Coordination in Japanese: a case of syntax-phonology mismatch

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1. Introduction

The Japanese particle *to* 'and' is generally considered a coordinator of nominals. It can coordinate two NPs, but not, for instance, two verbs, as demonstrated below, respectively. Moreover, it attaches phonologically to the immediately preceding element:

(1) John-ga [Mary-to Bill-o] mita
John-NOM Mary-and Bill-ACC saw

(2) *sono inu-ga John-o oikake/oikakete-to kanda
that dog-NOM John-ACC chase.INF/chase.GER-and bit
'That dog chased and bit John.'

Interestingly, *to* may also coordinate two conjuncts which do not appear to be syntactic constituents. In (3), each conjunct consists of an indirect object, a direct object and a quantifier associated with the latter (cf. Koizumi 1995, 2000). I will refer to such conjuncts as 'nonconstituents'. Other kinds of nonconstituents, such as [subject, direct object] and [subject, indirect object, direct object], are also possible.

(3) Mary-ga [[John-ni ringo-o 2-tu]-to [Bob-ni banana-o 3-bon]] ageta
Mary-NOM John-to apple-ACC 2-CL and Bob-to banana-ACC 3-CL gave
'Mary gave two apples to John, and three bananas to Bob.'

Assuming that only constituents can be coordinated, data such as (3) are puzzling and have generated some discussion on how the coordination should be achieved. There are two main schools of thought. One approach argues that conjuncts are remnant VPs, created by across-the-board movement of the verb (Koizumi 1995, 2000). The other approach claims that they are nominals, derived from VPs by particular operations (Fukui & Sakai 2003, Takano 2002) or base-generated as such (Fukushima 2001, 2003).

In support of their nominal analysis, Fukui & Sakai (2003) note a further peculiarity of *to*, namely that it may be optionally duplicated on the second nonconstituent conjunct and be followed by a case marker, as illustrated by (4)[1]. They argue that since only nominals are usually case-marked in Japanese, the whole coordinate structure must be a nominal, providing the bracketing indicated (cf. also Fukushima 2001, 2003). The duplication is also found in NP-coordination, as shown by (5), in which case the appearance of a case marker following *to* is obligatory.

(4) Taroo-ga [Hanako-ni ringo 3-tu-to (cf. Fukui & Sakai 2003: 345)
Taro-NOM Hanako-DAT apple 3-CL-and
Kumiko-ni banana 2-hon-to]-o ageta
Kumiko-DAT banana 2-cl-and-ACC gave
'Taro gave [three apples to Hanako] and [two bananas to Kumiko].'

(5) John-ga [Mary-to Bill-to]-o mita
John-NOM Mary-and Bill-and-ACC saw
'John saw Mary and Bill.'

In this paper, I argue that data such as (4) do not in fact provide support for treatment of nonconstituent conjuncts as nominals. Rather, the case marker outside the

coordination belongs syntactically to the quantifier in the second conjunct, but appears in the observed position due to a mismatch in the mapping between (morpho)syntax and (morpho)phonology (Section 3). The remnant VP-approach is compatible with the proposed account, while the nominal approach makes incorrect predictions (Sections 4 and 5). First, I will spell out the two approaches in more detail in the following section.

2. Two approaches to deriving nonconstituent coordination

Koizumi (1995, 2000) argues that the nonconstituents are remnant VPs, derived by across-the-board movement of the verb. The example in (3) therefore has a structure like the following. In this instance, the particle *to* can coordinate VPs, as it can cliticize onto a nominal-like element, namely the quantifier:

(6) S $[_{VP}$ $[_{VP}$ IO DO Q $t_v]$ *to* $[_{VP}$ $[_{VP}$ IO DO Q $t_v]$ V-T

That the verb is not part of the second conjunct can be seen from the fact that the whole coordinate structure may undergo scrambling to a position higher than the subject, as demonstrated by (7). Koizumi (2000: 231) argues that this rules out the possibility of an analysis in terms of gapping, in which the verb is necessarily inside the second conjunct.

