On Imaginary English Dvandvas in Relational Adjectives

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1 Typologically Unavailable, but Derivationally Available?

Dvandva compounds, a type of coordinated compound, have typological significance because they are widely observed in Asian languages, but not in European languages (Bauer (2008), Shimada (2013, 2016), among others). Thus, Japanese has the typical example of dvandvas expressing "a new unity made up of the whole of the two entities named" (Bauer (2008: 2)): *dan-jo* (male-female) 'male and female.' In contrast, its (Present-day) English counterpart is, as the translation shows, a phrase rather than a compound.

However, English has derivatives that apparently involve dvandvas. Such words can be observed in relational adjectives (RA), a kind of denominal adjective (e.g., *theatrical, historic*). Given that they have nominal bases, we encounter a paradoxical situation in the examples in (1) with combining forms composing neoclassical compounds (cited from the *OALD* and the *OED*): They appear to be derived from nominal dvandvas, which are supposed to be typologically unavailable in English.

- a. gastrointestinal 'of or related to the stomach and intestines'
 - b. dorsabdominal 'relating to the back and abdomen'
 - oesophagogastric 'of or relating to the oesophagus and the stomach'
 - d. psychosomatic 'involving or depending on both the mind and the body'

In (1a), *gastrointestinal* appears to contain as its base **gastrointestine*, which clearly has the typical reading of dvandvas '(the set of) the stomach and intestines,' but this potential base is not a grammatical compound (Shimada (2023: 239)). Then, how can the RAs like those in (1) accommodate such an "imaginary" base, so to speak?

We aim to answer this question, drawing on Nagano's (2013, 2015) analysis of RAs as prenominal variants of PPs, where P is a category-shifting functional category that turns an NP into an AP (Baker (2003)). If so, the RAs in (1) also have PPs as their underlying structures, where the nouns can be safely coordinated as in ordinary PPs (e.g., *in <u>Europe and Asia</u>*).

2 Framework: Nagano (2013, 2015)

(1)

c.

The core idea of Nagano's (2013, 2015) study is that RAs are morphological, realizational variants of PPs that appear in the environment of direct modification, where an attributive modifier is directly related to the head noun through base-generation. An important fact in this regard is that RAs can be semantically paraphrased as PPs, as in (2).

(2)	a.	presidential plane	a'.	plane of the president
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b. *theatrical* dancer b'. dancer *in the theater*

(Nagano (2013: 123; 2015: 6), with slight modifications)

Syntactically, this indicates that noun modification requires the modifier to be in the form of PP in the postnominal position and the form of RA in the prenominal position; PP cannot be a prenominal modifier as it stands (cf. $*a [_{PP} near [_{DP} Boston]]$ residential area (Escribano (2004: 2))).

Nagano (2013) then proposes that RAs are derived from the structure in (3a) through conflation (i.e., incorporation before lexical insertion). Specifically, N in (3a) is conflated into its head, P, forming the structure in (3b).

(3) a. $[P[_{Comp} N]]$ b. $[N_i + P[t_i]]$ (Nagano (2013: 125)) Given that conflation derives a structure with only one X⁰ node (Baker (2003: 168)) and that the head P in (3) is responsible for changing N to A, the resultant structure we obtain here, [N+P], constitutes A⁰ (Nagano (2013: 126)). The word structure formed in this manner is phonologically realized as an RA, as represented in (4), where P is realized by the suffix *-al*.

(4) $[THEATER + P_{in}] > \text{theatrical}$ (Nagano (2015: 10)) Why are PPs forced to turn into A⁰, namely RA, in the environment of direct modification? Nagano (2013, 2015) attributes the motivation behind the conflation in (3) to the following condition imposed on direct modification in general: "direct modifiers should take a form that is fit for agreement with the noun" (Nagano (2013: 116)). This kind of agreement is visible when a modifier includes a measure noun like *year*, as in a {*ten-year-old/*ten-years-old*} *girl* (Nagano (2013: 117)); *year* takes a singular form, a default word-form without a specific Number feature, which does not interfere with the modifier-head noun agreement (Watanabe (2010)). This condition works even when the agreement is invisible, and it is A⁰-size modifiers that satisfy this condition, thus triggering the conflation indicated in (3).

3 Analysis: Coordination under P

Nagano's (2013, 2015) study enables us to obtain the (1)-type RAs without relying on the formation of dvandvas. If RAs are derived from the PP structure in (3a), then it is not surprising that coordinated nouns occur in the N position. One potential problem is that the constituents are bound forms and cannot stand alone, leading to the question of how such elements are coordinated. Here, we adopt the assumption, in line with Nagano and Shimada (2014), that a combining form is a bound word form of a given lexeme, which itself can also be realized as a free form. Under this assumption, *psych*- and *mind*, for instance, are allomorphs of the single lexeme MIND. Importantly, direct modification is the environment that often triggers suppletion, as in <u>dental</u> disease (< disease of teeth) (Nagano (2013: 123)) and collateral adjectives (e.g., *vernal* (\sim spring), aestival (\sim summer), feline (\sim cat); Koshiishi (2011: 6)). Along with this line, we propose that gastrointestinal in (5a) is an attributive counterpart of the PP italicized in (5b) involving the bound word form of the lexeme STOMACH, namely, gastr-.

