Japanese alternative questions and a unified in-situ semantics for *ka*

1. **Introduction:** It is cross-linguistically common for a single particle to serve as (a part of) a *wh*-indeterminate and a disjunction marker (Jayaseelan 2001; Slade 2011; Szabolcsi 2015). Among such multi-functional particles, one of the most well-studied one is the Japanese particle *ka* (Kuroda 1965; Hagstrom 1998; Shimoyama 2006, i.a.). However, as we will argue below, none of the current compositional semantic analysis of *ka* (Hagstrom 1998; Shimoyama 2006; cf. Slade 2011) can successfully capture the fact that its function is conditioned by its syntactic position, both in its *wh*-indeterminate use and its disjunction use, in a parallel fashion. This paper proposes a unified semantics for *ka* in *wh*-indeterminates and disjunction that can properly capture this parallel effect.

2. **Data:** A *wh*-phrase and *ka* participate both in an existential construction and in a *wh*-question. When *ka* directly attaches to the *wh*-phrase as in (1a), the *wh-ka* complex forms an indefinite. When *ka* is in the clause-final position as in (1b), the sentence becomes a *wh*-question (the embedding verb *oshiete* ‘tell me’ is added in (1b) since the clause-final *ka* is most natural in embedded contexts).

(1) a. Dare-*ka*-ga kita. who-*KA-NOM* came.
   ‘Someone came.’ *(∃-statement)*

b. [Dare-*ga* kita-*ka*] (oshiete) who-*NOM* came-*KA* tell
   *(Tell me) who came?’ *(Wh-Question)*

Another empirical domain in which *ka* appears is disjunction. Example (2) shows that *ka* can attach to each disjunct in a disjunction (optionally to the second disjunct). Also, an additional coordinator (in this case *matawa*) can be inserted between the two disjuncts marked by *ka*.

(2) [Hanako-*ka* (matawa) Jiro-*ka*]-ga kita.

   Hanako-*KA* or Jiro-*KA-NOM* came.
   ‘Hanako or Jiro came.’ *(Disjunctive statement)*

So much is a well-known empirical paradigm. Our empirical contribution in this paper is to point out that the syntactic position of *ka* in a disjunction determines its interpretation in the same way as it does in *wh-ka*-constructions. That is, when the *ka*-phrases are syntactically smaller than a CP, the structure derives a disjunctive statement while, if they form CPs, the structure derives an alternative question (AltQ). This generalization is stated in below.

(3) | the *ka*-phrase is... | smaller than a CP | CP          |
    | *wh*-*ka* | existential statement | *wh*-question |
    | *α*-*ka *β*-*ka* | disjunctive statement | alternative question |

Syntactically, *ka*-disjunctions can coordinate DPs, TPs and CPs (Kishimoto 2013; Miyama 2015). The fact that a *ka*-disjunction coordinating DPs is interpreted as a disjunctive statement is seen in (2) above, where the *ka*-phrases are DPs and the whole sentence is interpreted as a disjunctive statement, not as an AltQ ‘Is it Hanako or Jiro that came?’ Adding a clause-final *ka* to (2) as in (4) does not lead to an AltQ interpretation, either. Rather, it only receives the interpretation as a Yes/No Question (YNQ) embedding a disjunctive statement (Uegaki 2014). Similarly, dropping the *kas* attaching to the disjuncts in (4), as in (5), does not alter the interpretation from (4):

(4) [[Hanako-*ka* (matawa) Jiro-*ka*]-ga kita-*ka*] (oshiete).

   Hanako-*KA* or Jiro-*KA-NOM* came-*KA* tell.
   *‘Tell me which is true: Hanako came or Jiro came.’ *(AltQ)*
   ‘Tell me whether or not Hanako came or Jiro came.’ *(YNQ)*

(5) [[Hanako matawa Jiro]-ga kita-*ka*] (oshiete).