(7) [[John-ni ringo-o 2-tu] to [Bob-ni banana-o 3-bon]]$_i$ Mary-ga t_i ageta
John-to apple-ACC 2-CL and Bob-to banana-ACC 3-CL Mary-NOM gave

An alternative approach is offered by Takano (2002), Fukui & Sakai (2003) and Fukushima (2001, 2003), who argue that the conjuncts are nominals. Fukui & Sakai argue

that the conjuncts are VPs in the narrow syntax, but the verb in the first conjunct is deleted under identity with the verb in the second conjunct and the latter undergoes morphological merger with the tense morpheme in T in the sense of Marantz (1988). The remaining elements are reanalyzed as NPs at PF and subsequently assigned case. Thus, the second part of the example in (3) has representations like the following (cf. Fukui & Sakai 2003: 351):

(8) a. Syntax: [$_{VP}$ Kumiko banana 2-hon age]-ta →
Kumiko banana 2-CL give-PAST

b. Phonology: [$_{NP}$ Kumiko-ni banana 2-hon]-o ageta
Kumiko-DAT banana 2-CL-ACC gave

Takano (2002), by contrast, proposes that the whole coordinate structure is a complex NP formed in the syntax by successively left-adjoining the phrases to the last phrase in the second conjunct. Similarly, Fukushima (2001, 2003) claims that each conjunct is an NP headed by the quantifier with the remaining phrases adjoined to it, but assumes that the NP is base-generated. Although the analyses within the latter approach differ in their details, the crucial point is that the nonconstituents are treated as nominals.

3. Syntax-Phonology Mismatch

In addition to the appearance of *to* and the case marker following the second conjunct, the example in (4) differs from the one in (3) in another respect: the direct objects bear the accusative case marker *o* in (3), but not in (4).[2] The case marker on the relevant constituent can be realized in the first conjunct in (4), but not in the second conjunct:

(9) Taroo-ga [[Hanako-ni ringo-o 3-tu] to
Taro-NOM Hanako-DAT apple-ACC 3-CL and
[Kumiko-ni banana(-*o) 2-hon to]]-o ageta
Kumiko-DAT banana-ACC 2-CL and-ACC gave

Regardless of whether the direct object in the first conjunct bears *o*, there seem to be potentially three elements on which *o* can be realized in the second part of the coordination. These elements are the direct object *banana*, the quantifier *2-hon* '2-cl' and the coordinator *to* 'and'.[3] In addition, there are some restrictions on its distribution, which are schematically illustrated in (10). Firstly, as we just saw in (9), *o* can appear on *to*, in which case it cannot also appear on *banana*, nor can it attach to *2-hon* (cf. (10)a). Secondly, it can be realized on *banana* if it does not also appear on *to* or *2-hon* (cf. (10)b). Finally, it can attach to *2-hon* if it is not realized on *banana* and if *to* is absent (cf. (10)c). Recall that *to* on the second conjunct is optional in nonconstituent coordination.

(10) a. banana(*-o) 2-hon(*-o) to-o
banana-ACC 2-CL-ACC and-ACC
b. banana-o 2-hon(*-o) to(*-o)
c. banana(*-o) 2-hon-o (*to(-o))

A generalization that emerges is that the accusative case marker can appear only once on one of the three elements and *to*, when present, must attach directly to the quantifier, disallowing the case marker to appear on the quantifier.

The fact that the appearance of *o* in a position following *to*, as in ((10)a), is in complementary distribution with that on the host NP, as in ((10)b), suggests that *o*

following *to* is an instance of the realization of accusative case associated with the direct object in the second conjunct, rather than with the whole coordinate structure, as argued by Fukui & Sakai (2003). I propose that *o* following *to* belongs syntactically to the quantifier in the second conjunct, but is realized phonologically in a position following *to*, due to a mismatch in the mapping between the two modules. This is illustrated below.

(11) a. Syntax: [IO DO Q-o]-to →

b. Phonology: IO DO Q-to-o

Why should such a mismatch occur? One possible answer to this question may be found in the phonological nature of the particles involved. Koizumi (2000: Appendix A) claims that the particle *to* must be realized on a nominal-like element.[4] The requirement appears rather strict, as even in a simple NP-coordination, a case marker cannot precede *to*. As shown below, the first NP cannot bear case, and when *to* on the second conjunct is realized, the case marker must follow *to*:

(12) John-wa ringo(*-o)-to banana-to-o/*-o-to tabeta.
John-TOP apple-ACC-and banana-and-ACC/ACC-and ate
'John ate apples and bananas.'