(5) a. gastrointestinal condition b. condition of the stomach and intestines From the PP structure in (3a), conflation yields the A⁰ structure of [N+P], as represented on the left side of (6a), where & stands for the functional category for coordination, and the conflated structure is phonologically realized as gastrointestinal. Likewise, *psychosomatic* is the realization form of the PP of the mind and the body in the attributive context, with the lexemes MIND and BODY realized as the bound word forms *psych*- and *-soma*, respectively.

(6) a. [STOMACH&INTESTINE + P_{of}] > gastrointestinal

b. [MIND&BODY + P_{of}] > psychosomatic

Importantly, this analysis is free from the formation of dvandvas, thus providing a typologically preferable consequence for Present-day English.

One might doubt the necessity of the proposed analysis because of the established view that, in English, coordinated compounds are licensed as long as they function as premodifiers of nouns, as in <u>mother-child</u> relationship (Bauer (2008: 6)). However, even in such an environment, the non-adjectival forms are ruled out, as shown in (7).

- (7) a. ?* psycho-soma relationship b. psycho-somatic relationship
 - cf. mind-body relationship

Thus, this type of coordination is possible only under P, which calls for our analysis.

In addition, one might think that a dvandva can be temporarily formed by directly combining two combining forms, the resultant structure being a base of a derivational suffix

to form an RA. If so, it would be expected that the semantic subtypes of dvandvas attested in dvandva-rich languages could also be observed in English, albeit in the form of RAs. However, this is not the case. Particularly relevant here are what Bauer (2008) calls the co-synonymic and co-hyponymic types, which are exemplified in (8a, b), respectively. The co-synonymic dvandva consists of constituents in a synonymous relationship. The co-hyponymic type is a compound where each constituent denotes a subclass of the category named by the compound as a whole.

(8)	a.	Co-synonymic	Lezgian	kar-k'walax	job work	'job, business'	
	b.	Co-hyponymic	Punjabi	bas-kaar	bus-car	'vehicles'	
				(0	(cited from Bauer (2008: 10, 9))		

As dvandvas are not available in Present-day English, these subtypes are also systematically unobservable, and this situation holds true even in the form of RA.

First, the co-synonymic dvandvas composed of a combining form and its free form synonym would be something like **gastrostomachic* or **enterointestinal*, but these combinations are not easily acceptable.

Second, co-hyponymic dvandvas are also difficult to find in the RAs in question because, in most cases, as observed in (1), the coordinated expression simply refers to the union of the two sets named by the constituents, not exceeding it. One potential candidate for this kind of dvandva is psychosomatic, given the Japanese nominal dvandva shin-shin (mind-body), which can be used to express 'every fiber of one's being,' where *mind* and *body* can be understood as parts of one's existence. However, this meaning is not reflected in psychosomatic, and again, it simply denotes the sum of mind and body. In fact, gastrointestinal tract means the entire digestive tract, where gastr- (i.e., stomach) and intestine are both hyponyms of digestive organ. This is similar to the case of the co-hyponymic dvandva observed above, in which the coordinated hyponyms form their hypernym. This appears to be a potential challenge for our analysis. We assume that the RA formed in the proposed manner can undergo such a semantic extension (i.e., synecdoche), depending on its relationship with the noun to be modified. In fact, gastrointestinal is not always used to represent digestive organs; gastrointestinal radiography most likely to refers to radiography of the stomach and intestines, not of the digestive tract as a whole. Thus, it is the modifier-head relationship that allows for semantic extension, arguing against (co-hyponymic) dvandva formation.

4 Implications from the Lack of Neoclassical Dvandvas

In English, verbal compounds, as well as dvandvas, are typologically unattested in the sense that N-V compounds are not directly formed by combining two bases (e.g., **to truck-drive* (Ackema and Neeleman (2004))). Instead, they can be obtained by applying back-formation to (nominal or adjectival) synthetic compounds (e.g., *to air-condition*_V < *air-condition*_N). This raises the question of why this process is applicable to synthetic compounds but not to the RAs in (1), which would otherwise be a potentially rich source of neoclassical dvandvas in English. One answer is blocking by the phrasal competitor, as in **gastrointestine vs. stomach and intestines* (cf. **male-female vs. male and female*; see Nishimaki (2022) for a related discussion). Our analysis implies another possible factor behind the situation in which dvandvas are not back-formed from RAs. A crucial difference between synthetic compounds and RAs lies in how they are formed. Synthetic compounds are outputs of compounding, and if we take the view that compounding is lexeme-internal syntax (cf. Aronoff (1994: 16)), their formation, regardless of the exact process, is driven by syntax and arguably by semantics as well. On the other hand, RAs are the realization forms that the structure [P+N] is forced to take in the syntactic context of direct modification (see Section 2). In this sense, the formal

alternation from PP to RA is "closer to inflection" (Nagano (2013: 113)), although the resulting word has the status of a derivative. This difference may determine the applicability of back-formation; the outputs of syntactic context-triggered (or inflection-like) word-formation, but not those of syntax-/semantics-driven word-formation, are likely to resist undergoing back-formation (and possibly some types of word-formation processes). This situation is reminiscent of Myers' Generalization that "no derivational suffixes may be added to a zero-derived word, just as no such suffix may be added to an inflected word" (Myers (1984: 66)). Our analysis, together with this generalization, leads us to examine the relationships among the relevant processes, which further deepens our understanding of how morphology works.

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