The same generalization obtains for TP *ka*-disjunctions (see Kishimoto 2013 for data). In contrast, a *ka*-disjunction with CP disjuncts is interpreted as an AltQ:

(6) [[Hanako-*ga* kita-mitai-*ka*]_CP [Jiro-*ga* kita-mitai-*ka*_CP] (oshiete).

   Hanako-*NOM* came-mood-*KA* Jiro-*NOM* came-mood-*KA* tell
We assume that $\downarrow$ would have to posit that $\downarrow$.

Again, in order for (14) to combine with a non-inquisitive predicate, it has to be type-shifted by $\downarrow$. As a result, an existential statement is derived instead of a result.

4. Problems for previous accounts:

3. Proposal: Our proposal employs two-dimensional alternative semantics (Rooth 1985) for in-situ $wh$-questions (Beck 2006). The gist is as follows: $ka$ introduces a set of alternatives in its ordinary-semantic value, but only specific operators (which I call inquisitive operators), such as interrogative-CP-embedding predicates, semantically combine with such a set. As a result, a semantic composition of a $ka$-phrase and a non-inquisitive predicate requires that the set denoted by the former be ‘flattened’ into an existential meaning. This flattening is implemented with a type-shifter $\downarrow$. Thus, when $ka$-phrases are smaller than CPs, they are ‘trapped’ inside a non-inquisitive predicate and receive an existential meaning. Lexical items have (ordinary) and alt(ernative-semantic) values. The former is combined with Functional Application (FA) while the latter is combined with Point-wise Functional Application. $\{o\}$ is the type for sets of $\sigma$-type objects.

We assume that $\downarrow$ is applied only when FA in the ordinary-semantic dimension is not possible. Given the definitions above, a $wh$-question can be derived from structures as in (1b) since the alternatives introduced by $\uparrow$ are passed up until $\downarrow$ returns it as the $o$-value. On the other hand, (1a) is analyzed as involving $\downarrow$ since the set denoted by $\downarrow$ cannot be combined with $\uparrow$ with FA:

As a result, an existential statement is derived instead of a $wh$-question. Turning to $\alpha$-$\beta$-$\gamma$, it involves the coordinator head $\gamma$ (cf. den Dikken 2006), which is optionally realized as $\gamma$. $\gamma$ denotes a generalized disjunction (12) and is compatible with sets. Since $\downarrow$ projects the singleton set of its sister when the sister possesses an $o$-value, we have the following:

Again, in order for (14) to combine with a non-inquisitive predicate, it has to be type-shifted by $\downarrow$:

This is what happens in the semantics of (2.4). In contrast, the alternatives introduced by the CP $\alpha$-$\gamma$-disjunction in (6) are not trapped inside a non-inquisitive predicate. Hence, there is no type-shift by $\downarrow$. Thus, it receives the following AltQ meaning in its $o$-value: $\{\text{saw}(t, h), \text{saw}(t, j)\}$

4. Problems for previous accounts:

Hagstrom’s (1988) choice-function analysis of $\alpha$ supplemented with Slade’s (2011) analysis of disjunction cannot account for the pattern above. Such an analysis would treat $\alpha$ as an interrogative Ct's of them to get Spec,CP, forming a Karttunen-style question denotation. This analysis would not explain why (5) disallows an AltQ reading which would result from an ATB overt movement of $\alpha$ to Spec,CP. Shimojima’s (2006) in-situ analysis supplemented with Hambly-semantic analysis of disjunction (e.g., Beck & Kim 2006) cannot deal with the pattern, either. Here is why: given that (6) allows an AltQ reading, the analysis would have to posit that $\alpha$-$\beta$-$\gamma$ introduces alternatives. But then, (4) would be predicted to allow an AltQ reading (given the null hypothesis that $\alpha$-$\beta$-$\gamma$ has uniform semantics in (4) and (6)) since the alternatives introduced by $\alpha$-$\beta$-$\gamma$ would pass up until the clause-final question-operator $\alpha$ operates on them. Note that there is no intervener (Beck 2006) in (4) and (5).

References: