compounds in Plag's (2003) term (e.g. *poet-doctor*). She discusses copulative compounds in Sanskrit, Romance (Spanish, Italian, Portuguese and French) and Germanic languages (English and German). She pays attention to phonological properties such as stress as well as semantics of copulative compounds.

Bauer (2001: 699) defines dvandva compounds as compounds that "have two or more words in a coordinate relationship, such that the entity denoted is the totality of the entities denoted by each of the elements." Bauer points out that dvandva compounds have strong areal biases in the world. He constructs a sample of 36 languages from six areas in order to test hypotheses about typological influences on compounding, as shown in (5), where the number on the left shows the number of languages with dvandva compounds and that on the right that with no dvandva compounds.

(5) a. Africa (1:5): Ewe, Hebrew, Kanuri, Tswana, Turkana, Yoruba
b. Eurasia (excluding southeast Asia) (5:1): Abkhaz, Basque, Chukchee, Danish, Finnish, Tamil
c. Southeast Asia and Oceania (5:1): Cantonese, Cambodian, Maori, Thai, Toba-Batak, Vietnamese
d. Australia-New Guinea (4:2): Arabana-Wangkangurru, Kobon, Mara, Siroi, Waskia, Yimas
e. North America (1:5): Dakota, Kiowa, Takelma, Tümpisa, Shoshone, Tzutujil, West Greenlandic
f. South America (1:4): Cayuvava, Guarani, Hixkaryana, Imbabura, Quechua, Paumarí, *Pirahã (omitted from the count)

The numbers of languages in (5) show that dvandva compounds are mainly seen in Eurasia, Southeast Asia and Oceania and Australia-New Guinea,

and not in Africa, North America and South America.

Wälchli (2005) also discusses dvandva compounds from typological point of view and focuses on Altaic and Uralic languages. Wälchli (2005: 218) proposes an interesting generalization that the frequency of co-compounds diminishes from east to west in Eurasia. He shows a map of the frequency of co-compounds with the scale in (6).

(6) The levels of co-compounding

[6] upper high level: Mandarin, Vietnamese, Hmong (White)

[5] high level: Tuva, Khalkha, Tibetan, Lahu, Burmese, Thai, Khmer

[4] upper moderate level: Manchu, Korean, Japanese, Yakut, Khakas, Kazakh, Kirghiz, Uzbek, Turkmen, Chuvash, Kalmyk, Mordvin, Avar, Khasi, Santali, Honda, Konda, Kannada, Toda; Kate, Melpa, Sentani

[3] moderate level: Khanty, Mansi, Komi, Udmurt, Mari, Tatar, Modem Uyghur, Abkhaz, Adyghe, Georgian, Lezgian, Basque, Burushaski, Hindi, Aceh, B. Indonesia, Sundanese, Toaripi

[2] upper low level: Finnish, Estonian, Hungarian, Modern Greek, Persian (?), Tadzhik (?), Turidsh, Azerbaijani, (Malagasy)

[1] low level: Modem Tamil, Tagalog, Yabem, Nanai, Even, Latvian, Lithuanian, Ossete, Armenian

[0] almost none: English (and other West European languages), Maltese, Arabic, Somali, Nicobarese, Tsou, Hua


Although Wälchli's generalization is interesting, we need to be carefull in investigating why this tendency holds in Eurasia. In the next section, I point out some ideas about the typology of coordinative compounds in terms of OCP.

Bauer (2008), independently from Wälchli (2005), also focusses on dvandva compounds in the world's languages. He discusses classification of dvandva compounds on his data mainly from Southern and South-East Asian languages.

Below I will focus on coordinative compounds in Plag's (2003) term because this type of dvandva compounds pose a problem concerning Obligatory Contour Principle.

## 3. Obligatory Contour Principle and dvandva compounds

### 3.1. English

In this section, I discuss the problem of dvandva compounds with respect to Obligatory Contour Principle (OCP). OCP guarantees that adjacent tones must be different, as shown in (7).

(7) Obligatory Contour Principle (Leben 1973, Goldsmith 1976):
At the melodic level of the grammar, any adjacent tonemes must be distinct.

Here I extend OCP to stress as shown in (8) (Tokizaki 2015, cf. Kubozono for

OCP(accent)).

(8) OCP Stress

Sisters of a constituent must have different degrees of stress.

OCP Stress is observed in most of compounds in English as shown in (9).

(9) a. stóne bridge

b. apple píe

Most of the compounds in English are left-prominent or right-prominent as in (9a) and (9b). Although right-prominent compounds are claimed to have double stress in some studies, Kunter (2011) argues that compounds such as (9b) indeed have right-prominence by pitch. The compounds in (9a) and (9b) have the head word on the right: the first noun restricts the set of the second noun.

However, it is not clear how OCP works in dvandva compounds, which have more than one head and primary stress, as shown in (9).[1]

(10) a. náture-núrture còntroversy

b. mínd-bódy pròblem

Here both of the two words have primary stress and function as the head of the whole prenominal modifier. The stress pattern in (10a) and (10b) violates OCP.

