COMPETITION THEORY AND A NEW PERSPECTIVE ON CROSS-LINGUISTIC VARIATIONS

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Ackema and Neeleman (2001, 2004) propose Competition Theory to explain typological differences. In this theory, morphology and syntax compete for structural realization, and language types depend on the way that an underlying structure is realized on its surface, whether morphologically or syntactically. Adopting Competition Theory, this article presents a new perspective on cross-linguistic variations in realization patterns of nominal modification with special reference to the contrast between English and Japanese. Our analysis reveals that this contrast ultimately follows from a macroparametric distinction between the two languages and that similar cross-linguistic variations can be given a unified account as instantiations of this macroparametric distinction.*

Keywords: morphology-syntax competition, realization pattern, macroparameter, cross-linguistic variation, direct modification

1. Introduction

Although the relationship between morphology and syntax has been controversial since Chomsky (1970), it has been commonly assumed that a morphological object functions as a building block to form a larger syntactic object. In other words, the relationship between the two modules is assumed to be asymmetrical and uni-directional in that morphology feeds syntax and not vice versa. This asymmetrical view is found, for example, in Di Sciullo and Williams’ (1987: 45) statement that “rules of syntax do...
not have access to the parts of words directly [...]” However, typological surveys have observed that different languages use different realization forms for the same structure. For example, according to Haspelmath and Sims (2010: 4–6), polysynthetic languages (e.g. Yana and West Greenlandic) make much greater use of morphology, specifically, compounding, than analytic (e.g. English and French) and isolating (e.g. Chinese and Vietnamese) languages, in which syntax is more prominent (for a more elaborated classification, see Sapir (1921: Ch. 6)). Given this observation, the asymmetrical view of the morphology-syntax relationship is not necessarily correct.

In contrast, the symmetrical view of the morphology-syntax interface is presented by Ackema and Neeleman (2001, 2004). They assume that morphology and syntax are parallel generative systems and thus compete for structural realization; in this sense, there is no asymmetry between these modules. Based on this assumption, Ackema and Neeleman develop a theory that hypothesizes that an unmarked realization form of a structure is parameterized in terms of either morphology or syntax, depending on which is more prominent in a given language. Since the notion of competition between the two modules plays a crucial role in this theory, we call it Competition Theory.

Ackema and Neeleman mainly apply Competition Theory to data concerning a realization pattern of a predicate-argument (or head-complement) structure in Germanic languages. Considering that Competition Theory is a general theory, it should hold true for other types of structures and capture variations among typologically unrelated languages. Based on this assumption, this article analyzes the realization patterns of a modifiee-modifier structure, another asymmetrical head-nonhead structure, in two typologically unrelated languages: English and Japanese. Specifically, we compare the following translation pairs, which are quoted from a Japanese-English dictionary:

(1) a. an old family (intended reading: an ancient family)
   a’. kyuu-ka
      ancient-family
      ‘an old family’ (KNJED, s.v. kyuu-ka ‘old family’)
   b. an old book (intended reading: a secondhand book)
   b’. huru-hon
      secondhand-book
      ‘an old book’ (KNJED, s.v. huru-hon ‘old book’)

In these translation pairs, adjectives modify nouns. The Japanese counterparts of the adjective old and the noun family in (1a) are kyuu- and -ka,
respectively, as is shown in (1a′). Additionally, the adjective *old* and the noun *book* in (1b) correspond to *huru-* and *hon*, respectively, in Japanese, as is shown in (1b′). Notice the difference in realization patterns: the English nominal phrases *old family* in (1a) and *old book* in (1b) are translated into the Japanese *kyuu-ka* in (1a′) and *huru-hon* in (1b′), respectively, which are normally analyzed as compounds. It is thus possible to consider that the same structure of nominal modification is realized as a phrase in English but as a word in Japanese. The aim of this article is to contribute to developing a competition-theoretic approach and to demonstrate its promise in presenting a new perspective on cross-linguistic variations and unifying otherwise separately-treated phenomena.

The organization of this article is as follows. Section 2 presents the general architecture of Competition Theory. In particular, this section considers how this theory successfully captures the interrelation between issues concerning inter-modularity and cross-linguistic variations. Section 3, the main part of this article, provides a competition-theoretic analysis of the contrasting realization patterns between English and Japanese. In this analysis, their contrast is attributable to a macroparametric distinction, and even a non-parameterized, or marked, realization pattern can be accepted if a grammatical environment requires it. Section 4 then observes the marked realization patterns of nominal modification in English and Japanese. Section 5 looks at phenomena other than nominal modification to further explore the possibilities of Competition Theory. Section 6 makes concluding remarks.

2. The Architecture of Competition Theory

2.1. Competition in Surface Realization

Ackema and Neeleman (2001, 2004) hypothesize that morphology and

1. *Kyuu-* ‘old’ in (1a′) and *huru(-i) ‘old’ in (1b′) are examples of Sino-Japanese (S-J) and native vocabulary, respectively. An EL reviewer points out that the former type of vocabulary does not necessarily reflect the characteristics of Japanese because it was borrowed from Chinese. However, Nagano and Shimada (2014) demonstrate that it has been fully integrated into the linguistic system of Japanese. Thus, it is safely assumed that S-J vocabulary raises no problem for discussing the characteristics of Japanese grammar.

2. According to Baker’s (1996) definition, a macroparameter is a primary, pervasive parameter of Universal Grammar whose particular settings entail a corollary of properties for each particular language.
syntax compete for PF (phonological form) realization and that the winner of the competition is parameterized cross-linguistically for each particular language. Thus, languages are classified as syntax-preferring or morphology-preferring, depending on the chosen value of the parameter. Ackema and Neeleman elaborate on this idea by examining the PF realization of the predicate-argument relationship, the verb-object relationship in particular. For example, the underlying syntactic structure in which *drive* takes *truck* as its argument can be phonologically realized as either the compound form *to truck-drive* or the phrasal form *to drive trucks*.\(^3\) The fact that English uses the latter form (in most contexts) leads Ackema and Neeleman to conclude that English prefers syntax for PF realization and that the compound form is blocked by the phrasal form. In morphology-preferring languages, the compound form corresponding to *truck-drive* should be selected instead.

The competition between morphology and syntax always obtains if both morphological and syntactic realizations can be candidates for a surface form of a given abstract structure. If either of the possibilities is excluded for some independent reason, however, the remaining possibility, whether a morphological or syntactic realization, must be chosen, regardless of the parametric value. Ackema and Neeleman show this by focusing on the fact that whereas English does not have the verbal compound *to truck-drive* per se, it does have the synthetic compound *truck driver*. Although *to truck-drive* is not allowed because its competitor *to drive trucks* is selected as a surface form, it is involved in the derivation of the compound *truck driver*. This means that the verbal compound form is not ungrammatical but unselected in English. According to Ackema and Neeleman, because suffixes, e.g. *-er*, require morphologically-realized objects as their bases, VP forms cannot be competitors in word formation involving suffixes. In an environment where syntactic realization is not allowed, morphological realization is possible even in a syntax-preferring language such as English.\(^4\)

\(^3\) It is irrelevant to competition whether *drive* and *truck* project prior to their merger. Ackema and Neeleman (2004: 51) explain the reason as follows:

(i) Because a head and its (extended) projections share identifying features, such as category, competition does not distinguish between merger of the terminals α and β and merger of α with an (extended) projection of β.

\(^4\) On evidence for embedded verbal compounds, see Ackema and Neeleman (2004: Ch. 3). These compounds constitute a typical case of “embedded productivity,” which is observed by Allen (1978) and Booij (2010), among others. Booij (2010: 47) explains this morphology-specific phenomenon as follows:
Note also that the competition explored here obtains only under the condition of structural identity and that it is irrelevant to the pair of different abstract structures. In spite of a semantic similarity, no competition is involved between the nominals *truck driver* and *driver of trucks*. Ackema and Neeleman (2004: 61) attribute this failure of competition to their structural differences in narrow syntax. Informally, they analyze *truck driver* as \([N[V[N\text{truck}][V\text{drive}]]\text{er}]\), and *driver of trucks* as \([N[N\text{driver}][N\text{of}\text{trucks}]]\). Because they are structurally different, they do not compete for surface realization.

In sum, a parameterized realization pattern is selected by default. Nevertheless, if certain special factors prevent the morphology-syntax competition, a marked realization pattern is selected independently of a parametric value.

2.2. Language Types: Syntax-Preferring and Morphology-Preferring Languages

Ackema and Neeleman (2001, 2004) use the (un)attestedness of verbal complexes as a criterion for distinguishing between syntax-preferring and morphologically preferred languages.

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(i) The term ‘embedded productivity’ denotes the phenomenon that a word formation process is normally unproductive, but is productive when it co-occurs with another word formation process.

According to Competition Theory, embedded productivity results from the failure of competition.

Competition Theory is an optimality-theoretically oriented, representational, theory (see Ackema and Neeleman (2001)), where constraints are violable and violation is explained in terms of (un)markedness. Optimality-theoretically, the embedded productivity of verbal compounds in English means that selectional restrictions on suffixes override the principle that syntactic realization should be selected.

Ackema and Neeleman regard *of trucks* as an extended projection of *truck*, based on Chomsky’s (1981) analysis that *of* is a functional head that is inserted for the case filter.

Competition Theory rules out a popular analysis of *truck driver* as a form of N-N root compounding (\([N[N\text{truck}][N\text{driver}]]\)). This analysis implies that *truck driver* is structurally identical to *driver of trucks* in that both are mergers of two nouns. Therefore, the analysis incorrectly predicts that *truck driver* would be in competition with and blocked by *driver of trucks*.

The competition just outlined is an illustration of inter-modular interaction. Competition Theory postulates three additional modules: the lexicon, semantics, and phonology. Note that the lexicon is distinguished from morphology; the lexicon is a mere list of idiosyncrasies or syntactic atoms (e.g. affixes, simplex words, and idioms), whereas morphology is similar to syntax in that it is responsible for structure-building. An optimal realization form is determined by the interaction among these modules as well as by the morphology-syntax competition. Thus, a non-default realization form may be selected for an idiosyncratic, semantic, and/or phonological reason.
morphology-preferring languages. Based on the unattestedness of genuine verbal compounds, for example, *to truck-drive in English, Ackema and Neeleman (2004: Ch. 3) assume that it belongs to the group of syntax-preferring languages. Ackema and Neeleman (2004: 55, fn. 2) suggest that the same is true of nearly all Germanic languages. In contrast, according to Ackema and Neeleman (2004: 85–88), polysynthetic languages are typical examples of morphology-preferring languages. For instance, concepts typically expressed by adverbials in English must be expressed morphologically as parts of verbal complexes in Yimas:

(2) Tpwi i-kay-a-pan-kiak.
    sago.X.PL X.PL.O-IPL.A-DEF-pound-NEAR.FUTURE
    ‘We will pound sago tomorrow.’
    (Ackema and Neeleman (2004: 87))

In (2), the time adverbial kiak ‘tomorrow’ is a part of the morphological verbal complex. Similarly, Japanese can be classified as a morphology-preferring language because it has expressions that involve verbal complexes, such as verbal compounds (e.g. sen-sha(-suru) (V-N) ‘to wash cars’ and tabe-hazimeru (V-V) ‘to begin to eat’). Thus, a particular language is assumed to be classified as syntax-preferring or morphology-preferring in Competition Theory. Within this theoretical framework, the next section examines the contrast in nominal modification between English and Japanese that is observed in (1).

3. Competition Theory and Realization Patterns of Nominal Modification

Under Competition Theory, the selection of a particular realization pattern by a given language is never arbitrary but is instead parametrically regulated. Ackema and Neeleman limit their analysis to the surface realization of a predicate-argument structure in Germanic languages. Therefore, it is

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8 A surprising, but necessary, consequence of Competition Theory is that syntax-preferring languages have no form of root compounding because the merger of lexical items results only in phrasal realization in these languages. Although forms of N-N root compounding are alleged to be productive, Ackema and Neeleman (2004: 80–85) claim that they result from a process of lexicalization of syntactic phrases; their alleged productivity reflects that of phrasal forms (for similar claims and supporting evidence, see Spencer (2003) and Giegerich (2004), among others).

9 Observing that Frisian has genuine argumental N-V compounds, Ackema and Neeleman suggest that it may be a morphology-preferring language, exceptionally among Germanic languages.
worth pursuing the applicability of Competition Theory to another case of asymmetrical head-nonhead structures, i.e. a modifiee-modifier structure. This section gives a competition-theoretic analysis of surface realizations of the modifiee-modifier structure in English and Japanese. More specifically, we reveal that Baker’s (2003a, b) observation on nominal modification immediately follows from Competition Theory. Our analysis in this section confirms its far-reaching validity.


Based on his theory of lexical categories, Baker (2003a, b) gives a principled explanation for the (im)possibility of so-called direct modification in English and Japanese. Direct modification is a certain type of nominal modification by adjectives. In the literature, nominal modification by adjectives has been classified into two types: direct and indirect modifications. Before a detailed discussion of Baker’s explanation, let us review some differences between these two types of nominal modification.

3.1.1. Two Types of Nominal Modification: Direct and Indirect Modification

According to Sproat and Shih (1991), attributive adjectives conform to ordering restrictions in direct modification, as in (3a), whereas they are freely ordered in indirect modification, as in (3b).

(3)  a. {small green Chinese/*green Chinese small} vase
    (Sproat and Shih (1991: 565))
    b. {tiisana sikakui/sikakui tiisana} ie
       small square/square small house
       ‘small square house’
    (Sproat and Shih (1991: 582))

Observing this difference, the authors assume that adjectives are available for direct modification in English and for indirect modification in Japanese.11

10 Under the rubric of adjectival nouns (see Kageyama (1993)), adjectives marked with -na, e.g. tiisa-na ‘small,’ may be differentiated from those marked with -i, e.g. sikaku-i ‘square.’ However, following Baker (2003b), we assume here that these two types belong to the same category ‘adjective.’

11 On the basis of ordering restrictions, Sproat and Shih (1991) and subsequent works propose that there is a universal hierarchy of direct attributive adjectives according to their semantic classes. For example, Scott (2002: 114) proposes the following fine-grained hierarchy:
In addition, interpretations differ between the two types of modification:

(4) a. Olga is a beautiful dancer.
   b. Olga is beautiful and Olga is a dancer.
   c. Olga dances beautifully.

(Cinque (2010: 9), with slight modifications)

   Olga-Nom beautiful dancer-Cop.Pres
   Olga-Nom beautiful-and Olga-Nom dancer-Cop.Pres
   c. Olga-ga utukusiku odor-u.
   Olga-Nom beautifully dance-Pres

Cinque (2010) observes that attributive adjectives may be ambiguous between intersective and non-intersective readings in English. When they are indirect modifiers, they may have intersective readings with predicative paraphrases, as in (4b). In contrast, when attributive adjectives are direct modifiers, they allow only non-intersective readings with adverbial paraphrases, as in (4c). This ambiguity means that English uses adjectives for both direct and indirect modifications (see Cinque (2010)). In Japanese, however, attributive adjectives have only intersective readings, as is shown by the fact that (5a) can only be paraphrased as in (5b), but not as in (5c). Based on this fact, it is generally assumed that only indirect modification is possible for adjectives in Japanese (see Baker (2003b)).

