Japanese Embedded Questions as Concealed Questions: Floated Quantifiers and QVE

Satoshi Tomioka, University of Delaware

Workshop on Japanese Interrogatives

Quantificational Variability Effects

An embedded question selected by a verb like *know* is known to show the 'exhaustivity' property (c.f., Groenendijk and Stokhof 1984, Heim 1994). In (1), for instance, the default interpretation is that for all the people who attended the meeting, David knows that they did so.

(1) David knows who attended the meeting.

Berman (1987) discovered, however, that the exhaustivity can be altered by a presence of an adverbial expression that belongs, at least structurally, to the matrix clause.

(2) a. For the most part, David knows who attended the meeting.
≈ For most of those who attended the meeting, David knows that they attended the meeting.

b. David in part knows who attended the meeting.
≈ For some of those who attended the meeting, David knows that they attended the meeting.

c. David barely knows who attended the meeting.
≈ For very few of those who attended the meeting, David knows that they attended the meeting.

Quantificational Variability Effects

The Quantificational Variability Effect (QVE) refers to this kind of variation in quantificational meaning of an embedded Wh-phrase. Berman (1987, 1991) offers an analysis in which a wh-phrase is treated like an indefinite NP within the framework developed in Heim (1982). Analogizing this effect to the well-known interpretational variability of indefinite NPs with adverbs of quantification, Berman suggests that wh-phrases are restricted variables that can be bound by QVE-inducing adverbs.

Lahiri (2002) gives a different analysis in which a QVE-inducing adverb quantifies over relevant answers (propositions) to the embedded question.

The newest entry to the QVE debate is Beck and Sharvit (2002), who argue that what is quantified over in the QVE phenomenon is sub-questions of the embedded question.

Quantificational Variability Effects

In Japanese, the quantifiers that can trigger QVEs can be classier phrases that 'agree' with the embedded wh-phrases.

（1） 真理子は、誰がその会議に出席していたか、**１０人くらい**知っている。

（2） これまでにどの国に行ったことがあるか、**５カ国ほど**挙げてみてください。

（3） このビルに誰が入って来たか、**全員**記録しておくことになっている。

（4） 誰がその会議に出席したか、真理は**４人**、エリカは**５人**教えてくれた。

（5） 誰がその会議に出席したか、あなたは**何人**挙げられますか？

The challenge is obvious.

- All the indications are such that the QVE-inducing classifiers are in the main clause.
- But the wh-phrases associated with the classifiers remain embedded.
- Such a long distance association is otherwise not possible.
- In addition, a QVE-inducing classifier can associate with a PP wh-phrase (= the Japanese (2)), but a floated classifier is supposed to be illicit with a PP host (cf. Miyagawa 1989).

Japanese Embedded Questions can be Concealed

In this talk, I would like to argue that the puzzling QVEs in Japanese can be accounted for by assuming that the embedded questions have nominal structures that are akin to relative clauses.

（1’） 真理子は、その会議に出席していた人を、１０人くらい知っている。

（2’） その会社が（そこから）ワインを輸入している国を、３カ国ほど挙げてみてください。

（3’） このビルに入って来た人を、全員記録しておくことになっている。

（4’） その会議に出席した人を、 真理は４人、エリカは５人教えてくれた。

（5’） その会議に出席した人を、あなたは何人挙げられますか？

Japanese Embedded Questions can be Concealed

Central to this proposal is the notion of **Concealed Questions**, noun phrases that can replace embedded questions but still retain the interrogative meanings.

(3) a. Anna knows the Wimbledon champions of the last ten years.
≈ Anna know who won Wimbledon the last ten years.

b. Can you tell me your location?
≈ Can you tell me where you are?

c. Bella tried to guess Carla's age.
≈ Bella tried to guess how old Carla was.

A Japanese embedded question looks like nothing but an interrogative sentence, but its structure is actually nominal, and the nominal structure is, in turn, interpreted as a concealed question (back to question meaning). In this sense, Japanese embedded questions are doubly concealed.

The analysis of embedded questions as nominal 'concealed' questions has been put forth for Adyghe, a Northwest Caucasian language by Caponigro and Polinsky (2011). However;

Based on our analysis, we can also outline several broader implications which we leave as questions for future research. First, if a language exhibits the embedding of complementizers encoding illocutionary force (as is the case, for example, in Japanese or Korean, where interrogative markers embed freely), then those embedded constructions cannot be relative clauses, since relative clauses lack higher functional projections associated with illocutionary force (Rizzi 1997)... (Caponigro and Polinsky 2011, p.119).

Thus, I am arguing against their generalization: the presence of an embeddable clause-typing morpheme (e.g., *ka*) does not prevent a language from having a nominalization option.

Japanese Embedded Questions are Nominal

The nominal nature of embedded questions in Japanese has already been pointed out by Fukui (1986, 1990). For instance, embedded questions can be accompanied with case particles or post-positions. In addition, an embedded question can be co-ordinated with an NP.

