Alternating conj/disjunctions: the case of Japanese –toka and –tari

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**Introduction:** The Japanese particles –toka and –tari are used in declaratives to express non-exhaustive conjunctions of individuals and predicates, respectively. However, in many other environments, including questions, modals, and the antecedent of a conditional, these particles receive a disjunctive interpretation. We analyze -toka and -tari as items that introduce alternatives, which, once they expand into propositions, are universally quantified or unmodified depending on their environment.

**Data:** -toka and –tari are used in veridical environments to denote non-exhaustive conjunctions of individuals and predicates, respectively. To illustrate, (1a) is true if Taro, Hanako, and someone else comes, and (1b) is true if Taro cleaned his room, studied English, and did something else.

1) a. Taro-toka Hanako-toka-ga kita  b. Taro-wa heya-o sooji-tari eigo-o benkyoosi-tari sita
   T-toka H-toka -Nom came T-Top room-Acc clean-tari English-Acc study-tari did
   ‘Taro, Hanako, and others came’  ‘Taro cleaned his room, studied English, etc.’

Although often encountered in coordinating constructions, both –toka and –tari can be used as stand-alone particles, as in (2).

   J-Top Japanese-toka-Acc studied T-Top English-Acc study-tari does
   ‘John studied Japanese and other things.’  ‘Taro studies English and does other things’

However, in other environments, such as the antecedent of a conditional (3), questions (4), imperatives (5), and possibility modals (6), -toka and -tari receive an inclusive disjunctive interpretation.

3) **Antecedent of a conditional**
   a. Taro-toka Hanako-ga ki-tara, Yosuke-wa ocha-o dasu.
      T-toka H-nom come-if Y-Top tea-Acc serve
      ‘If Taro or Hanako (or someone else) comes to the party, Ryo serves tea.’
   b. Taro-ga burokkori-o tabe-tari gyyuuuu-o non-dari su-reba, mama-wa yorokobu.
      T-Nom broccoli-Acc eat-tari milk-Acc drink-tari do-if mom-Top become.happy
      ‘If Taro eats broccoli or drinks milk (or does something else) his mom becomes happy.’

4) **Polar Questions**
   a. Taro-toka Hanako-toka-ga kita no?  b. Taro-wa heya-o sooji-si-tari sentaku-sitari sita no?
      T toka H-toka-Nom came Q T-Top room-Acc clean-do-tari laundry-do-tari did Q
      ‘Did Taro or Hanako (or someone else) come?’ ‘Did Taro clean the room or do laundry, etc.?’

5) **Imperatives**
      food -toka drink -toka bring-Imp boring dance-tari sing-tari do-Imp
      ‘Bring me food (or drink or something else)! ‘I’m bored. Dance (or sing or do something else)!’

6) **Possibility Modals**
   a. (Ganbare-ba), shoosin-toka kaigaikimmu-toka-ga ari-u/e-ru
      work.hard-if promotion-toka overseas.assignment-toka-Nom be-modal-Pres
      ‘There is a possibility that you attain promotion or work abroad, (if you work hard).’
   b. Godzilla-wa machi-o hakaisi-tari, teki-o taosi-tari si-u-ru
      G -Top town-Acc destroy-tari, enemy-Acc defeat-tari do-modal-Pres
      ‘Godzilla may destroy the town or defeat his enemies (or do something else)’
Analysis: Syntactically, we propose that \( -toka \) and \( -tari \) are independent particles, which, following Mitrovič & Sauerland (2014), may be coordinated by a silent J head, as in (7).

7) a. \[ JP \text{[tokaP NP-toka]} [P \text{[tariP VP-tari]}] \]
   
   Semantically, we propose that \( -toka \) and \( -tari \) introduce individual and predicate alternatives, respectively. The alternatives are restricted so that they are contextually salient (denoted by C) and are similar (notated as \( \sim \)) to the argument of \( -toka/-tari \). By virtue of being self-similar, the overtly mentioned argument is also in the alternative set. We provide denotations in (8a-b), and example alternatives in (8c-d).

8) a. \( \{\text{[tari-toki] = } \{ x \mid C(x) \land x \sim \alpha \} \)  
           
   c. \( \{\text{Taro-toka] = } \{ \text{Taro, Ryoichiro, ...} \)  

   b. \( \{\text{[tari-toki] = } \{ P \mid C(P) \land P \sim \alpha \} \)  
           
   d. \( \{\text{[tari-toki] = } \{ \lambda x.\lambda w.w. \text{ clean the room} \)  

   The J head that coordinates \( -toka/-tari \) is treated as simply collecting alternatives, with a denotation identical to Alonso-Ovalle’s (2006) analysis of or.

9) Where \( [XP] \) and \( [YP] \subseteq D, \), \( \{[[XP] [J [YP]]]\} \subseteq D = [XP] \cup [YP] \)

The alternatives compose with other elements of the sentence via Pointwise Functional Application (Hamblin 1973) ultimately yielding a set of propositional alternatives.

10) a. \( \{\text{Taro-toka ga kita] = } \{w.W. \text{Taro came in } w, \lambda w.\text{Ryoichiro came in } w, \ldots \)  

   b. \( \{\text{Taro wa heya-o soojisi-tari sita] = } \{w.W. \text{Taro cleaned the room in } w, \lambda w.\text{Taro did laundry} \)  

Finally, the alternatives are taken as an argument by one of the following propositional operators.

11) Propositional operators (Kratzer & Shimoyama 2002; Alonso-Ovalle 2006)

   a. \( \{\forall^w \} (A) = \{ \lambda w'. \forall p \in A \rightarrow p(w') \)  

   In a declarative, the alternatives are universally quantified, because an assertion operator higher in the tree is only defined if the set of alternatives is a singleton set, and the universal operator in (11a) is the default (Rawlins 2013), resulting in a conjunctive interpretation. The universal quantifier is inserted above the possibility modal resulting in an interpretation in which all propositional alternatives are possible (Menéndez-Benito 2005). Similarly, an imperative operator will take the set of alternatives, distribute a possibility modal over them, and universally quantify over the set, resulting in an interpretation in which realizing any of the alternative propositions will satisfy the desires of the speaker (Aloni 2007). For questions, the set of propositions is left unmodified. Finally, following Alonso-Ovalle (2006), we treat the conditional suffix as a universal quantifier over alternative propositions. This will return a meaning for (3a) in which all closest worlds where Taro comes are worlds where Ryo serves tea, and all closest worlds where Hanako comes are worlds where Ryo serves tea, but it does not require that they both come in the same world.

Predictions: This analysis predicts that \( -toka \) and \( -tari \) should have conjunctive readings under a necessity modal. This is because the interaction of the semantics of the necessity modal and the insertion of the universal propositional quantifier will result in an interpretation in which every propositional set holds in every accessible possible world. This prediction is borne out: (12) is interpreted as requiring graduate students to present at conferences, publish papers, and do something else like that; doing just one of the alternatives doesn’t suffice.

12) insei-wa gakkai-de happyoosi-tari ronbun-o shuppansi-tari su -ru hitsuyoo-ga ar -u grad-TOP conf -at present -tari paper-ACC publish -tari do-PRS need-NOM be-PRS

    “It is necessary for graduate students to present at conferences and publish papers, etc.”
**Conclusion:** This paper proposes an analysis of –*toka* and –*tari* as introducing alternatives, which are then manipulated by propositional operators higher in the structure, giving rise to their varying interpretations as conjunctions or disjunctions depending on their environment. The analysis captures their use as independent particles and in coordinating constructions, and derives their interpretation from the independently motivated semantic properties of the environments in which they appear.