3.1.2. Direct Modification as an Adjectival Property

Baker (2003b) attributes the impossibility of direct modification in Japanese to the clausal nature of Japanese adjectives. Baker (2003a, b) assumes that direct modification results from “the merger of a bare noun with a bare ‘adjective’ in the absence of any distinctively clausal material (Baker (2003a: 252)).” Following Sproat and Shih’s (1991) insight, Baker (2003b) assumes that nominal modification by adjectives in Japanese is a type of relative clause structure, in which adjectival inflections (e.g. *sikaku-*...
‘square’ and *tiisa-na* ‘small’) are fusions of a predicative head with a tense marker. Baker (2003a: 211) proposes the following adjectival parameter:

(6) In some languages, A[jectives] must be in the minimal domain of a Pred[icate] (Slave, Ika, Japanese, etc.).

Because of this parametric feature, a predicative head intervenes between adjectives and nouns, preventing direct modification in Japanese. In contrast, direct modification is possible in English due to the lack of an intervening predicate in nominal modification.

In Baker’s theory of lexical categories, only adjectives can qualify as direct modifiers; neither nouns nor verbs can be direct modifiers. This is a natural consequence of Baker’s definition of three lexical categories, which can be formulated as follows:

(7)  

a. The lexical category N(oun) bears a referential index.

b. The lexical category V(erb) has a theta-marked specifier (= subject).

c. The lexical category A(djective) has neither property.

The point is that A is defined as a defective category in (7). Both N and V have theta-theoretic properties. N has a referential index as theta-marked elements and V is a theta-role assigner. In the configuration of direct modification, N and V would induce theta-criterion violations because their theta-theoretic properties cannot be properly interpreted. In contrast, A is characterized as having no such character. This category has neither a referential index nor is a theta-role assigner. This syntactic defectiveness enables A to involve direct modification. Furthermore, based on behavioral similarities between APs and PPs, Baker (2003a: 311–324) analyzes P(reposition) as a category-shifting functional head that serves to turn NPs into APs. The next subsection shows that Competition Theory works well in capturing cross-linguistic variations in direct modification, conforming to Baker’s classification of grammatical categories and view of direct modification.

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12 Baker (2003a) adopts neo-Larsonian clausal structures, in which both a transitive object and a subject are base-generated in a specifier position and both receive a theta-role from a verb there.

13 For example, APs and PPs can occur as resultative predicates, unlike VPs and NPs:

(i) *I cut the bread {thin/into slices}.*  

(Baker (2003a: 313))

On the functional status of P, Baker (2003a: 303–311) discusses considerable differences between P, on one hand, and N, V, and A, on the other hand. For instance, P is a closed class, whereas N, V, and A constitute an open class; P can be neither an input to nor an output of a word formation rule.
3.2. Competition-Theoretic Analysis of Direct Modification

Bearing in mind the observation made in the literature that direct modification is possible in English but not in Japanese, let us consider (1) again, repeated here as (8).

(8) a. an old family  b. an old book
  a’. kyuu-ka        b’. huru-hon
    ancient-family   secondhand-book
    ‘an old family’  ‘an old book’

As discussed in section 3.1.1, nominal modification can involve both direct and indirect modification in English. The nominal phrases old family in (8a) and old book in (8b), for example, involve direct modification. Their unambiguous interpretation as direct modification can be seen from their non-intersective readings (‘ancient family’/‘secondhand book’) and lack of predicative paraphrases (#The family is old./#The book is old.) in the intended reading.14 Interestingly, it is possible to translate (8a, b) into Japanese, as shown in (8a’, b’). This means that the Japanese counterparts of old family and old book, kyuu-ka and huru-hon given in (8a’, b’), also have an interpretation as direct modification. In fact, the modifiers (kyuu-/huru- ‘old’) and the modifiees (-ka ‘family’/-hon ‘book’) establish a non-intersective, but never a predicative, relationship (#Sono ie-ga hurui. ‘The family is old.’/#Sono hon-ga hurui. ‘The book is old.’).

Recall that Baker (2003b) as well as Sproat and Shih (1991) assume that Japanese only allows the interpretation of indirect modification. The observation made above on the interpretation of (8a’, b’) seems to contradict this assumption. These authors are right, on the other hand, in the sense that if we translate (8a, b) into Japanese as in (9a, b), the resulting expressions sound rather awkward:15

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14 On attributive-only adjectives and their status as direct modifiers, see Sproat and Shih (1991: 574) and Cinque (2010: 29–30).

15 Seemingly, some nominal phrases have non-intersective readings. For example, hurui yuuizin ‘old friend’ may be marginally acceptable with its non-intersective reading ‘long-standing friend (cf. kyuu-yuu).’ However, Watanabe (2012: 511, fn. 7) notes that the use of hurui is highly indicative of translation of the intended reading; it should instead be expressed by hurukukara-no (yuizin) ‘long-standing (friend).’ We agree with Hoshi (2002) that hurui yuuizin ‘old friend’ and the like have intersective readings of relative clauses. According to Hoshi (2002), the seemingly non-intersective reading results from the properties of a Japanese relative clause. Recall from section 3.1.2 that nominal modification by adjectives in Japanese is a relative clause structure. Since Kuno (1973), a Japanese relative clause has been assumed to contain a zero pronominal and to be licensed by establishing an ‘aboutness’ relationship with the relative head. On this as-
In (9a, b), the nouns *ie* ‘family’ and *hon* ‘book’ are modified by the adjective *hurui* ‘old’; the modifier and the modificiee constitute a nominal phrase. In contrast to the examples in (8a′, b′), those in (9a, b) cannot be interpreted as direct modification.\(^{16}\)

We would like to claim here that the examples in (8a′, b′) and those in (9a, b) should be differentiated based on whether they are morphological or phrasal. First, consider the examples in (8a′, b′), where the modifier and the modificiee form a compound. Specifically, the modifiers *kyuu-* ‘old’ in (8a′) and *huru-* ‘old’ in (8b′) are bound forms.\(^{17}\) The former is attached with other bound morphemes, such as *-ka* ‘family,’ to derive words, whereas the latter combines with free forms, such as *hon* ‘book.’ In contrast, turning to (9a, b), the modifier *hurui* ‘old’ is not a bound form but a free form, and the modifier and the modificiee combine into a phrasal structure. We are thus led to conclude that direct modification is attested even in Japanese as long as the modificiee-modifier relationship is represented in a word form. In English, on the other hand, direct modification is represented in a phrasal form.

It seems to be implicitly assumed in the literature, such as Sproat and Shih (1991), Baker (2003a, b), and Cinque (2010), that the interpretation of direct modification is exclusively established in the form of syntactic sumption, Hoshi (2002: 11) explains that the marginal acceptability may arise if a particular interpretation of the zero pronominal contained in *hurui yuuzin* ‘old friend’ is licensed by the ‘aboutness’ condition. See Hoshi (2002) for a detailed explanation.

\(^{16}\) The interpretation of such examples as those given in (8) and (9) may depend on the idiosyncrasies of the lexical items involved. In fact, unlike *hurui yuuzin* ‘old friend,’ *hurui ie* ‘old family’ and *hurui hon* ‘old book’ are not open to non-intersective reading. *Hurui yuuzin* ‘old friend’ may be listed as a lexical item meaning ‘long-standing friend.’ Competition Theory leaves issues concerning idiosyncrasies for the lexicon (see fn. 7).

\(^{17}\) Two *EL* reviewers point out that the categorial status of S-J morphemes is unclear due to their boundness and that it is then questionable whether S-J compounds, e.g. *kyuuka* ‘ancient family,’ are morphological realizations of the direct merger of adjectives and nouns. The relationship between categorial status and boundness is too far-reaching to investigate here. For the present purpose, assuming with Nagano and Shimada (2014) that S-J and native morphemes mostly form pairs as two distinct ways of reading *kanji* graphs (*on-yomi* and *kun-yomi*), we identify categories of S-J morphemes with those of their paired native ones. According to this analysis, a *kun-yomi* variant of the S-J *kyuu-* ‘old’ is identified with *hurui* because both are written with the same *kanji* (経/経).
phrases or that direct modification is just a syntax-specific notion. However, this is not the case. The truth is that an underlying abstract structure for direct modification is available in any language, including English and Japanese. The terminology ‘direct modification’ should be used to refer to the structure in which a bare adjective and noun directly merge.

