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Empty nominalization over anonymous juxtaposition/coordination and the emergence of a new syntactic construction

Abstract: In Japanese, direct combination of verbs or adjectives by coordination (with *to* ‘and’) or juxtaposition (with its empty counterpart) can form a NP, if the conjuncts are anonymous to each other; the coordinator *to* ‘and’ can combine only NPs elsewhere. We claim that this is because there is a phonetically empty nominalizer that can nominalize each conjunct, and that the new nominal construction has been gradually developing in the history of Japanese. An acceptability-rating experiment targeting 400 participants shows that the younger speakers were likely to judge this construction more acceptable than the older ones, that this tendency is slightly weaker in the Nominative condition than in the Genitive condition, and that the coordination condition was significantly worse than the juxtaposition condition.

Keywords: anonymous juxtaposition, anonymous coordination, Nominative/Genitive conversion, empty nominalizer, diachronic development of a new construction, intergenerational differences in acceptability

1. Introduction

In Japanese, a direct combination of verbs (V) or adjectives (A) by coordination (with an overt coordinator *to* ‘and’) or juxtaposition (without *to*) can form a NP if the conjuncts are anonymous to each other, as in (1) and (2):¹

1 An anonymous reviewer has suggested that *to* in (1b) and (2b) may be more like the quotative marker *to* in Japanese, which is not restricted to an actual quotation (cf. Suzuki 2006), than the coordinator *to* in (3a), because the former is either absent or present in both antonyms, while in the latter, the second *to* is optional. However, we cannot share the reviewer’s intuition, because the quotative marker in Japanese can never be doubled in the form of *A-to B-to*, unlike the *to* in (1b) and (2b). The same reviewer has also suggested that if the *to* in (1b) and (2b) is a quotative marker, the clause containing it is subordinate or embedded in some way, and hence a Genitive subject therein could be subjected to Hiraiwa’s (2002) analysis, according to which a Genitive subject is licensed by a nominalized complementizer. However, there is no synchronic or diachronic evidence that the complementizer *to* in Japanese is a nominalized complementizer that could license a Genitive subject. For these reasons, we continue to assume that the *to* in (1b) and (2b) is a coordinator. See also section 3 and note 5 for relevant discussions.

- (1) a. *Kodomo-no/(?)ga iru_V i-nai_A de/niyotte, ...* <VP & AP>
 child-NOM/GEN is is-not with/depending.on
 ‘Depending on whether you have a child or not, ...’
- b. *Kodomo-no/ga iru_V to i-nai_A to de/niyotte, ...* <VP & AP>
 child-NOM/GEN is CONJ is-not CONJ with/depending.on
 ‘Depending on whether you have a child or not, ...’
- (2) a. *Koe-no/(?)ga ookii_A chiisai_A de/niyotte, ...* <AP & AP>
 voice-GEN/NOM large small with/depending.on
 ‘Depending on whether a voice is loud or quiet, ...’
- b. *Koe-no/ga ookii_A to chiisai_A to de/niyotte, ...* <AP & AP>
 voice-GEN/NOM large CONJ small CONJ with/depending.on
 ‘Depending on whether a voice is loud or low, ...’

The coordinator *to* ‘and’ can combine only NPs elsewhere, as in (3), and a different type of coordinator must be used to combine two or more VPs or APs, as in (4) and (5):

- (3) a. *Sakana to niku(-to)-o taberu.* <NP & NP>
 fish CONJ meat-CONJ-ACC eat
 ‘to eat fish and meat’
- b. **chiisai to kawaii(-to) akachan* <AP & AP>
 small CONJ pretty-CONJ baby (cf. (5a,b))
 ‘a small (and) pretty baby’
- c. **Sakana-o taberu to osake-o nomu(-to)-toki, ...* <VP & VP>
 fish-ACC eat CONJ sake-ACC drink(-CONJ)-when (cf. (4a,b))
 ‘when (you) eat fish and drink sake, ...’
- (4) a. *Sakana-o tabe-te osake-o nomu.* <VP & VP>
 fish-ACC eat-CONJ sake-ACC drink
 ‘to eat fish and (thereafter) drink sake’
- b. *Sakana-o tabe-ta-ri osake-o non-da-ri suru.*
 fish-ACC eat-PAST-CONJ sake-ACC drink-PAST-CONJ do
 ‘to repeat eating fish and drinking sake’
- c. *Sakana-o taberu-si osake-mo nomu.*
 fish-ACC eat-CONJ sake-also drink
 ‘to eat fish and also drink sake’
- (5) a. *akachan-wa chiisaku-te kawaii.* <AP & AP>
 baby-TOP small-CONJ pretty
 ‘Babies are small and pretty.’
- b. *akachan-wa chiisai-si kawaii.*
 baby-TOP small-CONJ pretty
 ‘Babies are small and (also) pretty.’

In this article, we will argue that the coordinator *to* is available in (1b) and (2b) despite there apparently being no nominal conjuncts, because the coordination or juxtaposition of two VPs/APs that are semantically antonymous to each other involves syntactic nominalization of each conjunct or the entire conjunction via zero derivation. In allowing the alternation between Nominative and Genitive Cases for the subject, the construction in (1), which we henceforth refer to as the “Nominalization of Antonymous Combination” Construction (NACC), might be identified with the Nominative/Genitive Conversion (NGC), as in (6a,b):

- (6) a. [Kyoo Taro-**ga**/(?)**no** kuru **koto**]-wa dare-mo sira-nai. (*koto* = FN)
 Today Taro-NOM/GEN come fact-TOP any-MO know-NEG
 ‘Nobody knows (the fact) that Taro will come today.’
- b. [furuhon’ya-de Taro-**ga**/(?)**no** kat-ta] hon
 used.book.store-at Taro-NOM/GEN buy-PAST book
 ‘the book that Taro bought at a used-book store’

In (6a,b) too, an adnominal finite clause has a subject whose Case morphology can alternate between Nominative and Genitive. Thus, if we only considered synchronic data, we might not be able to distinguish between the NACC and the NGC (cf. Hiraiwa 2002: 547). However, we will argue that the NACC in (1) and (2) should be distinguished from the NGC in (6) in diachronic terms: First, in the last 150 years or so, the NGC in (6) has seen a decrease in both type and token frequencies, while the NACC in (1) and (2) has seen an increase in both type and token frequencies; second, as far as the facts observed from the last century to the present are concerned, the NGC has been changing from a free alternation between the Nominative and Genitive subjects to the situation where the Nominative subject is increasingly preferred to the Genitive, while the NACC has been changing from a situation in which only the Genitive subject is allowed to one of free alternation between the Nominative and Genitive subjects. The two points will be shown by corpus studies and large-scale acceptability-rating experiments targeting hundreds of participants. The diachronic change in the NGCC shows that it has been undergoing what Ogawa (2014) calls “syntactic constructionalization,” while the diachronic change in the NGC shows that it has been undergoing what Ogawa (2018) calls “clause shrinking.” Given Bader and Häussler’s (2010) experiments, there is a correlation between the frequency and acceptability of syntactic constructions. Hence, we predict that for the NGC with a decreasing frequency, younger speakers were likely to judge it less acceptable than older ones, whereas for the NGCC with an increasing frequency, the younger speakers are likely to judge it more acceptable than the older ones.

This article is organized as follows: Section 2 shows how the NACC and the NGC are similar to and different from each other. Section 3 shows that Scalise et al.'s (2009) semantic approach can explain the nominal property of the juxtaposition cases as in (1a) and (2a), but cannot be extended to the coordination cases as in (1b) and (2b). This section also shows how a syntactic analysis based on nominalization as zero derivation can accommodate the variants of the NACC in Japanese. Section 4 shows, on the basis of a survey of the Corpus of Historical Japanese (CHJ), how the various types of the NACC have developed diachronically, and explains its developmental stages in terms of Ogawa's (2014) hypothesis of "syntactic constructionalization." This section also proposes that the explanation of the developmental stages makes a prediction of differences in acceptability judgments of the various types of NACC by speakers of younger and older ages. Section 5 shows that the prediction made in section 4 is borne out by our own experiment targeting 400 native speakers of Japanese whose ages range from their 20s to their 60s, and presents a discussion of the statistical results. Section 6 is the conclusion.

2. Similarities and differences between the NACC and the NGC

Although there are numerous syntactic analyses of the NGC in Japanese (Harada 1971, Watanabe 1996, Hiraiwa 2002, Maki and Uchibori 2008, Miyagawa 2011, among many others), most of them are synchronic analyses and are basically divided into two subfields: a CP analysis and a TP analysis. The former posits that both the Genitive subject clause (GSC) and the Nominative subject clause (NSC) are a result of free alternation in a finite clause of a certain kind (Watanabe 1996, Hiraiwa 2002), while the latter argues that while the NSC is a both semantically and syntactically full-fledged finite clause, the GSC is semantically and/or syntactically defective in various senses. Thus, Miyagawa (2011) claims that the GSC has a defective tense and lacks a CP projection, with the result that feature inheritance from C to T is unavailable, which is why Nominative Case is not assigned to the subject; instead, the defective TP of the GSC is selected by another phase head D, from which its subject can receive Genitive Case. In this sense, the NGC is not a free alternation but a consequence of different syntactic manifestations and phase theory, a cross-linguistic component of UG. We suppose that although these previous analyses differ from each other in technical details, almost all of them (except for Watanabe 1996) share the assumption that the GSC is adjacent to a noun or nominal functional head. This assumption is reasonable because almost all instances of the GSC occur in adnominal clauses, such as relative clauses or nominal

complement clauses. Watanabe (1996) argues that the NGC in Japanese is also possible in a comparative clause, which apparently lacks a nominal superordinator, and hence the (ad)nominal property of the GSC is irrelevant to the Genitive subject licensing. However, Maki and Uchibori (2008) and Miyagawa (2011) argue convincingly that even in a comparative clause, the GSC can be optionally subordinated to an overt nominal element such as *teido* ‘degree’ or *no*, as in (7):

- (7) Taroo-wa [Hanako-**ga/no** yonda-(**-teido/-no**) yori] takusan-no hon-o yonda.
 Taroo-TOP Hanako-NOM/GEN read-degree/NO than many-GEN book-ACC read
 ‘Taroo read more books than Mary read.’ (Miyagawa 2011: 1270)

Hiraiwa (2002) claims that Genitive subject is licensed by a special verbal inflection that he refers to as the ‘predicate adnominal (PA) form,’ which is also called *rentai-kei* in Japanese linguistics, rather than the nominal element. This claim is allegedly supported by the well-formedness of the data such as (8a), where there is no overt nominal category that could license a GSC. Even in these cases, however, Miyagawa (2011) argues that an overt nominal element can immediately follow the P-A form, as in (8b), so that the Genitive Case in (8a) can also be licensed by the null counterpart of the overt nominals:

- (8) a. John-wa [ame-**ga/no** yamu-made] offisu-ni i-ta.
 John-TOP rain-NOM/GEN stop.ADN-until office-at be-PAST
 ‘John was at his office until the rain stopped.’
 b. John-wa [ame-**ga/no** yamu-**toki/zikan**-made] offisu-ni i-ta.
 John-TOP rain-NOM/GEN stop.ADN-when/time-until office-at be-PAST

Hiraiwa (2002: 547) also argues that examples like (1b) are a case of the NGC licensed by the P-A form. Even in these cases, however, we can easily find a variant in which the bare V/A conjunct is immediately followed by an overt nominal complementizer *no*, as in (9a,b):

- (9) a. Ken-**ga/no** iru_v **no** to i-nai_A **no** to de/niyotte, ... (V&A)
 Ken-NOM/GEN is COMP CONJ is-not COMP CONJ with/depending.on
 ‘Depending on whether Ken is here or not, ...’
 b. Koe-**ga/no** ookii_A **no** to chiisai_A **no** to de/niyotte, ... (A&A)
 voice-GEN/NOM large COMP CONJ small COMP CONJ with/depending.on
 ‘Depending on whether the voice is loud or small, ...’

Then, along Miyagawa’s (2011) lines, one might argue that the account given for (7) and (8a,b) would explain (1b) and (2b) as well, assuming that (1b) and (2b) also contain an empty nominal complementizer corresponding to the overt *no* in (7), (8b), and (9a,b).

However, there are three reasons against the identification of the NGC and the NACC. First, although the juxtapositional NACCs in (1a) and (2a) are semantically identical to, and hence should be syntactically related to, the coordinational ones in (1b) and (2b), the NGC analysis of (1b) and (2b) cannot itself relate the two variants straightforwardly, as the former does not allow an overt nominal complementizer as in (10) as a variant:

- (10) Ken-**no**/(?)ga iru_v (*no) i-nai_A (*no) de/niyotte, ...
 Ken-NOM/GEN is (COMP) is-not COMP with/depending.on
 ‘Depending on whether Ken is here or not, ...’

