Contiguity Theory and Crystallization: wh-phrases and concord adverbs in Japanese

Puzzles. This paper discusses the two puzzles of insitu wh-phrases in Japanese adjunct clauses. The acceptability of insitu wh-phrases is contingent upon the presence of concord adverbs. Although insitu wh-elements in the conditional clause are acceptable in this language (= (1)a), the sentence becomes illicit if there is an adverb, e.g., mosi and karin, which concords with the head of the conditional clause -tara ‘if’, as shown in (1)b, despite the fact that its existence is optional in the corresponding declarative sentence in (2) (the ADVERT PUZZLE). Since mosi strengthens the hypotheticality of the conditional clause, one may wonder if this strengthening effect triggers a conflict with the wh-element in meaning. But, this view is challenged by the fact that the mere scrambling of nani ameliorates the acceptability (= (1)c) though the degree of hypotheticality of the conditional clause in (1)b must be the same as that of (1)c (SCRAMBLING PUZZLE). In addition, these puzzles cannot be explained, for example, by the distinction of strong/weak [+wh] or the EPP of C.

1. a. [CP [CP Nani-o ire-tara] amak-u nat-ta [C [ka]-na]?]
   b. *[CP [CP Mosi nani-o ire-tara] amak-u nat-ta [C [ka]-na]?
   c. [CP [CP Nani-o mosi ire-tara] amak-u nat-ta [C [ka]-na]?

‘What would it have become sweeter [CP if I had put in it] (lit.)’

2. [CP [CP (Mosi) meron-o ire-tara] amak-u nat-ta ka-na]? ‘Would it have become sweeter if I had put the melon in it?’

Contiguity Theory. I propose that these two puzzles are explained from the syntax-phonology interface, hinted by Contiguity Theory (Richards 2010, 2016, 2017; hereafter, CT), which claims that “apparent syntactic differences between languages are always the consequence of more fundamental phonological and morphological parameters, together with a cross-linguistically invariant syntactic system (Richards 2016: 2).” With a set of syntax-prosody mapping principles in Match Theory (Selkirk 2009, 2011, Bennet, Elfnser and McCloskey 2016), CT argues that the difference between wh-movement and wh-insitu languages results from the principles in (3) (ibid: 195). Contiguity-prominent elements (e.g., wh-phrases) must be prosodically related to the C which Agrees with them. Therefore, the wh-phrase to appear at the left-edge of this domain and, to fulfill this requirement, a string vacuous structural change takes place, i.e., from (4)a to (4)b, called Grouping (ibid: 78).

3. (a) If a either Agrees with or selects β, α and β must be dominated by a single prosodic node φ, within which β is contiguity prominent. (b) β is contiguity-prominent within φ if β is adjacent to a prosodically active edge of φ.

Analysis. I argue that (i) concord adverbs are also contiguity-prominent w.r.t. its corresponding head and (ii) propose the following PF linearity requirement:

(5) Crystallization: In the linear configuration, W...X...Y...Z..., X and Z cannot form a prosodic domain, if W and Y have already created a prosodic domain.

First, for (1)a, the prosodic phrase φ₁ in phonological tree (corresponding to CP in the syntactic tree) has nani at its left edge, as in (6); it is contiguous to C. Second, in (1)b, mosi’s contiguity is checked when the embedded adjunct clause is formed, as in (7). But, nani-o’s contiguity is checked when the embedded adjunct clause is formed, as in (8). Without Grouping, as in (8), nani-o is not at the left-edge; it is illicit. With Grouping, as in (9), nani-o and kana fail to form a prosodic domain due to crystallization; i.e., mosi and tara form a crystallized pitch reduction region (note that, in the case of (1)a, tara is not an ender of a prosodic region, because there is no initiator (= no concord adverb); thus, there is no crystallization effect in this sentence). Finally, if nani-o is scrambled out of the crystallized region, as in (11), nani-o is contiguous to C (kana). As in (10), mosi is also contiguous to C (tara). The scrambling is required due to the PF requirement in (5).

4. [CP=cp [DP Nani-o] ire-tara ama-ku nat-ta [c [kana]]] (φ for nani; Fig 1)
   5. [CP=cp [DP Mosi] [L [nani-o] ire-[c [tara]]] (φ for mosi; Fig 2)
   6. [CP=cp [DP Nani-o] ire-tara ama-ku nat-ta [c [kana]]] (φ for nani; Fig 1)
   7. [CP=cp [DP Mosi] [L [nani-o] ire-[c [tara]]] (φ for mosi; Fig 2)
   8. [CP=cp [DP Nani-o] ire-tara ama-ku nat-ta [c [kana]]] (φ for nani; Fig 1)
   9. [CP=cp [DP Mosi] [L [nani-o] ire-[c [tara]]] ama-ku nat-ta [c [kana]]] (φ for mosi; Fig 2)
   10. [CP=cp [DP Nani-o] [L [a [mosi] ire-[c [tara]]] ama-ku nat-ta [c [kana]]] (φ for mosi; Fig 3)
   11. [CP=cp [DP Nani-o] [L [a [mosi] ire-[c [tara]]] ama-ku nat-ta [c [kana]]] (φ for mosi; Fig 3)

Interpretation. The proposal in (5) can be rephrased as follows: prosodic domains must be nested. Fig 1 to 3 show the pitch patterns of the three sentences. Of all the three, Fig 2 is not well-formed, because the pitch-reduction of the wh-phrase (the blue region) and that of mosi (the red region) are not nested. Scrambling in Fig 3, on the other hand, makes the red region inside the blue region (hence, it is nested). Importantly, the movement of nani-o (a syntactic operation) is triggered AFTER the pitch-region marking (a phonological operation). This works out only under the architecture of CT, which, unlike Chomsky (2000, 2001), assumes that “the building of certain aspects of phonological structure in fact begins in the narrow syntax (Richards 2016: 2)” and syntactic and phonological operations alternate during the derivation.