Under Competition Theory, the cross-linguistic variations and phrase-word distinctions in direct modification observed above are successfully captured. English and Japanese differ with respect to whether they belong to the group of syntax-preferring or morphology-preferring languages. Their surface forms are selected depending on the value of this macroparameter. Competition Theory thus predicts that direct modification is phonologically realized as a form of a syntactic phrase in English and as a form of a morphological compound in Japanese. Indeed, direct modification is observed in phrasal structures in English, whereas it is observed in compound structures in Japanese, as is clearly shown in (8).

Note that direct and indirect modifications do not compete because of their different underlying structures. If we follow Sproat and Shih (1991), Baker (2003a, b) and Cinque (2010), among others, indirect modification is taken as a relative clause structure and distinguished from direct modification in structure. In this sense, the relationship between direct and indirect modification is parallel to the one between *truck driver* and *driver of trucks* (see section 2.1). Ackema and Neeleman (2004: 82, fn. 11) point out that a relative clause is never in competition with a morphologically-realized form. Because of the lack of a morphological counterpart, indirect modification is possible in Japanese as well as in English.

We provide some additional data on direct modification in English and Japanese. First, let us confirm that Japanese A-N compounds with the interpretation of direct modification are usually translated into English nominal phrases with the interpretation of direct modification, and vice versa. Such translation pairs abound in dictionaries, as is shown in Table 1. This correspondence between English and Japanese also suggests the validity of the analysis developed here (stress-marked examples in Table 1 (ii) are quoted from LPD, and non-stress-marked ones from KNJED):
Table 1  Japanese A-N Compounds and their English Phrasal Counterparts

<table>
<thead>
<tr>
<th>(i) Japanese</th>
<th>(ii) English</th>
<th>(i) Japanese</th>
<th>(ii) English</th>
</tr>
</thead>
<tbody>
<tr>
<td>an-situ</td>
<td>dárkroom</td>
<td>kootoo-saibanzyo</td>
<td>High Cóurt</td>
</tr>
<tr>
<td>anraku-isu</td>
<td>easy cháir</td>
<td>niga-warai</td>
<td>bitter smile</td>
</tr>
<tr>
<td>atu-gesyoo</td>
<td>heavy makeup</td>
<td>on-situ</td>
<td>hóthouse</td>
</tr>
<tr>
<td>(lit. thick makeup)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>haku-syo</td>
<td>white páper</td>
<td>oo-ozi</td>
<td>grèat-úncle</td>
</tr>
<tr>
<td>haya-ban</td>
<td>early shift</td>
<td>ree-sen</td>
<td>còld wár</td>
</tr>
<tr>
<td>hituyoo-aku</td>
<td>nècessary évil</td>
<td>sin-nen</td>
<td>nèw yéar</td>
</tr>
<tr>
<td>(lit. old furniture)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>huru doogu</td>
<td>sècond-hand</td>
<td>tyoo-on</td>
<td>màjor ký</td>
</tr>
<tr>
<td>(lit. old furniture)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kanree-zensen</td>
<td>còld frónt</td>
<td>uresi-namida</td>
<td>happy tears</td>
</tr>
<tr>
<td>ko-eego</td>
<td>Òld Énglish</td>
<td>usu-akinai</td>
<td>light trading</td>
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<tr>
<td>(lit. thin trading)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>koku-ban</td>
<td>bláckboard</td>
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</tbody>
</table>

The English nominal phrases given in Table 1 (ii) are exclusively involved in direct modification because they are interpreted only non-intersectively. For example, *easy chair* does not mean a chair that is easy (= relaxed) but rather one that makes people feel easy while they are sitting in it. The same interpretation is true of the Japanese counterpart *anraku-isu* (lit. ‘easy-chair’). Therefore, it may be safely assumed that the Japanese

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18 Japanese (A-N) compounds consistently exhibit compound accents, which indicate their full integration into a phonological unit (see Kageyama (1993, 2009)).

19 Competition Theory tells us that such A-N combinations as those given in Table 1 (ii) are phrases, or syntactically-realized forms of direct modification (see fn. 8). They may be alleged to be A-N compounds, but it has been pointed out in the literature that they are lexicalized phrases and that English has no A-N compounds (see Allen (1978), Liberman and Sproat (1992), Spencer (2003), and Giegerich (2004), among others). Lexicalization essentially differs from morphological realization in that an input to the latter process is an underlying structure derived by Merge while an input to the former process is a realized form of the underlying structure (see fn. 7). As for the non-rule-governedness, Liberman and Sproat (1992: 150–151) observe that lexicalization has three stages. According to their observation, lexicalized phrases come to be left-stressed only in the final stage. We can find this final stage in *bláckboard*. In contrast, *easy chair* retains its phrasal right-stress because of little, if any, lexicalization. The distinction lies merely in the degree of lexicalization.

20 An EL reviewer points out that stems of ‘adjectival nouns,’ e.g. *anraku(-na) ‘easy,*’ may have their categorial status unspecified. This issue goes beyond the scope of this article. They are often translated as adjectives in English, as is shown in Table 1. Therefore, for the present purpose, we assume here that they have adjectival status.
A-N compounds in Table 1 (i) involve direct modification in the same way that the English phrasal counterparts do.

Next, we would like to note that A-N compounding is highly productive in Japanese. Its high degree of productivity is indicated by the fact that A-N compounding freely coin new words with consistent compound accents. Our corpus search finds the following recently-coined A-N compounds in BCCWJC:


The high degree of productivity and consistent compound accents suggest that their derivation is regulated by some core component of grammar. The point is that these newly-coined expressions are usually realized as words but not phrases. From the viewpoint of Competition Theory, these expressions are derived through a usual process of merging to form structures of direct modification. These structures are realized as compounds in accordance with the parametric value that characterizes Japanese as a morphology-preferring language.

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21 An EL reviewer notes the possibility that kuro ‘black’ (kuro-situzi ‘black butler’) in (10) is a nominal stem. It is true that some stems of color and shape adjectives behave like nouns (e.g. ao(-i) ‘blue,’ aka(-i) ‘red,’ and maru(-i) ‘round’), but they exhibit behavior specific to adjectival stems. For example, they can undergo -sa suffixation unlike regular nominal stems (kuro-sa ‘blackness’ vs. *asa-sa lit. ‘morningness’ (OK with the reading ‘shallowness’)). Given this, we tentatively postulate their adjectival status.

22 Kyuu-koooseesyoo ‘former Ministry of Health’ in (10) is an example of W’ compounds (see Kageyama (1993, 2009)). Despite its phrasal accent, the full-fledged wordhood is corroborated by its syntactic opacity, i.e. the defining property of words (see Di Sciullo and Williams (1987: 49)). For example, the relevant type of compound disallows syntactic insertion (kyuu-(*kyodaina)kooseesyoo ‘(huge) former Ministry of Health’).

23 Two EL reviewers point out that Japanese A-N compounds may involve indirect modification because they coexist with their phrasal counterparts:

(i) huru-dokee/hurui tokee ‘old clock’; maru-gao/marui kao ‘round face’; adeyaka-na-mizugi ‘fascinating swimsuit’

However, it is reasonable to suppose that these compounds semantically differ from their phrasal counterparts, because the former cannot alternate with the latter.
3.3. Diversity of Nominal Modifications in Germanic Languages

To this point, we have observed that Competition Theory opens a new perspective on the treatment of direct modification. We have argued that while the same underlying structure of direct modification is available in both English and Japanese, this structure is realized syntactically in English and morphologically in Japanese. This may remind many readers of the issues concerning nominal modifications in Germanic languages. Striking differences have been observed among these languages with respect to whether naming, a subtype of nominal modification, is realized as a compound or a phrase. The proposed analysis, if it is on the right track, should have some significance to this traditional issue. Based on the concept of Competition Theory, this subsection explores a unified treatment of a contrast in realization patterns of nominal modification among typologically unrelated languages, such as English and Japanese, and the contrast among typologically related ones, such as German and Dutch.