Second, in the standard NGC, the Nominative Case on the subject is unmarked, while the Genitive Case is marked. Nambu’s (2014) and Ogawa’s (2018) independent corpus studies show that the GSC has become less frequent in the last 100 years or so for colloquial Japanese and written Japanese, respectively, and Niikuni et al.’s (2017) and Ogawa et al.’s (2017) investigations show that the GSC is becoming increasingly unacceptable among younger age groups if the predicate is eventive. Moreover, the CHJ shows that while the standard NGC was found frequently from the Heian period (about the 800s to 1200s AD) on, the NACC of the coordination type in (1b) and (2b) types was almost never found before the Meiji period (from the 1860s on), and when it first emerged as a new construction, the Genitive subject was more frequent than the Nominative (as will be seen in Table 2 below). Even in present-day Japanese, as shown in (1) and (2), the Nominative counterpart is degraded for some speakers compared to the Genitive ones, which are always acceptable. No such restriction is observed for the normal NGC. Third, the NACC is severely degraded with an overt Genitive subject on the second conjunct, which is intended to give a contrastive focus, as in (11a), and the degradation effect is eliminated if the overt nominal complementizer *no* is inserted as in (11b). However, no corresponding effect is found in any cases of the NGC:

- (11) a. Otoko-ga/?*no iru to onna-ga/?*no iru to de-wa, ...
 male-NOM/GEN is CONJ female-NOM/GEN is CONJ depending.on-TOP
 ‘Depending on whether men are there or women are there, ...’
 b. Otoko-ga/no iru no to onna-ga/no iru no to de-wa, ...
 male-NOM/GEN is NO CONJ female-NOM/GEN is NO CONJ depending.on-TOP

For these reasons, we claim that the standard NGC and the NACC (whether juxtaposition or coordination) should be analyzed as different syntactic constructions, in that the Genitive Case in the NGC is licensed by an overt nominal head or a null nominal complementizer (which is a descendant of the

adnominal inflection), whereas the Genitive Case in the NACC is licensed by an empty nominalizer. What remains to be seen is whether the nominalization by an empty nominalizer is well-motivated or not. To answer to this question, we shall critically review Scalise et al.'s (2009) alternative semantic analysis of exocentric compounds in general in order to show that the combination of non-nominal antonyms leading to a nominal category as in (1) and (2) is not a semantic (universal) phenomenon but a syntactic phenomenon.

3. The nouniness of the juxtaposition/ coordination of antonymic non-nominals

In the context of exploring the nature of exocentricity of compounds, Scalise et al. (2009: 74–75) argue that compounds formed by antonymic predicates are universally retracted to nouns, whatever the original categories of their constituents. Some examples are given below:

- | | | |
|---------|--|-----------|
| (12) a. | saliscendi ‘climb _V + descend _V = latch’ | <Italian> |
| b. | subibaja ‘climb _V + descend _V = lift’ | <Spanish> |
| c. | Dàxiǎo ‘big _A + small _A = size’ | <Chinese> |
| d. | Chángduǎn ‘long _A + short _A = length’ | <Chinese> |

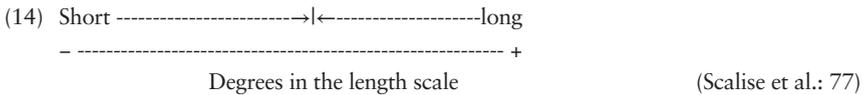
In (12a,b), two semantically antonymous motion verbs are combined by compounding and the output is a noun semantically related to the verbs. In (12c,d), two semantically antonymous dimension adjectives are combined by compounding and the output is a noun semantically related to the adjectives. They argue that “there is a semantic primitive which underlies these examples: the notion of path. The path, taken as an ordered series of values, underlies both the notion of trajectory and the notion of scale. In the first case, the path is an ordered series of locative points and in the second case, the path is constructed over a series of degree values.”

As for the question of why these two types of antonymic compounds are exocentric, with the entire nominal category underived from the category of their constituents, they provide a semantic explanation: In V-V compounds of the type in (12a,b), the component verbs denote opposite transitions inside the same locative path defined vertically, as below:

- | | | |
|------|-----------------------------|----------------------|
| (13) | ascend -----> <-----descend | |
| | - -----+ | |
| | Vertical space scale | (Scalise et al.: 78) |

As they express semantically opposite meanings, “if the two lexical items are combined it cannot be inside a category which is bound by a time

expression such as the verb. Instead, the two expressions combined have a coherent meaning if they are taken to refer to the interval of the path where the two lexical items can overlap.” A similar argument also applies to A-A compounds of the type in (12c,d): “once the standard comparison is fixed as a point in the scale, it is impossible that the same object exhibits a value of a property which at the same time counts as short and long.”



“The semantic denotation of a compound composed by two opposite adjectives is, therefore, incompatible with that of an adjective, but ... it can be naturally used to name the whole scale.”

This semantic explanation of Scalise et al.’s (2009) is, however, not as motivated as it seems at first sight. It is true that one thing cannot satisfy the opposite value on a single scale at the same time. However, it is usually the case that every event and state extends over a certain spatiotemporal domain, rather than occupying a single spatiotemporal point. For example, although one thing cannot go up and down at the same time, it can repeat going up and down during a certain temporal interval. Although one thing cannot be short and long on a single scale, it can be short and long at different times (e.g., a tape measure can grow or shrink). Hence, in order to make a situation denoted in (13) and (14) contradictory, any semantic analysis of the exocentric compounds in (12) would have to prohibit the spatiotemporal extension of an eventuality denoted by the combined verbs or adjectives to any domain larger than a point. However, it is clear that such a semantic restriction is too strong to explain the empirical data. Thus, we can say that in Japanese, a combination of antonymous verbs does not refer to a vertical spatial scale itself but to an event of moving up and down repeatedly, as in (15a), or to a metaphorical extension of such an event, as in (15b):

- (15) a. *Agari-sagari-o* kurikaesi-te, kibun-ga waruku-nat-ta.
 go.up-go.down-ACC repeat-CONJ mind-NOM bad-become-PAST
 ‘After going up and down repeatedly, I became sick.’
 b. *Ano michi-wa agari-sagari-ga* hagesii.
 that road-TOP go.up-go.down-NOM drastic
 ‘That road goes up and down repeatedly and drastically.’