Mismatches or 'cross-correspondences' between syntax and phonology are generally disfavored, but are not rare (Marantz 1984, 1988, Halpern 1992, Schütze 1994, Sproat 1985, Embick & Noyer 2001, Ackema & Neeleman 2004). They are found, for example, in English *–er* nominalization with particle verbs. A person who passes by is realized as *[[pass]-er by]*, although as far as the syntax is concerned, it should be *[pass by]-er*. Similarly,

someone who picks up something is realized as *[[pick]-er [upp]-er]*, while the meaning suggests *[pick up]-er*. Another instance of mismatch is observed in languages with templatic morphology such as Chimwi:ni. In this language, the causative suffix always precedes the applicative suffix, yielding the unexpected order V-causative-applicative for a causative applicative construction (cf. Ackema & Neeleman 2004 and references therein). Note that the behavior of *to* fits in with the general pattern of mismatches. Thus, just as *-er* in *[pass by]-er*, for instance, must shift leftwards over a lexical item to attach to *pass*, *to* must shift leftwards over a case marker to attach to the quantifier.

If the present analysis is correct, one would expect that some other particles in the language may behave in a similar manner to *to*. The disjunctive particle *ka* 'or' is an example bearing out this expectation. *Ka*, like *to*, is phonologically weak, coordinates two nominals and can be duplicated on the second conjunct, in which case it must precede the case marker, if present, as (13) illustrates.[5] (14) shows furthermore that it can also coordinate two nonconstituents and be duplicated on the second conjunct, with the case marker optionally following it (cf. (4)).

(13) John-wa Tom-ka Mary-ka(-o)/*-o-ka mita
John-TOP Tom-or Mary-or-ACC/ACC-or saw
'John saw Tom or Mary.'

(14) Taroo-ga [[Hanako-ni ringo-o 3-tu] ka
Taro-NOM Hanako-DAT apple-ACC 3-CL or
[Kumiko-ni banana 2-hon ka]](-o) ageta
Kumiko-DAT banana 2-CL and-ACC gave

The distribution of the case marker with respect to *ka* is identical to that with respect to

to. Thus, it can either follow *ka* or attach to the direct object, but not intervene between the quantifier and *ka*, as illustrated below:

(15) a. banana(*-o) 2-hon(*-o) ka-o
banana-ACC 2-CL-ACC or-ACC
b. banana-o 2-hon(*-o) ka(*-o)
c. banana(*-o) 2-hon-o (*ka(-o))

Other particles exhibiting similar behavior include *yara*, *toka*, *nari*, all meaning 'or'.[6] Interestingly, these particles are all affixal. Phonologically independent coordinators, such as *sosite* and *katu*, both meaning 'and', display no similar characteristics: they cannot be duplicated on the second conjunct. This observation lends further support to the idea that the phonological properties of the particles involved are at play.

4. Nonconstituents as remnant VPs

The analysis proposed in the previous section is compatible with Koizumi's analysis of nonconstituent conjuncts as remnant VPs. Implementing the present analysis, the second part of the example in (4) would have the following representations:

(16) a. Syntax: [$_{VP}$ Kumiko-ni banana 2-hon-o t_v]-to ageta$_v$ →
Kumiko-DAT banana 2-CL-ACC and gave
b. Phonology: Kumiko-ni banana 2-hon-to-o ageta
Kumiko-DAT banana 2-CL-and-ACC gave

In the syntax, the case marker *o* is licensed on the quantifier inside the conjunct. However, it follows *to* in the phonology, as the latter must attach to a nominal-like item.

This approach makes one prediction concerning case-marker drop. In Japanese, the accusative case marker on an object need not be realized if no argument intervenes between the object and the verb. If the object is scrambled however, to a position preceding another argument, the case marker must be overt. This is illustrated below (cf. Saito 1985, Takezawa 1987, Fukuda 1993).

(17) a. John-ga ringo(-o) katta.
John-NOM apple-ACC bought
'John bought apples.'
b. ringo*(-o) John-ga katta.
apple-ACC John-NOM bought

I assume that a trace of a verb can license case-marker drop on its object if the relevant conditions are met.[7] If nonconstituents are remnant VPs containing traces of the verb, it should be possible for the objects inside the conjuncts to appear case-less, even if the coordinate structure is scrambled and no longer adjacent to the verb overtly. The grammaticality of the following example shows that the prediction is correct.

(18) [[Hanako-ni ringo 3-tu] to [Kumiko-ni banana 2-hon (to)]]
Hanako-DAT apple 3-CL and Kumiko-DAT banana 2-CL and
Taroo-ga ageta
Taro-NOM gave

5. Nonconstituents as nominals

Fukui & Sakai (2003) claim explicitly that the whole coordinate structure is case-marked. This claim, however, makes some incorrect predictions.[8] Firstly, considering that the accusative marker can freely occur on the direct object in the first conjunct, the same option should be available to the direct object in the second conjunct. In particular, whether a case particle is realized on *to* following the second conjunct should have no effect, as the particle is marking the whole coordinate structure and not the direct object. As we saw in (9), the prediction is not borne out: the accusative marker on the second direct object and that on *to* on the second conjunct are in complementary distribution.