Booij (2002: 316) observes that “[i]n German we have systematically AN compounds, Dutch varies, but is rather similar to English, and English has systematically phrases […]” Hüning (2010) makes a similar observation. The correspondence among these three languages is illustrated in the following:

(ii) A: Dotti-ga seekakuna-no, atarasii tokee soretomo hurui tokee.
   which-Nom accurate-Q new clock or old clock
   ‘Which is accurate, a new or an old clock?’

   B: {*Huru-dokee /Huri tokee}-da-yo.
  {* antique-clock /old clock}-Cop.Pre-Particle
   ‘It is the old clock.’

Plausibly, this semantic difference entails the structural difference. For example, huru-dokee involves direct modification with the non-intersective reading ‘antique clock,’ but hurui tokee involves indirect modification with the intersective reading ‘old clock’ of a relative clause. Of course, it may be that the interpretational difference does not directly reflect the structural difference in particular pairs (e.g. maru-gao/marui kao ‘round face’ and adeyaka(na)-mizugi ‘fascinating swimsuit’) because interpretation depends on pragmatic factors to some degree; as a result, it sounds as if compounds and their phrasal counterparts had the same semantics. Nevertheless, proper contexts enable us to clearly notice the interpretational difference between direct and indirect modifications.
For German and Dutch, Hüning (2010: 200) notes that the adjective in phrases is inflected but that it loses its inflection in compounds:

(12)  

<table>
<thead>
<tr>
<th>Phrases</th>
<th>Compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>Dutch</td>
</tr>
<tr>
<td>schnell Zug</td>
<td>sneltrein</td>
</tr>
<tr>
<td>Schnellzug</td>
<td>‘fast train’</td>
</tr>
<tr>
<td>Dutch</td>
<td></td>
</tr>
<tr>
<td>snelle trein</td>
<td></td>
</tr>
<tr>
<td>‘fast train’</td>
<td></td>
</tr>
</tbody>
</table>

Interestingly, given the above observations, Booij and Hüning assume that the abstract structure of modifying a noun by an adjective can be realized by two different forms, a compound or a phrase, and that the two forms are in competition with respect to the naming function.

This assumption indicates that the issue discussed in the last subsection is parallel to the long-standing issue concerning contrastive realization patterns of naming among Germanic languages. It is thus reasonable to expect that Competition Theory could potentially provide an explanation for the facts observed by Booij and Hüning. The contrastive behaviors that English and Japanese exhibit in nominal modification are fundamentally the same as those of Germanic languages. Competition Theory can give a unified account of these contrasts.

In fact, Hüning (2010: 206) has already provided an explanation in the spirit of Competition Theory. First, note that German and Dutch are identical in that they are syntax-preferring languages (see section 2.2). Accordingly, they should both select phrasal forms for naming units. However, this is not the case for German. According to Competition Theory, this means that morphological and syntactic realizations do not compete with each other in the case of German naming units for some reason, with only the morphological realization pattern available. The case of German naming units is thus similar to the case of truck driver in English; in the latter case, morphological realization of the verb-object combination is forced for
reasons of suffixation.

The difference between German and Dutch in their surface forms of naming units lies in the richness of inflectional morphology. In German, inflectional morphology is rich. In contrast, the schwa -e is the only adjectival inflection in Dutch, and there is no adjectival inflection in English. Observing this fact, Hüning (2010: 206) hypothesizes that the tendency to use either phrases or compounds is linked to the richness of inflectional morphology. Based on this hypothesis, Hüning (2010: 207) explains the German preference for A-N compounds over phrases as follows:

(13) While there would be form variation inside the ‘name’ when realized as phrase, the compound has the preferred constant form: *Schwarzmarkt* ['black market']. In this view, the need for compounding is more pressing in German because of the adjectival inflection and the resulting form variation.

According to this explanation, the form variation resulting from rich inflections makes a German A-N phrase too unstable to be identified as a single naming unit; in German, the compound is a much better candidate for the naming function. In contrast, a Dutch or English A-N phrase stays unchanged in (almost) all contexts because of poor inflections. In Dutch and English, this formal stability makes an A-N phrase readily identifiable as a name; the realization of the concept as a compound is not necessary.

From the competition-theoretic point of view, the explanation given in (13) means that the rich inflectional morphology and resulting form variation prevent competition between phrasal and morphological realizations and force German naming units to be realized as compounds irrespective of syntactic preference. Remember that in the case of *truck driver* in English, the morphological reason of affixation cancels a syntactic option of realization. Likewise, in the case of naming units in German, the rich inflectional morphology cancels a syntactic option of realization. The same mechanism of Competition Theory is at work in both cases. Competition Theory provides a unified account for the determination of surface forms of modification structures cross-linguistically.

3.4. Summary
This section has revealed that a competition-theoretic perspective enables us to take a fresh look at the behaviors of nominal modification in English and Japanese. It has been observed in the literature that direct modification is possible in English, while it is impossible in Japanese. It is pointed out here that direct modification is sometimes observable even in Japanese.
Competition Theory solves the dual problems of how the contrast between English and Japanese is explained and when direct modification is observed even in Japanese. Competition Theory also explains the contrast between German and Dutch in nominal modification. Interestingly, it has turned out that this contrast is reducible to the same mechanism that determines when direct modification is observed in Japanese.

Competition Theory tells us that direct modification is universally available but that the surface realization of this underlying structure shows morphology-syntax variations. An available option in a given language is determined by its macroparametric value, its preference for using morphological or syntactic means for structural realization. For example, direct modification is realized morphologically as a compound form in Japanese and syntactically as a phrasal form in English. This is a reflection of the macroparametric distinction between these two languages: Japanese is a morphology-preferring language, whereas English is a syntax-preferring language. In non-competing circumstances, the remaining option is always available for surface forms.

4. Competition-Theoretic Predictions in Non-competing Circumstances

As is observed in the cases that involve suffixation in English and rich inflectional morphology in German, Competition Theory predicts that marked realization patterns may be available when there is no competition for certain independent reasons. In section 4.1, we point out another case involving suffixation, in which English allows the morphological realization of direct modification in the absence of competition with its syntactic counterpart. In section 4.2, we confirm that Japanese can allow the syntactic realization in the absence of competition with its morphological counterpart.

4.1. Morphologically-Realized Cases in English

In addition to truck driver, English has another case of ‘embedded productivity’ (see fn. 4), in which direct modification must be morphologically realized. In this case, the suffix -ed, which derives adjectives such as blue-eyed, is involved. Following Beard’s (1995) terminology, we call the relevant adjectives Possessional adjectives. In general, they are analyzed as in (14), based on the parenthesized standard paraphrase.

\[(14) \quad [\text{blue-eye}-\text{ed}] (‘\text{having a blue eye/blue eyes’) (\text{Plag} \ (2003: \text{153})\]

This analysis means that the suffix -ed attaches to the combination of the modifier blue and the modifiee eye. Because English is a syntax-prefer-
ring language, the modifiee-modifier combination should be realized as a phrase. However, in the case of (14), Competition Theory predicts that the combination blue eye is realized as a compound. This combination is embedded within the suffix -ed, which requires that its base be morphological. For this morphological reason, a syntactic realization cannot be counted as an option of its realization form. Just as surface forms of verbal compounds are required for the suffix -er, direct modification must be morphologically realized in Possessional adjectives; the suffixal requirement prevents competition with syntactically-realized forms.