（６） 警察は、陽子がその時間どこにいたかを調べている。

（７） 陽子がその時間どこにいたかが問題になった。

（８） みんなの関心は、田中が楽天に残るかどうかから、どの大リーグ球団に行くかに移って行った。

（９） 記者達の質問は、原発の現状と今後いかにして汚染水を制御するかに集中した。

Japanese Embedded Questions are Nominal

Perhaps more dramatically, we can find a sentence pattern in which an interrogative CP is immediately followed by a definite description that corresponds to the Wh-phrase, as illustrated below.

（１１） 真由美は、預金通帳をどこにしまったかその場所を忘れてしまった。

（１２） 警察は、誰がその車を盗んだかその犯人を既に知っているようだ。

（１３） *真由美が預金通帳をどこにしまったかその場所には、印鑑もあるはずだ。

（１４） *誰がその車を盗んだかその犯人が捕まった。

Head-internal Relative Clauses

Japanese has two different options for relativization: Head-external (the much more common strategy across languages) and head-internal (Kuroda 1976, Hoshi 1995, Shimoyama 1999). The relevance of HIRCs to the embedded questions is quite obvious. Their forms are remarkably similar.

（１５） 母がコロッケを作りおきしてくれたのを、冷凍庫に入れておいた。(HIRC)

（１６） 母が作りおきしてくれたコロッケを、冷凍庫に入れておいた。(HERC)

（１７） 父が遺してくれたお金を会計士に預けておいたのを、隆は結婚資金として使うつもりでいる。

（１７’） 父が遺してくれたお金を会計士に預けておいた**そのお金を**、隆は結婚資金として使うつもりでいる。

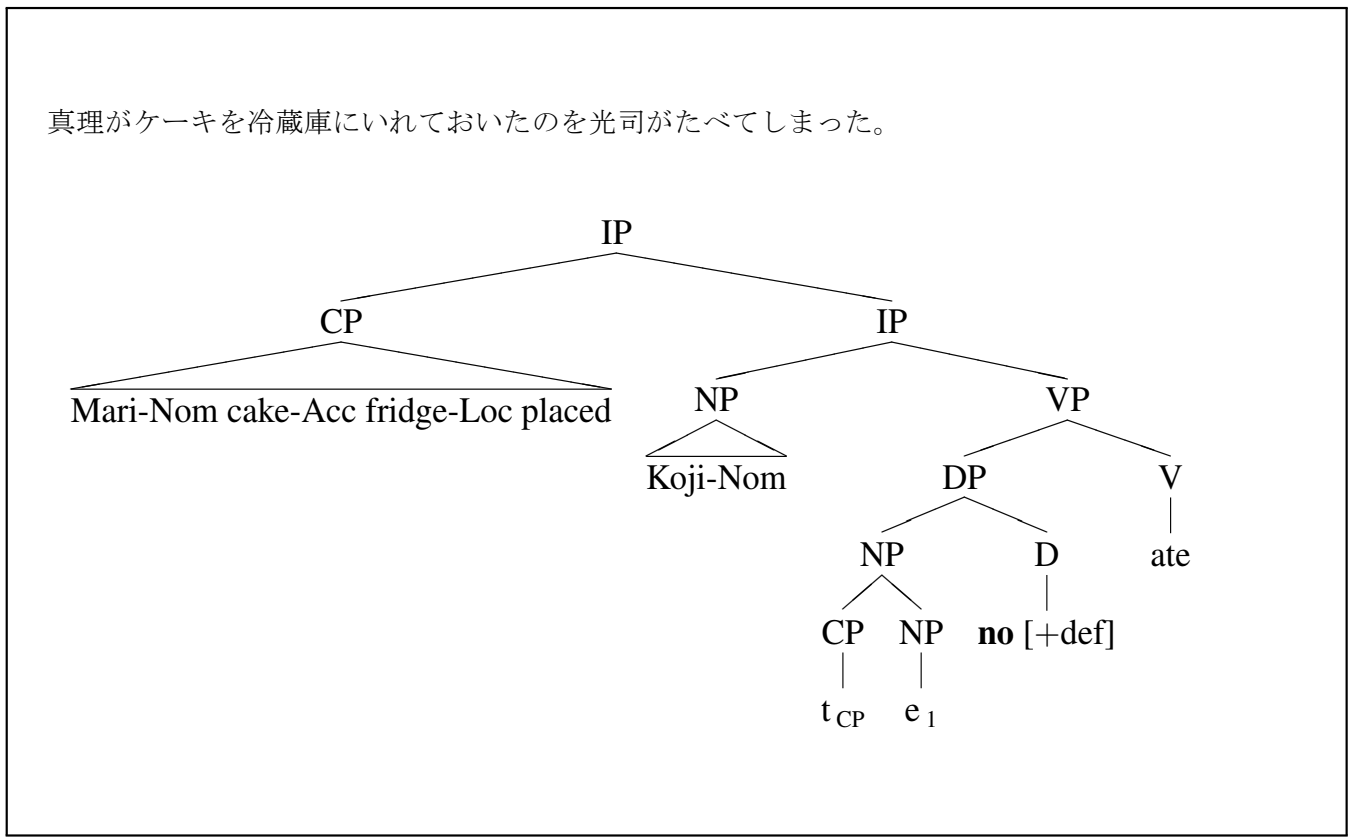
- If we bend our mind to imagine an embedded wh-interrogative to be a relative clause, then, the embedded wh-phrase is pretty much the same as the head of a HIRC.
- Like embedded wh-interrogative sentences, the external head can be added (i.e., the doubly-headed structure) with the demonstrative *sono*. The success rate of this strategy is not 100%, but it is not hard to find good examples.