As *agari-sagari* in both (15a,b) are compounds denoting an event or its metaphorical extension, we need to say that the universal semantic principle can sometimes apply to a compound formed from antonymous verbs or adjectives and interpret it as a path but otherwise does not apply, thereby yielding a set of repeated events. But what is such a semantic universal?

Second, whatever explanation is made to induce the conclusion of semantic contradiction in (13) and (14) should not be extended to the possible noun phrases in (16a–c) and (17), which are composed of antonymous non-nominal words or phrases that are mediated by a coordinator and that behave as noun phrases as a whole:

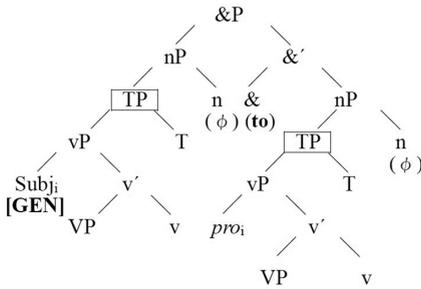
- (16) a. every now and then (= occasionally, once in a while, every time)
 b. every here and there (= every place, everywhere)
 c. With every up and down, you learn lessons that make you strong.
- (17) Agat-ta-ri sagat-ta-ri-o kurikaesi-ta.
 go.up-PAST-CONJ go.down-PAST-CONJ-ACC repeat-PAST
 ‘We repeated going up and going down.’

For example, in (16a), you can refer to every different point on a temporal path that is either identical to or different from the speech time without contradiction, from which the universal quantificational reading over time can be obtained. In (16b), you can refer to every different spatial point that is identical to or different from where you are without contradiction, from which you can obtain the universal quantificational reading over space. (16c) applies the same thing to every step of movement that is either upward or downward movement and obtains the non-contradictory meaning of “every movement.” In (17), the coordination is mediated by *ri* ‘and’, a coordinator that combines two or more TPs to induce a reading of event repetition (cf. (4b)), and yet the entire coordinational structure is nominal, as shown by the Accusative Case- marker following it. If a contradictory situation can be avoided by the universal quantificational reading as in (16) or the repetitive readings as in (15) and (17), Scalise et al.’s semantic explanation of the nominal nature of (12a–d) cannot be a logical necessity. Hence, we will argue that the combination of two antonymous non-nominal categories, whether it is a word or a phrase, can be changed into a nominal category that refers to either a concrete object or an abstract event/state because the structure can involve some kind of syntactic nominalization.

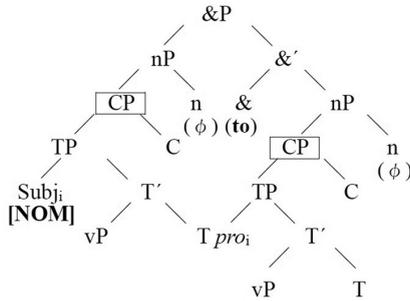
More specifically, we claim that whenever two antonymous non-nominal words or phrases are juxtaposed or coordinated, a zero nominalizer as a functional category (represented as *n*) can be merged with either conjunct, so that (1a,b) have a syntactic structure as in (18a,b):²

2 An anonymous reviewer has asked how the second coordinator in *A-to B-to* in (1b) and (2b) appears in syntax. In this respect, the structures in (18a,b) contain innocuous simplification in that the syntactic position of the second coordinator *to* in (1b) and (2b) is not represented anywhere in the tree diagram. When more

(18)a.



b.



The left conjunct in (18a) has a Genitive subject, while that of (18b) has a Nominative subject, and in both cases the right conjunct has a coreferential subject *pro*. The two structures differ in terms of whether the nominalized category is TP or CP, but this distinction directly reflects Miyagawa's (2011) analysis of the NGC, according to which a Genitive subject is licensed by the phase head D (which in our analysis is replaced by *n*) that selects TP as

than one coordinator is represented in a coordinate structure, we can assume, following Johannessen (1998: 150), that the coordinator phrase (his CoP, our &P) as a functional projection can be stuck recursively. If we apply this assumption to (1b), where the linear order is *A-to B-to*, we can give it a more complex structure than (18a), as in (ia), where the first conjunct is merged with the lower coordinator (&2) whose Spec is filled with the second conjunct, the higher coordinator (&1) is merged with &P2, and the first conjunct is moved from the complement of &2 to the Spec of &1. Alternatively, we may assume that as in (ib), &P2 that occurs to the complement of &1 moves to the Spec of &1 to derive the same word order (Kayne 1994: 58).

(i) a. [_{&P1} [_{nP} [_{TP} Subj_i-GEN ...] n]_i [_{&1'} &1 (to) [_{&P2} [_{nP} [_{TP} *pro*_i ...] n] [_{&2'} &2 (to) *t*_{nP1}]

b. [_{&P1} [_{&P2} [_{nP} [_{TP} Subj_i-GEN ...] n] [_{&2'} &2 (to) [_{nP} [_{TP} *pro*_i ...] n]] [_{&1'} &1 (to) *t*_{&P2}]

However, we will continue to use the simpler structure in (18a) rather than (ia) or (ib) when discussing the issues in the text, as nothing in our argument hinges on the choice between the different coordinate structures.

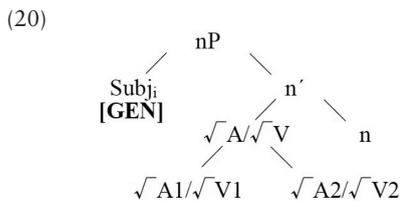
its complement, while a Nominative subject is licensed by the phase head C that selects TP as its complement. (18a,b) enable us to explain why the coordinator *to* ‘and,’ which must always combine nominal elements as in (3), is used in (1b) and (2b) to combine two apparently non-nominal categories.

In (18a,b), we also assume that juxtaposition and coordination share the same structure, the only difference between them being whether the head of &P is covert or overt. There is an independent motivation for this assumption: First, in NP, two adjectives or two numerals that modify a noun can be either juxtaposed or coordinated, as in (19a,b); second, when more than two DPs/VPs are conjoined, a DP/VP that does not come last and another DP before it can be combined without an overt coordinator but with a comma, as in (19c,d):

- (19) a. a long (and) happy life <AP & AP>
- b. three thousand (and) eight hundred miles <Numeral & Numeral>
- c. a man, (and) two women, and three dogs <DP & DP>
- d. I see (, / and) hear and feel what’s happened <VP & VP>

For the same reasons, we assume that the overt coordinator is optional in (18a,b).