The wordhood of the modifiee-modifier combinations embedded in Possessional adjectives is confirmed by their syntactic opacity, i.e. the defining property of words:

(15)  
a. *[white dirty hair]ed (cf. white dirty hair)  
b. *[short and violent temper]ed (cf. short and violent temper)  

(Shimamura (2007: 376))

Unlike the parenthesized phrasal forms, the suffixed modifiee-modifier combinations disallow adjetival stacking, as in (15a), and internal coordination, as in (15b). Thus, the option of morphological realization is utilized in deriving Possessional adjectives.

4.2. Syntactically-Realized Cases in Japanese

Turning to Japanese, Competition Theory tells us that direct modification can be syntactically realized if there is no competition with any morphologically-realized counterpart. This situation can be found in direct modification by nouns, as noted by Morita (2011) and Watanabe (2012). According to Watanabe, Japanese lacks adjectives that denote nationality/origin and material, that is, a set of denominal adjectives called relational adjectives (RAdjs), and genitive NPs are used instead as direct modifiers. Their status as direct modifiers is confirmed by ordering restrictions, which are illustrated in (16).

24 Morita (2011) and Watanabe (2012) assume that the particle -no is either a linker or a genitive case marker, as is shown in the English glosses in (16). For convenience, we follow Watanabe (2012) in treating -no marked nominal modifiers as genitive NPs.

25 Note that no ordering restriction is imposed on regular genitive NPs (e.g. John-no aoi koppa ‘John’s blue glass’).
(16)  
a. \{aoi garasu-no /??*garasu-no aoi\} koppu
   blue glass-Linker / glass-Linker blue glass
   ‘blue glass glass’  
   (Morita (2011: 97))
b. \{tiisana tyuugoku-no /??tyuugoku-no tiisana\} kabin
   small China-Gen / China-Gen small vase
   ‘small Chinese vase’  
   (Watanabe (2012: 507))
c. \{hokuoo-no ki-no /*ki-no North.Europe-Gen wood-Gen / wood-Gen
   hokuoo-no\} isu
   North.Europe-Gen chair
   ‘North European wooden chair’  
   (Watanabe (2012: 508))

Further supporting evidence comes from the fact that the relevant type of
genitive NPs cannot be used predicatively with their intended readings:

(17)  
a. ??Kono koppu-ga garasu-da.
   this glass-Nom glass-Cop.Pre
   ‘This glass is made of glass.’
b. ??Kono kabin-ga tyuugoku-da.
   this vase-Nom China-Cop.Pre
   ‘This vase is from China.’
c. ??Kono isu-ga \{hokuoo /ki\}-da.
   this chair-Nom \{North.Europe/wood\}-Cop.Pre
   ‘This chair is \{from North Europe/made of wood\}.’

These facts lead us to the conclusion that certain semantic classes of geni-
tive NPs qualify as direct modifiers in Japanese.

As is observed, for example, in kyuu-ka ‘ancient family,’ the combination
of a direct modifier and its modifiee is realized as a compound in Japanese
because it is a morphology-preferring language. When modifiers denote
nationality/origin and material, however, the structure of direct modification
is represented as a syntactic phrase because the relevant classes of modifiers
cannot occur as adjectives in Japanese for unclear reasons and must take the
form of genitive NPs.26 The option of morphological realization, i.e. A-N
compounding, is blocked for the lack of RAdjs and there is no competition
between morphological and syntactic realizations. Competition Theory re-

26 Nagano and Shimada (2013) attribute the lack of RAdjs to the fact that Japanese
adjectives must always be agglutinated with a predicate (see section 3.1.2). This basic
property of Japanese adjectives is inconsistent with that of RAdjs, which specifies that
they cannot occur with a predicate because of their status as direct modifiers.
quires that the option of syntactic realization be selected in (16).

Finally, note that Japanese modifiers can lack adjectival forms even if they denote semantics other than nationality/origin and material. This is clear from translation pairs found in an English-Japanese dictionary. The following pairs, which are quoted from TUGEJD, illustrate English RAdjs with meanings other than nationality/origin and material and their Japanese counterparts:

Table 2  English Relational Adjectives and their Japanese Counterparts

<table>
<thead>
<tr>
<th>(i) English</th>
<th>(ii) Japanese</th>
<th>(i) English</th>
<th>(ii) Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td>the eastern sky</td>
<td>higasi-no sora</td>
<td>religious liberty</td>
<td>sinkoo-no ziyuu</td>
</tr>
<tr>
<td>economic theories</td>
<td>keezaigaku-no riron</td>
<td>the Romantic tradition</td>
<td>romanha-no keetoo</td>
</tr>
<tr>
<td>an editorial post</td>
<td>hensyuusha-no posuto</td>
<td>a triangular road-sign</td>
<td>sankakkee-no doоорhoososiki</td>
</tr>
<tr>
<td>a national holiday</td>
<td>kuni-no syuku-saizitu</td>
<td>verbal mistakes</td>
<td>kotobazukai-no ayamari</td>
</tr>
</tbody>
</table>

Notice that the RAdjs all correspond to genitive NPs in Japanese. This correspondence indicates that Japanese uses genitive NPs instead of RAdjs more widely than it is usually considered (also see Shimamura (2014) for a detailed discussion on English RAdjs and their Japanese counterparts). The above genitive NPs, which do not denote nationality/origin and material,

27 The phrasal status of the relevant direct modification is corroborated by accent patterns and *Rendaku* (the voicing of the initial consonant of a compound). For example, in the direct modification *ki-no tukue* ‘wooden desk,’ *ki* ‘wood’ and *tukue* ‘desk’ are separately accented, and /tukue/ cannot be voiced (e.g. */ki-no zukue/). In contrast, in the compound *ama-no gawa* ‘the Milky Way,’ *ama* ‘heaven’ and *gawa* ‘river’ constitute a single accent unit, and /kawa/ is voiced into /gawa/ by *Rendaku*.

28 Under Competition Theory, this correspondence implies that RAdjs in English and genitive direct modifiers in Japanese underlyingly have a common structure despite the categorial difference in surface forms. In the same spirit, Nagano and Shimada (2013) attribute the different surface forms to two different operations: conflation and incorporation. For a detailed discussion on this issue, see section 5.

29 An *EL* reviewer points out that the correspondence shows that when the nonhead is a free form, compounding tends to be avoided. Section 5 shows that this tendency ultimately follows from Competition Theory, assuming that Japanese is a stem-based language, where compounding is preferably based on bound stems. The tendency reflects this stem-basedness. From a competition-theoretic perspective, section 5 considers that the stem-basedness is reducible to the morphological preference of Japanese.
show the property of direct modifiers in that they are subject to ordering restrictions and have no predicative usage:

\[ (18) \]

\[(a) \quad \{kireena \ higasi-no \ /??higasi-no \ kireena\} \ sora \]
\[ \text{beautiful east-Gen / east-Gen beautiful sky} \]
\[ \text{‘beautiful eastern sky’} \]
\[(b) \quad ??\text{kono sora-ga} \ higasi-da. \]
\[ \text{this sky-Nom east-Cop.Pre} \]
\[ \text{‘This sky is in the east.’} \]

These examples also show that syntactic realization can be forced even in Japanese.30

5. Contrasts between Word-Based and Stem-Based Languages

As has been discussed so far, languages are divided into syntax-preferring or morphology-preferring within the framework of Competition Theory. Languages have also been classified as word-based and stem-based in the literature. This classification depends on the degree to which bound morphemes are used. If a given language tends to rely on bound stems in compounding, it falls into the group of stem-based languages. In contrast, languages that utilize free morphemes as a default for compounding are taken as word-based languages. According to Ralli (2009), for example,

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30 An \textit{EL} reviewer points out that N-N compounds can coexist with phrasal direct modifications with genitive NPs:

\[(i) \]
\[(a) \quad \text{hokuoo-kagu a’. hokuoo-no kagu ‘North European furniture’} \]
\[(b) \quad \text{tep-pi b’. tetu-no tobira ‘iron door’} \]
\[(c) \quad \text{keezai-iron e’. keezai-no riron ‘economic theory’} \]

If so, one might wonder whether they are in a competing relationship. The N-N compounds in (ia-c) and the phrasal direct modifications in (ia′-c′) involve nominal modification and have the same underlying structure in that both are mergers of two nouns. Given these points, N-N compounds appear to be morphological competitors with phrasal direct modifications with genitive NPs. However, if the present analysis is valid, they should not compete. While we are yet to give the exact reason for this failure of competition, a possible explanation is that the relevant direct modifiers as a whole are adjectives, which follows from Baker’s (2003a) theory that only adjectives can qualify as direct modifiers (see section 3.1.2). For similar views, see Morita (2011, 2013) and Nagano and Shimada (2013). Unlike regular Japanese adjectives, they have no bound form available for A-N compounding. As a result, the phrasal direct modifications are mergers of adjectives with nouns and do not compete with N-N compounds, mergers of two nouns (for an explanation along this line, see Nishimaki (2014)). This situation is parallel to the failure of competition between the synthetic compound \textit{truck driver} and the NP \textit{driver of trucks} (see section 2.1).
Modern Greek and English are a stem-based language and a word-based language, respectively.