3.2. German

Olsen (2001: 302) observes that "nominal copulative compounds in German follow the stress contour of determinative compounds in displaying heavy stress on the initial and weak stress on the final constituent" citing the examples of determinative compounds in (11a) and "copulative compounds" in (11b).

(11) a. Wéinkèller, Bíerkrùg

wein-cellar beer-mug

b. Báby-Bastàrd, Díchterkomponìst

baby-bastard poet-composer

Note that although Olsen calls the compounds in (11b) copulative, these compounds are appositive in the sense of Plag (2003). Olsen also observes that "adjectival copulatives denoting a pattern of two colors in German ... take double stress" as shown in (12).

(12) a. *bláu-wéiß,* *grün-gélb*

blue and white green and yellow

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[1] Stress marks in (9a) and (9b) are those of *An Encyclopedic Supplement to the Dictionary for the General Reader* (Kenkyusha 2000) and *Taishukan's Unabridged Genius English-Japanese Dictionary* (Taishukan 2001).

b. *blau-weiß gestreift*
blue and white striped

Toman (1985) observes that coordinative compounds have "prosodic prominence on the last constituent, similarly to prosodic contours in enumerations, lists and the like," as shown in (13).

(13) a. *schwarz-weiß-rót*
black-white-red
b. *Nord-Wést*
north-west
c. *Freund-Féind-Verhältnis*
frient-enemy-relationship

From these data, we can conclude that German have left-prominence in appositive compounds, and double-prominence or right-prominence in coordinative compounds. Then, OCP can be violated in coordinative compounds in German.

### 3.3. Romance

The prosody of Romance copulative compounds has not well been described in literature. Rainer and Valera (1992: 125) observe that in Spanish coordinative compounds both constituents get main stress, though destressing can be observed in lexicalized cases," as shown in (14).

(14) a. poeta-pintor
poet-painter
b. compraventa
buying-selling
c. marxismo-leninismo
Marxism-Leninism
d. panaderia-pasteleria
bakery-pastry

Lexicalized compounds as in (14c), which shows destressing of the first constituent (*compraventa*), observes OCP while other coordinative compounds do not.

### 3.4. Japanese

Prosody of Japanese dvandva compounds is investigated by Kurisu (2005). Kurisu classifies dvandva compounds in terms of the number of mora as shown in (15), where I show the pitch of each mora in Tokyo dialect.[2]

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[2] Mukai (2006: 68) also discusses a number of coordinative compounds in

(15) a. ta-ka
H-L
many-few
b. u-mu
H-L
presence-absence
(16) a. yama-kawa
LH-LL
mountain-river
b. siro-kuro
HL-LL
white-black

The examples in (15) are sino-Japanese and those in (16) are yamato-Japanese. Kindaichi and Akinaga (2001: App. p. 26) observe that coordinative compounds in Japanese tend to preserve the accent pattern of the first word. Japanese coordinative compounds observe OCP by disregarding the accent of the second word (cf. Nishimura (2013: 210) for an optimality theoretic analysis in terms of OCP(accent) by Kubozono (1997)).[3]

3.5. Chinese

Wälchli (2005) describes Mandarin Chinese as upper high level [6] in co-compounding as we saw in section 2. Mandarin Chinese, whose words are mostly monosyllabic, has a strong tendency to have bisyllabic foot. Thus, dvandva compounds match this tendency very well. The presence or absence of stress other than lexical tones has been controversial. If Mandarin Chinese does not have stress, OCP(stress) does not apply to this language.

3.6. Languages in Africa, the Americas and Australia

According to Bauer (2009), coordinate compounds are rare in languages in Africa, the Americas and Australia. As he points out, the types of possible coordinate compounds may well be different among those areas.

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Japanese as well as English and Danish. However, the pitch accent patterns of some Japanese examples are different from those of Standard Japanese.

[3] Kubozono (1997) originally proposed in his analysis of Japanese normal compounding:

(i) OCP(accent): No more than one prominence (i.e., a word accent) is allowed in a single prosodic word.

It may be possible to speculate that OCP(tone) functions as a constraint on compounding in tone languages including African languages. We need more data and careful investigation, however.

## 4. Theoretical considerations

In this section, I would like to consider the theoretical implications of coordinative compounds. First, English and other West European languages are classified into the level 0 coordinative compounding by Wälchli (2005). It is not clear whether this vast generalization holds or not. However, it might be possible to ascribe this low level of coordinative compounding to the fact that a large number of languages including English and German have word stress. OCP(stress) is violated in coordinate compounds as we have seen above. Thus, the frequency of coordinate compounds is low in these languages for the rhythmic reason.

Related to this idea, it is interesting that most of coordinate compounds in English are found in prenominal position as shown in (9). I argue that this limited context is due to a head-final constraint on phrase structure. Suppose that coordinate phrase with a conjunction and occurs in the prenominal position, as shown in (17).

(17) a. náture and núrture còntroversy
b. mínd and bódy pròblem

This type of phrases has the structure in (18).