Note, however, that (18a) cannot be the only structure for a juxtaposition of non-nominals whose subject has a Genitive Case. This is because Genitive Case in Japanese can be assigned not only to a subject in a nominalized clause but also to a subject in a pure noun phrase, as in *John-no hon* ‘John’s book’. Hence, we assume that for juxtaposition, but not for coordination, a smaller and simpler structure like (20) is also available, at least for some speakers:



An anonymous reviewer has cast doubt on our proposed structure in (18a,b) and (20) on the basis of the following two facts: First, even when two verbs that are mutually antonymous are juxtaposed without an overt tense morpheme or an overt coordinator and appear to have a structure like (20), they can be modified by a manner-depicting adjectives as in (21), or the verb can take a direct object as in (22), so that they should have the larger structure like (18a):

- (21) Bukka-no kyuugeki-na agari-sagari niyotte, ...
 price-GEN abrupt-AND go.up-go.down due.to
 ‘Because of (the repetition of) an abrupt increase and decrease of prices, ...’
- (22) Otoshiyori-no kaidan-no nobori-ori-o tetsudau.
 the.old-GEN stairway-GEN go.up-go.down-ACC help
 ‘to help the elderly person’s going up and down the stairway,’

It is important to note in this respect that the adnominal inflection on the adjective in (21) and the Genitive Case-marker on the direct object in (22) cannot be replaced by an adverbial inflection in (23a) or an Accusative Case-marker as in (24a) (in this respect, the NACC contrasts sharply with the NGC, where an adverb but not an adjective can co-occur), although the NACC with a Nominative subject are acceptable with them, as in (23b) and (24b):

- (23) a. *Bukka-no kyuugeki-ni agari-sagari de, ...
 price-GEN abrupt-ADV go.up-go-down with
 b. Bukka-ga kyuugeki-ni agar-u to sagar-u to de, ...
 price-NOM abrupt-ADV go.up-NONPAST and go.down-NONPAST and with
- (24) a. *Otoshiyori-no kaidan-o nobori-ori de
 the.old-GEN stairway-ACC go.up-go.down-ACC with
 b. Otoshiyori-ga kaidan-o nobor-u to ori-ru to de, ...
 the.old-NOM stairway-ACC go.up-NONPAST and go.down-NONPAST and with

Hence, we assume that when the NACC with a Genitive subject co-occurs with an adjectival modifier as in (21) or a Genitive-Case-marked object as in (22), it has a structure like (25a,b), where a nominal functional projection we tentatively represent as FP is located between nP and DP, rather than (18a), where vP and/or TP occurs below nP:

- (25) a. [_{DP} Subj-GEN [_{FP} adjective/*adverb [_{nP} √V1+√V2 n] F] D]³
 b. [_{DP} Subj-GEN [_{FP} DP-GEN/*DP-ACC [_{nP} √V1+√V2 n] F] D]

Second, the same anonymous reviewer has also cast doubt on our proposed structure in (18b) based on the fact that the realization of the coordinator *to* is not as freely optional as our theory would predict, pointing out the following minimal pairs of examples:

- (26) a. Kodomo-ga iru-inai-o teema-ni suru.
 child-NOM be-be.not-ACC theme-to make
 ‘to place it on the agenda whether one has a child or not’
 b. *Kodomo-ga iru-to inai-to-o teema-ni suru.
 child-NOM be-CONJ be.not-CONJ-ACC theme-to make

3 See Ogawa (2001) for the distinction between nP (nominalizerP) and DP. Cf. also Cinque (2010) for the placement of each of the adjectives in NP in the Spec of various nominal functional categories.

- (27) a. Shinchoo-ga takai hikui-o hyooka-no kijun-to suru.
 height-NOM high short-ACC evaluation-GEN criterion-as make
 ‘to regard whether one’s stature is high or low as a criterion of evaluation’
- b. *Shinchoo-ga takai-to hikui-to-o hyooka-no kijun-to suru.
 height-NOM high-CONJ short-CONJ-ACC evaluation-GEN criterion-as make

It is true that there is a sharp contrast in acceptability between the (a) and (b) examples in (26) and (27). However, (26b) and (27b) can become acceptable once the conjunctive coordinator *to* ‘and’ is replaced by the disjunctive coordinator *ka* ‘or,’ as in (28):

- (28) a. Kodomo-ga iru-ka inai-ka-o teema-ni suru.
 child-NOM be-CONJ be.not-CONJ-ACC theme-to make
 ‘to place it on the agenda whether one has a child or not’
- b. Shinchoo-ga takai-ka hikui-ka-o hyooka-no kijun-to suru.
 height-NOM tall-CONJ short-CONJ-ACC evaluation-GEN criterion-as make
 ‘to regard it as a criterion of evaluation whether one is tall or short’

As the translations in these examples show, these constructions always have the semantics of disjunction rather than conjunction. This contrasts with the fact that what is overtly realized in (1b) and (2b) is a (nominal) conjunctive marker *to* ‘and.’ Recall here Scalise et al.’s (2009) discussion of what they call exocentric compounds, stating in essence that the *combination* of semantically antonymous verbs or adjectives will inevitably lead to contradiction, so that they cannot remain verbal or adjectival but have to be converted to nouns to name the whole scale. However, if the coordinator of two antonyms is that of *disjunction* rather than *conjunction*, which happens to be overtly realized sometimes as *to* and other times as *ka*, then the problem of semantic contradiction does not occur from the beginning. Hence, this fact also corroborates our claim that the entire phrase that contains mutually antonymous Vs/As has to be nominal, not to avoid the semantic contradiction, as Scalise et al. argue, but because there is a syntactic nominalizer that takes scope over the antonyms. Now, the remaining question is why semantic disjunction of antonymous Vs/As can sometimes be morphologically realized with the syntactic conjunctive marker *to*. Our tentative answer is that in the structures in (18a) and (18b), the empty head of &P, which is semantically *disjunctive*, is morphologically realized with *to* ‘and’ when each conjunct is nominalized, because the conjunctive marker *to*, as well as the disjunctive marker *ka*, can combine two or more NPs. Here, the categorial/morphological selection can override the semantic selection for some reason. Such a peculiar alternation between the conjunctive and disjunctive markers without changing the meaning is also observed in English, as in (29), where sentential negation requires switching from *and* to *or* as in (29a,b), and maintenance of *and* in the negative context leads to constituent negation:

- (29) a. John bought apples and oranges. (A&B)
 b. John did not buy apples or oranges. ($\neg A \& \neg B$)
 c. John did not buy apples and oranges. ($\neg (A \& B)$)

As both interrogatives (of the *whether A or B* type) and the negation license negative polarity items (NPIs), it is not surprising that they behave alike in terms of the peculiar morphological switching. The only difference between (1b) and (2b) in Japanese and (29a,b) in English is that the switching pattern is opposite: While in the former the semantic *or* is expressed with a conjunctive marker, in the latter, the semantic *and* is expressed with a disjunctive marker. There is no *semantic* reason for why the sentential negation of conjunction needs to be expressed with a disjunctive marker as in (29b); (29c) could be semantically ambiguous between the wide- and narrow-scope readings with respect to the negation, given that a quantifier that is potentially scopally ambiguous with respect to negation seldom shows a morphological opposition like the one between (29b) and (29c) (this is natural because quantifier raising in LF should not have an effect on the PF side).⁴ Thus, the switching from *and* to *or* in (29b) is fairly likely to be a matter of morphological parameter whose value is to be fixed at various levels of granularity, ranging from a nanoparameter to a macroparameter (Biberauer and Roberts 2012). A nanoparametric approach is also applicable to the question of why the disjunctive marker must be used in (28a,b), but the conjunctive marker can be used in (1b) and (2b), a question to which we cannot give a principled explanation in any event.⁵

4 Interestingly, in the Japanese counterpart to (29b), we do not use either *to* ‘and’ or *ka* ‘or’, but an additive morpheme *mo* ‘also’ as in (i), and the use of *to* ‘and’ in the scope of negation leads to constituent negation:

(i) John-wa ringo-{**mo**/***to**/***ka**} mikan-{**mo**/***to**/***ka**} kawa-nakat-ta.
 John-TOP apple-{also/and/or} orange-{also/and/or} buy-NEG-PAST
 ‘John did not buy (either) apples or oranges.’

5 The conjunctive *to* in (1b) and (2b) can be replaced with the disjunctive *ka*, without changing the meaning:

(i) a. Kodomo-no/ga iru_v **ka** i-nai_A **ka** de/niyotte, ... <VP & AP>
 child-NOM/GEN is CONJ is-not CONJ with/depending.on
 b. Koe-no/ga ookii_A **ka** chiisai_A **ka** de/niyotte, ... <AP & AP>
 voice-GEN/NOM large CONJ small CONJ with/depending.on

In Japanese, in the context of choice from alternatives too, the alternation between *to* and *ka* is possible:

(ii) Ringo-**{to/ka}** mikan-**{to/ka}** banana-no-naka-kara hi totu-o erande-kudasai.
 apple-or/and orange-and/or banana-GEN-inside-from one-CL choose-please
 ‘Please choose one from the set including an apple, an orange, and a banana.’

We believe that we managed to make it clear to the readers that the *whether A or B* clause in Japanese can have an &P structure whose head can be empty and that the head of the semantically disjunctive &P can sometimes be morphologically realized as the overt conjunctive coordinator *to* (in which case morphological selection can override semantic selection).

4. The diachronic development of the NACC

Now, let us shift our focus to the diachronic development of the NACC. Allowing the possibility of assuming the two structures (18b) and (20) for cases of juxtaposition entails a structural ambiguity for juxtaposition with a Genitive subject, but juxtaposition with a Nominative subject and coordination with either type of subject remain structurally unambiguous, because a Nominative subject requires CP and an overt coordination requires the functional projection &P, neither of which is present in (20).

It is important to note that of the two types of Genitive subject NACC, the one without an overt coordinator is found in literature written as early as the 11th century, the early Heian period, in the form of *ari-nasi* ‘present-absent’, as in (30a); by contrast, the version whose structure must be analyzed as in (18a) with an overt coordinator first appeared in literature in the 13th century, the Kamakura period, as in (30b), and we must wait until the late 19th century, the Meiji period, for the Nominative counterpart of (30b) to first appear in the CHJ:

- (30) a. Turaki kokoro-no ari-nasi-o mi-mu. (c1010; *Izumi Sikibu Nikki*)
 hard mind-GEN present-absent-ACC see-AUX
 ‘I wonder why you can see whether my mind is faithless or not.’
- b. Kore, chie-no aru to naki to nari. (c1220; *Uji Shuui Monogatari*)
 this wisdom-GEN exist CONJ absent CONJ MOD
 ‘This is (the difference in whether) a wisdom is present or not.’

A survey of the CHJ also shows that, putting aside the three strongly idiomatic expressions *ari-nasi* ‘present-absent’, *yosi-asi* ‘good-bad’, and *suki-kirai* ‘like-dislike’, both the type frequency and token frequency of the juxtapositional NACC has gradually increased over the last 1000 years, as shown in Table 1. The CHJ also shows that the coordinational NACC was not found before the Meiji period, and originally it was only compatible with a Genitive subject in the Meiji-Taisho period, but from the Showa period on it has only been compatible with a Nominative subject, as in Table 2. Judging from the corpus data, we may assume that the NACC construction started from the juxtapositional NACC with a Genitive subject in (20), and developed to the coordinational NACC with a Genitive subject and an optional coordinator in (18a), after which it developed from (18a) to the coordinational NACC

with a Nominative subject and an optional coordinator, as in (18b). This developmental path of the syntactic construction is fairly in line with what Ogawa (2014) calls “syntactic constructionalization,” which is a general process of diachronic syntactic change defined as in (31) and (32):

Tab. 1: Juxtaposition of antonymous verbs and adjectives.

	Heian-Edo	Meiji-Taisho	Showa	
the years of publications	900~1864	1874~1925	1970~80s	1990-2000s
Words compiled (M)	3.39	14.73	10.86	94.05
type frequency (V1&V2)	3	8	10	18
token frequency (V1&V2)	12	66	61	828
type frequency (A1&A2)	2	4	4	13
token frequency (A1&A2)	2	4	5	38
type frequencies in total	5	12	14	31
token frequencies in total	14	70	66	866
PER MIL in total	4.13	4.75	6.08	9.21

Tab. 2: Coordination of antonymous verbs and adjectives.

