Quexjunction: Japanese Questions are Disjunctions(, as well as Existentials) Takashi Toyoshima, Kyushu Institute of Technology

The Japanese particle $-ka < \hbar^3 >$ has various semantic functions, depending on the morphosyntactic positions where it appears. In the sentence-final position, it signals a question. When suffixed to a plain declarative sentence such as (1a), it is a *yes/no*-question (1b), and if the sentence contains a so-called 'indeterminate' (INDT) expression, it will be a *wh*-question as in (1c).

(1) a.	Mary wa	kita. b.	Mary v	wa 1	kita	-ka ?	c.	Dare	ga	kita	-ka ?
	TOP	came	-	ТОР (came			INDT(PERSON)	NOM	came	
	'Mary come	,	'Did Ma	ary c	ome?	,	4	Who came?			

The particle -ka also functions as cross-categorial disjunction (Gazar 1980, Rooth & Partee 1983, among others), coordinating nominal phrases (2a), adjectival phrases (2b), verb phrases (2c), postpositional phrases (2d), or clauses (2e).

(2) a.	John -ka Mary ga	kita.	b.	John	wa	tuyoi	-ka	takumasii.	
	NOM	came			ТОР	be.strong	3	be.sturdy	
'John or Mary came.'			'John is strong or sturdy.'						

c. Mary wa sigoto ni itta *-ka* uti ni kaetta. TOP work to went home to returned 'Mary went to work or returned to home.'

- d. Doroboo ga mado kara -*ka* uraguti kara haitta. thief NOM window from backdoor from entered 'A thief entered from the window or the backdoor.'
- e. John ga kita *-ka* Mary ga kita. NOM came NOM came 'John came or Mary came.'

All the disjunctive sentences can be questioned, by adding another -ka to the sentence-final position, which would be an alternative question. For example, (2e) will be as in (3) below.

(3) John ga kita *-ka* Mary ga kita *-ka*? NOM came NOM came 'Did John come or did Mary come?'

Suffixed directly to an 'indeterminate' expression, the particle -ka serves as an existential quantifier, with the indeterminate serving as a restrictor predicate and a variable (Kuroda 1965).

(4) Dare *-ka* ga kita. INDT(PERSON) NOM came 'Someone came.'

Existential statements can also be made into a question by adding another sentence-final -ka.

(5) Dare *-ka* ga kita *-ka*? INDT(PERSON) NOM came 'Did anyone come?'

Since the seminal work of Hamblin (1973), questions have been analyzed as denoting a set of propositions that are answers to the questions, and the *wh*-phrases, if any, are existential quantifiers (Karttunen 1977). Employing a two-sorted type logic, Groenendijk & Stokhof (1982, *et seq.*) developed the so-called partition semantics for questions, in which a question denotes a partition of the logical space of possible worlds and the extension of the question in a given world is the intension of a proposition that is a true answer to the question in that world. Simply put, a question forms a set of possible worlds, whose partition contains propositions that are true answers to the question.

The logical affinity between existential quantification and disjunction has long been noted, and McCawley (1981) suggests a possibility of unifying the semantics of conjunctions and quantifiers, by treating them both as operators applying to a set of propositions — conjunctions to an extensional set of enumerated propositions and quantifiers to an intensional set of propositional descriptions. In particular, existential quantification is equivalent to disjunction.

Independently developing is a Hamblin-style semantics for disjunction as a set of alternatives, to deal with various problems of the classical semantics of binary, inclusive, disjunction in veridical contexts, such as Aloni (2003), Simons (2005), Alonso-Ovalle (2006), among others. A set-based semantics is also proposed for quantification, in particular for Japanese (Kratzer & Shimoyama 2002, Shimoyama 2006, among others.)

Taking stock, this paper sketches a possible direction for a unified semantics of -ka, proposing that the particle -ka is what can be dubbed "*quexjunction*" operator (\coprod), which forms a set of alternatives by collecting the 'associated' denotations and existentially quantifies over world-variables.

References:

- Aloni, Maria (2003) "Free Choice in Modal Contexts," *Proceedings of the Conference "SuB7* – *Sinn und Bedeutung"*. *Arbeitspapier Nr. 114*, FB Sprachwissenschaft, Universität Konstanz, 28–37.
- Alonso-Ovalle, Luis (2006) *Disjunction in Alternative Semantics*, Doctoral dissertation, University of Massachusetts, Amherst.
- Gazdar, Gerald (1980) "A Cross-Categorial Semantics for Coordination," *Linguistics and Philosophy* **3**: 407–409.
- Groenendijk, Jereon & Martin Stokhof (1982) "Semantic Analysis of Wh-Complements," *Linguistics and Philosophy* **5**, 175–233.
- Groenendijk, Jeroen & Martin Stokhof (1984) *Studies on the Semantics of Questions and the Pragmatics of Answers*. Academisch Proefschrift, Universiteit van Amsterdam.
- Groenendijk, Jeroen & Martin Stokhof (1989) "Type-shifting Rules and the Semantics of Interrogatives," pp.21–68 in G. Chierchia, B. Partee & R. Turner (eds.) Properties, Types and Meaning II. Kluwer Academic Publishers: Dordrecht.
- Hamblin, C. L. (1973) "Questions in Montague English." *Foundations of Language* **10**:41–53.
- Karttunen, Lauri (1977) "Syntax and Semantics of Questions." *Linguistics & Philosophy* **1**:1–44.
- Kratzer, Angelika & Junko Shimoyama (2002) "Indeterminate Pronouns: The View from Japanese," pp.1–25 in Y. Otsu (ed.) *The Proceedings of the Third Tokyo Conference on Psycholinguistics*. Hituzi Syobo: Tokyo.
- Kuroda, Shige-Yuki (1965) *Generative Grammatical Studies in the Japanese Language*, Doctoral dissertation, MIT.
- McCawley, James D. (1981) Everything that Linguists have Always Wanted to Know about Logic* *but were ashamed to ask. The University of Chicago Press: Chicago.
- Rooth, Mats & Barbara Partee (1982) "Conjunction, Type Ambiguity, and Wide Scope "Or"," pp.1–10 in D. Flickinger, M. Macken and N. Wiegand (eds.), *Proceedings of the First West Coast Conference on Formal Linguistics*. Stanford Linguistics Association: Stanford, CA.
- Shimoyama, Junko (2006) "Indeterminate Phrase Quantification in Japanese," *Natural Language Semantics* 14, 139–173.
- Simons, Mandy (2005) "Dividing Things Up: The Semantics of *Or* and the Modal/*Or* Interaction," *Natural Language Semantics* **13**:271–316.