Secondly, we saw above that the accusative case marker on an object need not be overt, if no argument intervenes between the object and the verb (cf. (17)). If the whole coordinate structure is case-marked, it should be possible to drop the case marker when adjacent to the verb. The optionality of the case marker in question, which was noted in Section 1, shows that this is indeed true. However, it is equally predicted that this case marker cannot be absent when the coordinate structure is scrambled to a position higher than the subject, as it will no longer meet the conditions on case-marker drop. This prediction is not correct. The accusative case marker following *to* on the second conjunct can still be absent, as (19) illustrates.

(19) [[Hanako-ni ringo-o 3-tu] to [Kumiko-ni banana 2-hon to]](-o)
Hanako-DAT apple-ACC 3-CL and Kumiko-DAT banana 2-CL and-ACC
Taroo-ga ageta
Taro-NOM gave

Finally, if the coordinate structure as a whole were assigned accusative case, hence in a sense acted as the direct object of the verb, it should be possible to passivise it. Specifically, the accusative case marker on the direct object in the first conjunct should remain unchanged, as this is not the constituent which is passivised. Nevertheless, the following passive example shows that case on the direct object in the first conjunct as well as that on the second conjunct must change to nominative case, indicating that the direct objects are being passivised here rather than the whole coordinated elements:

(20) [[Hanako-ni ringo-ga/*o 3-tu]-to [Kumiko-ni banana 2-hon]]-(to)-ga/*o
Hanako-DAT apple-NOM/ACC 3-CL-and Kumiko-DAT banana 2-CL-and-NOM/ACC
Taroo-niyotte wata-sare-ta
Taro-by hand-PASS-PAST
'[three apples to Hanako] and [two bananas to Kumiko] were handed by Taro.'

In conclusion, the possible realization of the case marker on the second conjunct is best analyzed as a result of a syntax-phonology mismatch. Consequently, data such as (4) does not provide evidence for the nominal status of the nonconstituent conjuncts.

Notes:

[1] The same observation obtains with nominative case. See Fukui & Sakai (2003) for data.

[2] As discussed in Section 3, Japanese case markers can be absent in certain instances.

[3] In Japanese, an argument and its associated quantifier can be realized in one of the following three forms. The quantifier may precede the host noun, in which case it bears genitive case and forms a constituent with the noun, as in (i). It may follow the noun and carry case, still forming a constituent with the host noun, as in (ii). Finally, it may appear

as a distinct constituent lower in the structure with the host noun bearing case.

(i) [Q-GEN NP]-case (ii) [NP Q]-case (iii) NP-case ... Q

[4] What kind of elements are precisely referred to by 'nominal-like' elements must be further clarified, as *to* is also able to coordinate two PPs, as (i) shows.

(i) teki-wa kita-kara-to minami-kara sono mati-o semeta
enemy-TOP north-from-and south-from this town-ACC attacked
'The enemy attacked the town from the north and from the south.'

[5] It seems that *ka* can combine a wider range of elements than *to*. For instance, it can coordinate verbs, as shown by (i). Here, it must be duplicated on the second verb and the dummy do *su*- appears. I will leave the precise analysis of *ka* for future research.

(i) John-ga sono keeki-o katta-ka yaita-ka sita
John-NOM this cake-ACC bought-or baked-or did
'John either bought or baked this cake.'

[6] The three particles exhibit the same behavior as described in (10) and (15), but differ from *to* and *ka* in that in NP-coordination they prefer to appear on both conjuncts.

[7] Under Koizumi's approach, one may wonder what prevents the example in (17b) from being analyzed as involving fronting of a remnant VP containing the object and a trace of the verb. If this is the case, the trace of the verb should license case-marker drop on the object. I propose that if given a choice, movement operations target a smaller constituent, i.e. the object here, in accordance with economy considerations, rather than a larger constituent, i.e., the remnant VP (cf. Akiyama 2005).

[8] A nominal approach is not, in principle, incompatible with the proposed analysis. However, as argued in xxxxx, a nominal approach, including Takano's (2002) proposal, faces further problems that are not directly related to the issue at hand.

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