	Heian-Edo	Meiji-Taisho	Showa	
the years of publications	900~1864	1874~1925	1970~80s	1990-2000s
Words compiled (M)	3.39	14.73	10.86	94.05
Genitive subject & antonyms				
token frequency	0	10	0	0
~no V1-to-V1{zaru/nai}-to	0	6	0	0
~no A1-to-A2-to (antonymous)	0	4	0	0
PER MIL	0.00	0.68	0.00	0.00
Nominative subjects & antonyms				
token frequency	0	0	1	12
~ga V1-to-V1{zaru/nai}-to	0	0	0	3
~ga A1-to-A2-to (antonymous)	0	0	1	2
PER MIL	0.00	0.00	0.09	0.13

(31) Syntactic Construction (cf. slightly modified from Ogawa 2014):

If a morphosyntactic constituent that dominates two or more morphemes (Y_1, \dots , no paragraph Y_n , X) ($n \geq 1$, X = head) contains at least one variable Y_i , call it a Syntactic Construction. Y_i is qualified as a variable only if there are at least two candidates no paragraph for substituting Y_i in combination with a particular head X .

(32) Syntactic Constructionalization (cf. slightly modified from Ogawa 2014):⁶

When a syntactic constituent, which was not a syntactic construction at the earliest stage, becomes a minimal syntactic construction (i.e., with only one variable and one categorizer) at a later stage, and comes to have more than one variable and/or more functional categories than before and possibly enlarges the size of its syntactic constituent in a unidirectional fashion, in a way in accordance with the universal principle of structure building, functional hierarchy, and category selection.

Given (32), and given that the syntactic constructionalization of the NACC is now in progress among the native speakers of Japanese, we predict that certain versions of NACC are more acceptable for younger speakers than for older ones, unlike the standard NGC, which Niikuni et al. (2017) and Ogawa et al. (2017) have shown is more acceptable for older speakers than for younger ones due to what we call “clause shrinking.” In the next section, we will explain the result of the experiment we administered, which bears out this prediction.

5. An intergenerational difference in the acceptability of the NACC

To test the validity of our prediction, we administered a large-scale Internet-based survey of acceptability judgments on each of the Nominative and Genitive subjects that occur in sentences like (2), targeting 400 participants ranging in age from their 20s to 60s. We examined the effects of participants’ age on the acceptability of these sentences, as well as the differences in acceptability by type of sentences.

5.1. Methods

5.1.1. Participants

Our web-based survey included 567 native speakers of Japanese and was administered in the first half of 2019. All the participants met the following criteria: (i) born in the Tokyo metropolitan area (i.e., born in Tokyo, Saitama, Chiba, or Kanagawa Prefecture), (ii) raised in this area until the

6 Ogawa (2014) argues that (32) explains many phenomena involving diachronic syntactic change, such as the development from a stem compound (e.g., *hydrophobia*) to a word compound (e.g., *dog phobia*), from a resultative V-A form (e.g., *push open the door*) to the resultative construction (e.g., *push the door open*), from a lexical V-V compound (*tachi-kiru* ‘separate-cut’) to a syntactic V-V compound (*yomi-kiru* ‘(lit.) read-cut (= finish reading)’) via the grammaticalization of the second verb in Japanese, and the development of the predicate inversion construction in DP from an apparent compound.

age of 15, and (iii) now living in this area. We finally analyzed the data from 400 participants (Table 3), who correctly answered each of the dummy items described in the Materials and Procedure section. Table 3 shows the age categories and the numbers of participants for each category.

Tab. 3: Participants of the Experiment.

Age (years old)	N (female)	Average age (SD)
20–29	80 (40)	25.7 (2.8)
30–39	80 (40)	34.8 (2.9)
40–49	80 (40)	44.7 (3.0)
50–59	80 (40)	54.1 (2.7)
60–69	80 (40)	63.8 (2.7)

5.1.2. Materials and procedure

We created 16 sets of experimental sentences, each of which can be assigned to one of the following 2 (Case: Nominative/Genitive) × 2 (Coordinator: absent/present) conditions:

- (i) Nominative case/coordinator absent condition
 hey-a-ga akarui kurai de, sagyoo-no siy-asu-sa-wa zenzen tigai-masu.
 room-NOM bright dark by operation-GEN easiness-TOP totally differ-HON.
 ‘Depending on whether the room is bright or dark, the ease of the operation differs totally.’
- (ii) Nominative case/coordinator present condition
 hey-a-ga karui-to kurai-to de, sagyoo-no siy-asu-sa-wa zenzen tigai-masu.
 room-NOM bright-CONJ dark-CONJ by operation-GEN easiness-TOP totally differ-HON
 (the intended meaning is identical to (i))
- (iii) Genitive case/coordinator absent condition
 hey-a-no akarui kurai de, sagyoo-no siy-asu-sa-wa zenzen tigai-masu.
 room-GEN bright dark by operation-GEN easiness-TOP totally differ-HON
 (the intended meaning is identical to (i))
- (iv) Genitive case/coordinator present condition
 hey-a-no akarui-to kurai-to de, sagyoo-no siy-asu-sa-wa zenzen tigai-masu.
 room-GEN bright-CONJ dark-CONJ by operation-GEN easiness-TOP totally differ-HON
 (the intended meaning is identical to (i))

Thirty-two filler sentences were also prepared, and the target sentences were distributed over four experimental lists using a Latin square design with conditions counterbalanced across lists. The filler sentences were added to each list, and the orders of the items were individually randomized.

A total of 48 sentences (16 target and 32 filler items) were presented on a page on the Web browser, and participants performed an acceptability-rating task in which they rated each sentence on a 5-point Likert scale ranging

from 0 (*unacceptable*) to 4 (*acceptable*). In addition, two dummy items were also inserted at random positions in the array of sentences. For these items, participants were instructed to make the specified answer: rating “0” for one dummy item and “4” for the other. If a participant made a different answer from what was specified to at least one dummy item, we excluded the participant’s data from analysis.

5.2. Results

Taking the rating scores as the dependent variable, we performed linear mixed-effects model analyses with participants and items as random factors (Baayen, Davidson, & Bates, 2008). We included Case (Nominative/Genitive), Coordinator (absent/present), and participants’ Age (continuous variable) as fixed effects with interactions between the factors. Case conditions and Noun conditions were deviation-coded, and the continuous variable (Age) was standardized (to *z*-scores). The R programming language and the *lmer* function within the *lmerTest* package (Kuznetsova, Brockhoff, & Christensen, 2017) were used for the analyses. Table 4 presents the results of the statistical analysis.

Tab. 4: Results of the linear mixed-effects model analysis for rating scores.