As many readers may already know, the two types of language classification look quite similar. It seems that syntax-preferring and morphology-preferring languages roughly correspond to word-based and stem-based languages, respectively. This section deals with several phenomena that have been, or can be, discussed from the viewpoint of the distinction between word-based and stem-based languages and considers how Competition Theory provides a unified treatment.

Let us start by discussing dvandvas, which are compounds whose constituents establish a coordinated relationship. A typical example is found in Japanese:

(19) **Huu-hu-wa** tagai-o hagemasi-ta.
husband-wife-Top each.other-Acc cheer.up-Past

‘The husband and wife cheered each other up.’

(Kageyama (2009: 515))

The underlined *huu-hu* ‘husband and wife’ in (19) is a dvandva, whose two constituents take bound forms. The bound morphemes *huu-* and *-hu* mean ‘husband’ and ‘wife,’ respectively. Japanese, classified as a morphology-preferring language in Competition Theory, simultaneously falls into a class of stem-based languages, as is expected.

How does Competition Theory explain the occurrence of dvandvas? So far, we have examined asymmetrical structures (i.e. predicate-argument, or head-complement structures, and modifiee-modifier structures) in Competition Theory. Dvandvas provide us with a testing ground to consider the applicability of this theory to the realization of coordinated structures.

Reexamining the typological survey by Arcodia et al. (2010) and observing that many Japanese dvandvas are based on bound forms with S-J (or on-yomi) pronunciation, Shimada (2013) demonstrates that dvandvas are allowed in stem-based languages, e.g. Japanese, and not in word-based languages, e.g. English.\(^{31}\) Competition Theory successfully explains the cross-linguistic difference in distribution of dvandvas if the classification based on boundness is parallel to the classification assumed in Competition Theory. It requires that coordinated structures be realized as phrases

\[^{31}\text{According to Shimada (2012), native dvandvas, e.g. oya-ko ‘parent and child,’ result from the marginal extension of dvandva formation based on bound morphemes to free morphemes, and native dvandvas, consisting of free morphemes, are not as productive as those consisting of bound morphemes.}\]
in English and as compounds in Japanese, based on the value of the macroparameter adopted in Competition Theory. Because English is a syntax-prefering language, it resists realizing coordinated structures as dvandvas and instead selects phrasal realization. Japanese, on the other hand, selects their morphological realization. In fact, an English counterpart of a Japanese dvandva takes a phrasal form with the conjunct and, as is shown in the English translation in (19).32 Competition Theory is thus applicable to the derivation of coordinated structures.

One might wonder whether such an expression as mother-child is a dvandva compound, modifying a following noun (e.g. mother-child relationship (Bauer (2008: 6))).33 If this type of expression is a dvandva, this means that English has dvandvas, contrary to our prediction. What should be noted here is that the relevant type of expression is always embedded. In other words, it only occurs as prenominal modifiers, contrasting with Japanese dvandvas. According to Bauer (2008), dvandvas are compounds that can occur in isolation. In fact, compounds like mother-child are classified as another type of compound, which is referred to as a co-participant compound.

Interestingly, the distributional pattern of co-participant compounds really supports the present analysis. As Olsen (2001: 298–302) correctly points out, they can be paraphrased into PPs of postnominal modifiers, which are illustrated by a relationship between mother and child. This implies that co-participant compounds are interpreted as arguments of modified nouns. Based on this semantic correspondence, Nagano (2013) assumes that PPs formally alternate with co-participant compounds to function as direct modifiers. To put it differently, the compound form is required in the embedded environment, which is successfully captured within the frame-

32 One might wonder why Japanese allows phrasal coordination with the conjunct -to, the Japanese counterpart of and:

(i) Otto-to tuma-wa tagai-o hagemasi-ta.
    husband-and wife-Top each.other-Acc cheer.up-Past

‘The husband and wife cheered each other up.’

Dvandvas consist of two constituents, but they can stand for one concept. For example, the dvandva tyoo-tan (lit. long-short ‘length’) can mean the notion of length but not to be long and to be short. Just as there are several types of modification, there may be several types of coordination. It is possible that the structure of the phrasal coordination using the conjunct -to is different from that of dvandvas. We assume here that they are not in a competing relationship. In English, the use of the conjunct is forced even in the latter case.

33 I am grateful to an EL reviewer for helpful comments on this issue.
work of Competition Theory. The prenominal occurrence of co-participant compounds is thus another case of morphological realization forced for an independent reason (see sections 3.3 and 4.1).

Let us turn to the realization of verbal elements. One of the characteristics of stem-based languages is that they have a lot of verbal clusters. As is mentioned in section 2.2, their existence is also a diagnostic property of morphology-preferring languages. We make a further rough sketch of the realization of verbal elements from a cross-linguistic point of view, focusing on the difference between English and Japanese.

First, we consider the following data, in which an English VP is translated into a Japanese V-V compound:

(20) a. The singer finishes singing an aria.
   b. Kasyu-ga aria-o utai-oeru.
      singer-Nom aria-Acc sing-finish-Pre

(Kageyama (1993: 79))

The English VP to finish singing (an aria) in (20a) and the Japanese compound utai-oeru in (20b) are headed by an aspectual verb. English, a word-based language, uses VP forms and Japanese, a stem-based language, uses compound forms. Assuming that (20a) and (20b) have the same underlying structure, Competition Theory distinguishes them in such a way that the English VP and the Japanese compound are a syntactic and morphological realization of the same structure, respectively.

A difference along similar lines that occurs between English and Japanese is found in resultatives:

(21) a. Hanako pounded the metal flat. (Hasegawa (1999: 178))
   b. Hanako-ga kinzoku-o (taira-ni) tataki-nobasi-ta.
      Hanako-Nom metal-Acc flat pound-spread-Past

(Hasegawa (1999: 184), with slight modifications)

In English, an accomplishment eventuality is syntactically realized with a resultative construction, as in (21a). In Japanese, however, it is morphologically realized with a V-V compound, as in (21b). The eventuality and the predicate are both represented in word forms in English and in bound forms in Japanese. Kageyama (1993) and Washio (1997) note that Japanese does not allow result phrases as freely as English.34 This contrast

34 Similarly, resultatives are said to be severely restricted in Romance languages. For example, in French, adjectives cannot be used for resultative phrases. According to Hasegawa (1999: 194–195), this is because resultatives disrupt the obligatory agreement
naturally follows from Competition Theory. English, a syntax-preferring language, adopts a way of syntactic realization, producing a resultative construction. On the other hand, Japanese, a morphology-preferring language, expresses resultative meanings with a surface form of a V-V compound, which is impossible in English:

(22) *John shoot-killed (shot-kill or shot-killed) Mary.