(18) [[náture [and núrture]] còntroversy]

This structure is a kind of phrasal compound, which is marked in a lot of languages including English. I argue that in order to avoid this structure, coordinative compounding is licensed in spite of OCP violation. Thus, English has coordinative compounds in prenominal position only.

Second, Chomsky (2013) argues that labeling of syntactic objects is necessary for interface at LF. That is, syntactic objects must be labeled for semantic interpretation. Chomsky argues how structure can be labeled if it is symmetric.[4] He suggests that one way of labeling of symmetric structure is to find the common feature of two constituents of the structure and make it the label of the structure. Turning back to phonology of coordinating compounds, OCP can be satisfied by destressing of one of the constituents or some other phonological mechanism. Then, interface at PF as well as LF allows coordinative compounds in the language. Assuming that semantics or LF is basically the same in languages of the world, the

[4] See Bauke (2014) for movement analysis of compounds and Harley (2009) for an analysis of compounds in Distributed Morphology

frequency of coordinate compounding is due to phonology of the language including OCP. Then, we can ascribe the typological difference of coordinate compounding to the parameters in phonology and not to those of morphosyntax (for the idea of Universal Syntax and Parametric Phonology (USPP), see Tokizaki and Dobashi (2013)).

## 5. Conclusion

We have discussed how coordinate compounds cope with OCP in languages of the world. It is clear that we need more data on the prosody of coordinative compounds in various languages. It is also necessary to classify these compounds with rigid definitions in order to make meaningful discussion on the matter. I hope that this paper can be some help in encouraging future study of symmetry in words and languages in general.

## References


Bauer, Laurie (2001) "Compounding," *Language Typology and Language Universals: An International Handbook, Vol. 1*, ed. by Martin Haspelmath, Ekkehard Konig, Wulf Oesterreicher and Wolfgang Raible, 695-707, Berlin: Walter de Gruyter.

Bauer, Laurie (2008) "Dvandva," *Word Structure* 1, 1-20.

Bauer, Laurie (2009) "Typology of Compounds," *The Oxford Handbook of Compounding*, ed. by Rochelle Lieber and Pavol Štekauer, 129-144, Oxford University Press, Oxford.

Bauke, Leah S. (2014) *Symmetry Breaking in Syntax and the Lexicon.* Amsterdam: John Benjamins.

Chomsky, Noam (2013) "Problems of Projection," *Lingua* 130, 33-49.

Goldsmith, John (1976) Autosegmental Phonology. Doctoral dissertation, MIT.

Harley, Heidi (2009) "Compounding in Distributed Morphology," *The Oxford Handbook of Compounding*, ed. by Rochelle Lieber and Pavol Štekauer, 129-144, Oxford University Press, Oxford.

Jespersen, Otto (1949) *A Modern English Grammar on Historical Principles, Part VI: Morphology.* London: George Allen & Unwin.

Kindaichi, Haruhiko and Kazue Akinaga (2001) *Shinmeikai Nihongo Akusento Jiten* [Shinmeikai Japanese Accent Dictionary]. Tokyo: Sanseido.

Kubozono, Haruo (1997) "Lexical Markedness and Variation: A Nonderivational Account of Japanese Compound Accent," *Proceedings of the West Coast Conference on Formal Linguistics* 15, 273–89.

Kunter, Gero (2011) *Compound Stress in English: The Phonetics and Phonology of Prosodic Prominence.* Berlin: De Gruyter.

Kurisu, Kazutaka (2005) "Gradient Prosody in Japanese," *Journal of East Asian Linguistics* 14, 175–226.

Leben, William (1973) Suprasegmental Phonology. Doctoral dissertation, MIT.
Mukai, Makiko (2006) A Comparative Study of Compound Words in English, Japanese, and Mainland Scandinavian. Doctoral dissertation. University of Newcastle.
Nishimura, Kohei (2013) Morphophonology of Japanese Compounding. Doctoral dissertation, University of Tokyo.
Olsen, Susan (2001) "Copulative compounds: a closer look at the interface between syntax and morphology," Geert Booij and Jaap van Marie (eds), *Yearbook of Morphology 2000*, 279-320. Kluwer.
Plag, Ingo (2003) *Word-Formation in English*. Cambridge: Cambridge University Press.
Rainer, Franz and Soledad Valera (1992) "Compounding in Spanish," *Rivista di Linguistica* 4, 117-142.
Tokizaki, Hisao and Yoshihito Dobashi (2013) "Introduction to Universal Syntax and Parametric Phonology," *Linguistic Analysis* 38, 147-151.
Tokizaki, Hisao (2015) "Hitsuigenri-to Seiseitoogoron," *A Report of Studies on the OCP effects*, ed. by Masao Okazaki, 53-61, Ibaraki University.
Toman, Jindřich (1985) "A Discussion of Coordination and Word-Syntax," *Studies in German Grammar,* ed. by Jindřich Toman, Dordrecht: Foris, 407-432.
Wälchli, Bernhard (2005) *Co-compounds and Natural Coordination*. Oxford: Oxford University Press.

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