	β	SE	<i>t</i>	<i>p</i>
(Intercept)	2.564	0.056	46.12	< .001
Case	0.054	0.021	2.52	.012
Coordinator	-0.116	0.029	-4.06	< .001
Age	-0.048	0.045	-1.08	.280
Case × Coordinator	-0.120	0.044	-2.71	.007
Case × Age	-0.049	0.021	-2.32	.021
Coordinator × Age	-0.030	0.029	-1.06	.290
Case × Coordinator × Age	< 0.001	0.044	-0.01	.994

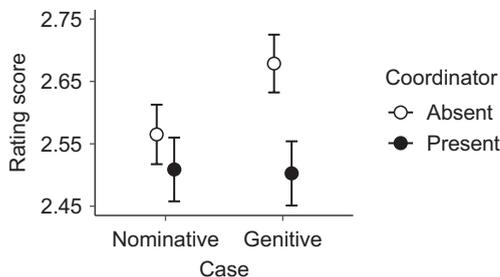


Fig. 1: Mean rating scores for each experimental condition. Error bars indicate standard errors of the mean by participant.

Figure 1 shows the mean rating scores for each experimental condition for all participants. Since the interaction between Case and Coordinator was significant, we tested the simple main effects of Coordinator for each Case condition as well as the effects of Case for each Coordinator condition. While there was no significant main effect of Coordinator in the Nominative Case condition ($\beta = -0.06$, $SE = 0.04$, $t = -1.58$, $p > .1$), in the Genitive Case condition we found a significant main effect of Coordinator ($\beta = -0.18$, $SE = 0.04$, $t = -4.78$, $p < .001$). The main effect of Case was also significant in the coordinator-absent condition ($\beta = 0.11$, $SE = 0.03$, $t = 3.60$, $p < .001$), but not significant in the coordinator-present condition ($\beta = -0.01$, $SE = 0.03$, $t = -0.21$, $p > .1$). These results indicate that sentences were judged more acceptable in the Genitive Case/coordinator-absent condition than the other three conditions.

In addition, since the interaction between Case and Age was also significant, we tested the simple main effects of Age for each Case condition. The analyses found no significant main effect of Age in the Nominative Case condition ($\beta = -0.02$, $SE = 0.05$, $t = -0.51$, $p > .1$) or in the Genitive Case condition ($\beta = -0.07$, $SE = 0.05$, $t = -1.61$, $p > .1$), although the coefficients suggest that younger speakers tend to judge the sentences to be more acceptable in the Genitive Case condition, and this tendency is slightly weaker for the Nominative Case condition. Figure 2 shows the Case \times Age interaction plot (vertical axis: the rating scores predicted from the parameter estimates of the final regression model, which is shown in Table 4).

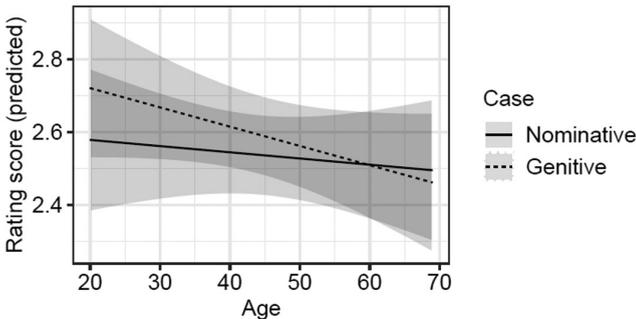


Fig. 2: Rating scores predicted from the parameter estimates of the mixed effects regression model. Shaded areas indicate 95% confidential intervals.

5.3. Discussion

The statistical analysis and its results obtained in the previous subsection show that (i) the Case \times Coordinator interaction was significant, meaning that in juxtaposition but not in coordination the Genitive subject tends to be more acceptable than the Nominative subject, (ii) the Case \times Age

interaction was significant, meaning that Genitive Case tends to be increasingly acceptable than Nominative Case for the younger speakers than for the older ones, and (iii) the Coordinator \times Age interaction was not significant.

The first result is obtained by our assumption that the NACC is more likely to be constructionalized up to (18a) for the younger speakers, but has been constructionalized up to (18b) only for part of the youngest speakers, and that the overt realization of the coordinator *to* ‘and’ in (18a,b) is optional. In the absence of the overt coordinator, a Genitive NACC will be accepted with the structure in (20) for all the participants, but the Genitive NACC with the overt coordinator will be accepted only for those who accept (18a). Here arose a statistical significance. However, the Nominative NACC has the structure in (18b), which is the most constructionalized of all. For those who allow (18b), the coordinator is optionally realized, but the number is quite few. For those who do not allow (18b), the Nominative NACC is unacceptable, whether there is an overt coordinator or not. Hence, the presence or absence of a coordinator does not cause statistical significance, as far as the Nominative NACC is concerned.

The second result is also obtained because the syntactic constructionalization from (20) to (18a) to (18b) is now in progress. If (18a) is more acceptable for the younger speakers than for the older ones and if the number of those who accept (18b), the structure of the Nominative NACC, is significantly less than the number of those who accept (18a), a structure of the Genitive NACC, then it follows that the younger speakers are more likely to allow a wider variety of Genitive NACCs than the older ones and they are also more likely to accept the Nominative NACC. This is why there will be a much weaker effect of participant’s age for the Nominative NACC than for the Genitive NACC.

Third, let us consider why the Coordinator \times Age interaction was not significant. This is explained by our assumption on the optionality of an overt coordinator in (18a,b). For those who accept the Genitive NACC with the structure in (18a), it is acceptable, irrespectively of whether there is an overt coordinator or not. The same thing also applies to those who accept the Nominative NACC with the structure in (18b). Hence, for each speaker, acceptability will not differ, whether there is an overt coordinator or not.

6. Conclusion

We have argued that Japanese allows what we call the Nominalization of Antonymous Combination” Construction (NACC), which maps a combination of two non-nominal constituents with or without an overt coordination into a noun phrase. First of all, we argued that the NACC is a construction distinct from the Nominative/Genitive Conversion (NGC) in Japanese. As for the exocentricity of the antonymous combinations, we argued against

Scalise et al.'s (2009) claim that it is based on a universal semantic condition, and proposed that they behave as nominals when each conjunct of the NACC is capped by an empty nominalizer, and that the syntactic size of each conjunct of the NACC started from the root but has been enlarging to a larger category, including TP and even CP, as a result of a common diachronic process of “syntactic constructionalization” (Ogawa 2014). This proposal was supported by the intergenerational differences in the acceptability of the NACC.

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