(Hasegawa (1999: 199, fn. 14))

Finally, we would like to consider verbal clusters in terms of the notions of conflation and incorporation. Both conflation and incorporation are processes of creating X^0 categories by head movement. According to Baker (2003a: 86, 168), conflation occurs prior to vocabulary insertion, whereas incorporation occurs subsequent to vocabulary insertion. The crucial point is that conflated categories differ from incorporated ones in losing their own independent existence in syntax. To put it differently, every element involved in incorporation remains visible after the operation, whereas this is not the case with conflation. We point out here the interesting possibility that conflation and incorporation are prominent in syntax-preferring and morphology-preferring languages, respectively. Also, we make a tentative proposal to explain this correspondence within the framework of Competition Theory.

Polysynthetic languages, typical examples of morphology-preferring languages, correspond largely to incorporating ones (see Baker (1988)). Also, Japanese extensively employs a process of incorporation for word formation; in particular, various kinds of syntactic compounds are derived by noun incorporation (see Kageyama (1993)). In contrast, as Baker (1988) suggests, noun incorporation is unattested in English, in which a process of conflation is widely used for verb formation. First, let us consider N-to-V conversion. It has been widely observed that this process is very productive in English (e.g. to dance, to shelve, and to saddle). Hale and Keyser (1993) propose that N-to-V head movement occurs in N-to-V conversion. According to the conflation-incorporation distinction in Baker’s view, the derivation proposed by Hale and Keyser is taken as involving conflation; in spite of the occurrence of head movement, base nouns and converted verbs have the same forms. On the other hand, turning to morphology-preferring lan-

between predicative adjectives and nouns; French allows resultatives when resultative phrases take prepositional forms:

(i) Juan pintó la pared en blanco.

‘Juan painted the wall white (lit. ‘in white’).’

(Hasegawa (1999: 194))
languages, Baker (2003a: 266, fn. 1) suggests that N-to-V conversion is much less productive in polysynthetic languages, e.g. Mohawk and Australian languages, than it is in English. The limitedness of N-to-V conversion is true of Japanese (Akiko Nagano (personal communication)).

The existence of manner verbs in English also suggests the prominence of conflation in syntax-preferring languages. The verb *slice*, for example, includes the meaning of the manner of cutting. In English, the word form *slice* appears as a result of manner conflation. In Japanese, on the other hand, the verb *kiru* ‘to cut’ and the adjective (adverb) *usu(ku)* ‘thin’ both occur overtly, as in *usu-giri (ni suru)* or *usuku kiru* ‘to cut thin.’ As for a polysynthetic language, Talmy (1985: 110–111) observes that Nez Perce, a language of North America, extensively realizes the manner component as prefixes.

Note that we draw the same conclusion from the consideration of categories other than verbs. The fact that genitive NPs are used instead of RAdjs in Japanese, which was discussed in section 4.2, is attributable to the conflation-incorporation distinction, if we adopt Nagano and Shimada’s (2013) view that the genitive marker *-no* under discussion is a category-shifting P in the sense of Baker (2003a). Nagano and Shimada propose that head movement of nominals denoting nationality/origin and material to the category-shifting P derives so-called RAdjs. They further argue that a process of conflation results in RAdjs (e.g. *wooden*) and a process of incorporation results in genitive NPs (e.g. *ki-no* lit. ‘wood-Gen’). This suggests again that conflation and incorporation apply to English and to Japanese, respectively.

Morality-preferring languages lack an incorporated counterpart of N-to-V conversion in English. For example, Baker (1996, 2003a) observes that Mohawk never allows the combination of a noun plus a locative postposition to incorporate into a verb:

(i) *Wa-k-atekhwara-hnê-hrɅ*-.
    FACT-IsS-table-LOC-put-PUNC
    ‘I put it on the table.’ (Baker (1996: 430))

We can say the same about the Japanese locative [VP [N tana]-[P ni] [V oku]] ‘to shelve.’ This is another illustration of morphological realization canceled for an independent reason (see section 4.2). In this case, incorporation is unavailable due to a general constraint on head movement, which Baker (2003a) calls the Proper Head Movement Generalization (PHMG). The PHMG states that “[a] lexical head A cannot move to a functional head B and then to a lexical head C (Baker (2003a: 53)).” In (i), the movement from *hnê* ‘on’ into the verb *hrɅ* ‘to put’ violates the PHMG, based on Baker’s (2003a) assumption that adpositions are functional heads (see section 3.1.2). Thus, the remaining phrasal option is available for realizing structures of locative expressions.
Given these facts, it is safe to assume that syntax-preferring, or word-based, languages prefer conflation, while morphology-preferring, or stem-based, languages prefer incorporation. From the viewpoint of the word-basedness/stem-basedness distinction, conflation is characterized as a process of introducing word forms in sentences. In contrast, incorporation merely reflects a process of derivation. Word-based languages prefer conflation because they can use word forms, which do not reflect morphological derivation from abstract structures. Stem-based languages prefer incorporation because it produces more faithful morphological realizations of abstract structures. Based on the notion of complexity minimizing, Competition Theory provides a unified account of the interrelation between word-basedness and conflation, on one hand, and the interrelation between stem-basedness and incorporation, on the other hand.

As is noted, conflated categories lose their own independent existence in syntax. This means that as monomorphemic words they have no morphological complexity in narrow syntax. In other words, conflation is a strategy for creating $X^0$ categories without morphological complexity; it becomes unnecessary for narrow syntax to access morphology in computing a conflated $X^0$. Therefore, syntax-preferring languages can minimize morphological complexity by means of conflation. On the other hand, morphology-preferring languages prefer to rely on morphological representation and to minimize syntactic complexity. Computation based on morphological information conveyed by incorporation would be much easier for these languages. Incorporation minimizes the necessity to resort to syntax. Competition Theory thus characterizes word-based languages as preferring to minimize morphological complexity and stem-based languages as preferring to minimize syntactic complexity.

This section has briefly discussed coordinated structures, verbal structures, word-basedness/stem-basedness distinction, and conflation/incorporation distinction. This brief discussion shows that Competition Theory provides a unified treatment of long-standing issues discussed independently in the literature. In this sense, we expect that a competition-theoretic approach will

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36 Hasegawa (1999: 199, fn. 14) explains the ungrammaticality of V-V compounds in English, which is illustrated in (22), stating that “in English a compound with two verbs is in a sense ‘too heavy’ or ‘too complicated’ for pure syntactic operations (involving $v$ and Tense) to apply.” This heaviness or complicatedness makes perfect sense if we assume that morphological complexity must be minimized as much as possible in English as a syntax-preferring language.
give an interesting twist to a study on cross-linguistic universals and variations.

6. Concluding Remarks

This article has pursued a competition-theoretic approach to cross-linguistic variations. Competition Theory, along the lines of generative perspectives on human language, assumes that there is no difference among particular languages on an abstract level, and that their variations merely reside in how the common abstract structure is realized. Specifically, whether morphological realization or syntactic realization is available in a particular language is determined by its parametric value. Importantly, in Competition Theory, morphological realization and syntactic realization are never regulated by inviolable rules, as the terminologies ‘syntax-preferring languages’ and ‘morphology-preferring languages’ suggest (see fn. 4). If there is no competition between syntactic and morphological realizations, the remaining non-default option is selected.

Our analysis has shown that Competition Theory can successfully describe the contrasting realization patterns of direct modification between English and Japanese. Direct modification is syntactically realized as a phrasal form in English and morphologically realized as a compound form in Japanese. This contrast is an instantiation of the macroparametric distinction between syntax-preferring and morphology-preferring languages. Furthermore, from a competition-theoretic perspective, it is suggested that cross-linguistic variations discussed independently in the literature may be given a unified account.

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**Corpus**

*Balanced Corpus of Contemporary Written Japanese Chunagon* (BCCWJC) <https://chunagon.ninjal.ac.jp/search>

**Dictionaries**


*Taishukan’s Unabridged Genius English-Japanese Dictionary* (TUGEJD), Taishukan, Tokyo.

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