For a theory of IHRCs in Japanese, I will follow the analysis presented by Shimoyama (1999). The main features of her analysis are the following.

- Semantically, the embedded clause in an IHRC is interpreted as a conjunction to the main clause.
- The main clause contains an E-type pronoun (cf. Hoshi 1995), which picks out a referent made salient by the embedded clause.

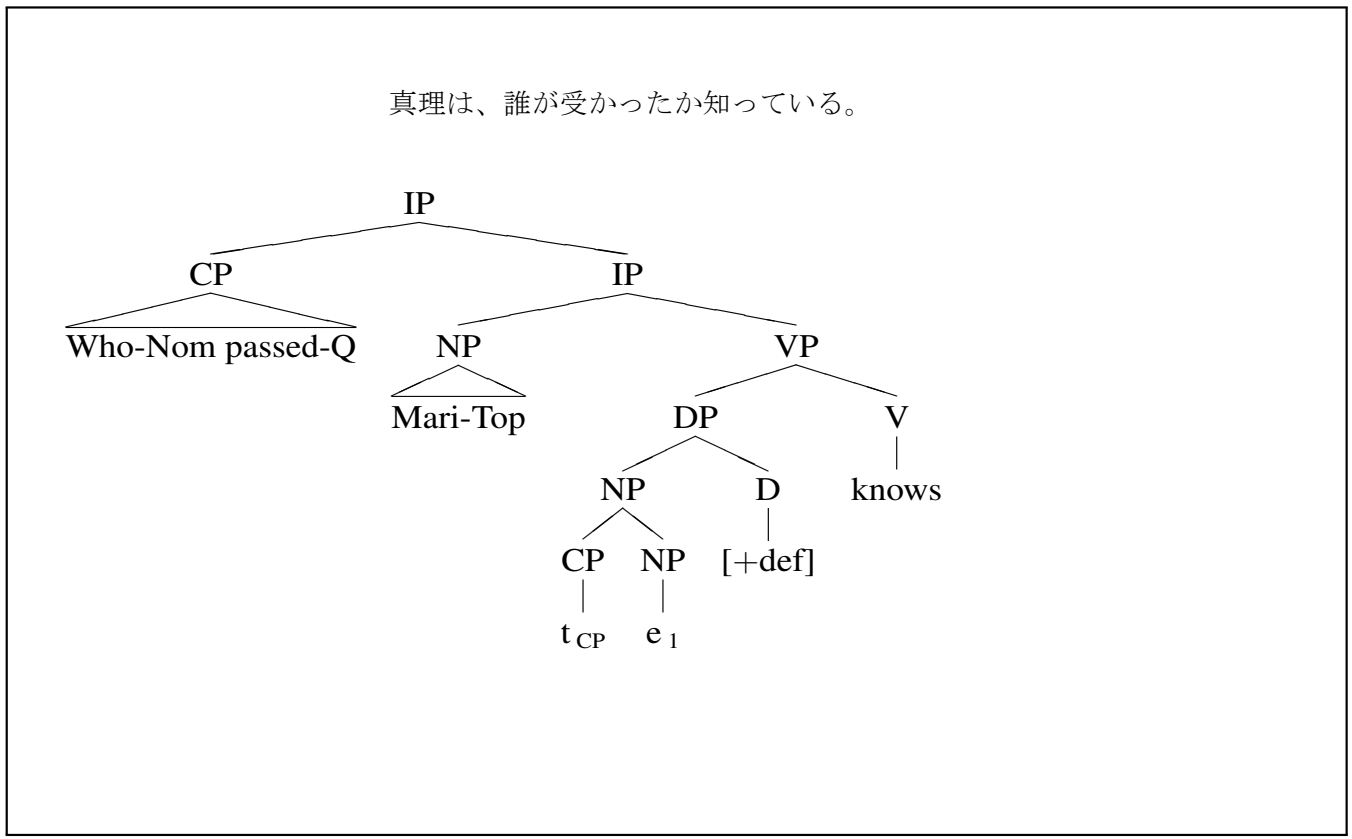
Head-internal Relative Clauses

1. The 'conjunctive' semantics is achieved by QR-ing the embedded CP and adjoin it to the matrix IP. This movement does not leave a trace behind, and the moved CP is interpreted as a part of the conjunction at the level of IP.
2. Meanwhile, there is a phonologically silent property anaphora, and combined with the nominalizer no, which acts like a definite determiner, it is treated as a disguised definite description (= an E-type pronoun).



Head-internal Relative Clauses

If we adopt the same syntax to embedded questions...



The raised CP is not a proposition but a set of propositions. How could such a meaning be 'conjoined'? Without knowing what semantic contribution the raised CP makes, we cannot easily determine the meaning of the E-type pronoun in the representation.

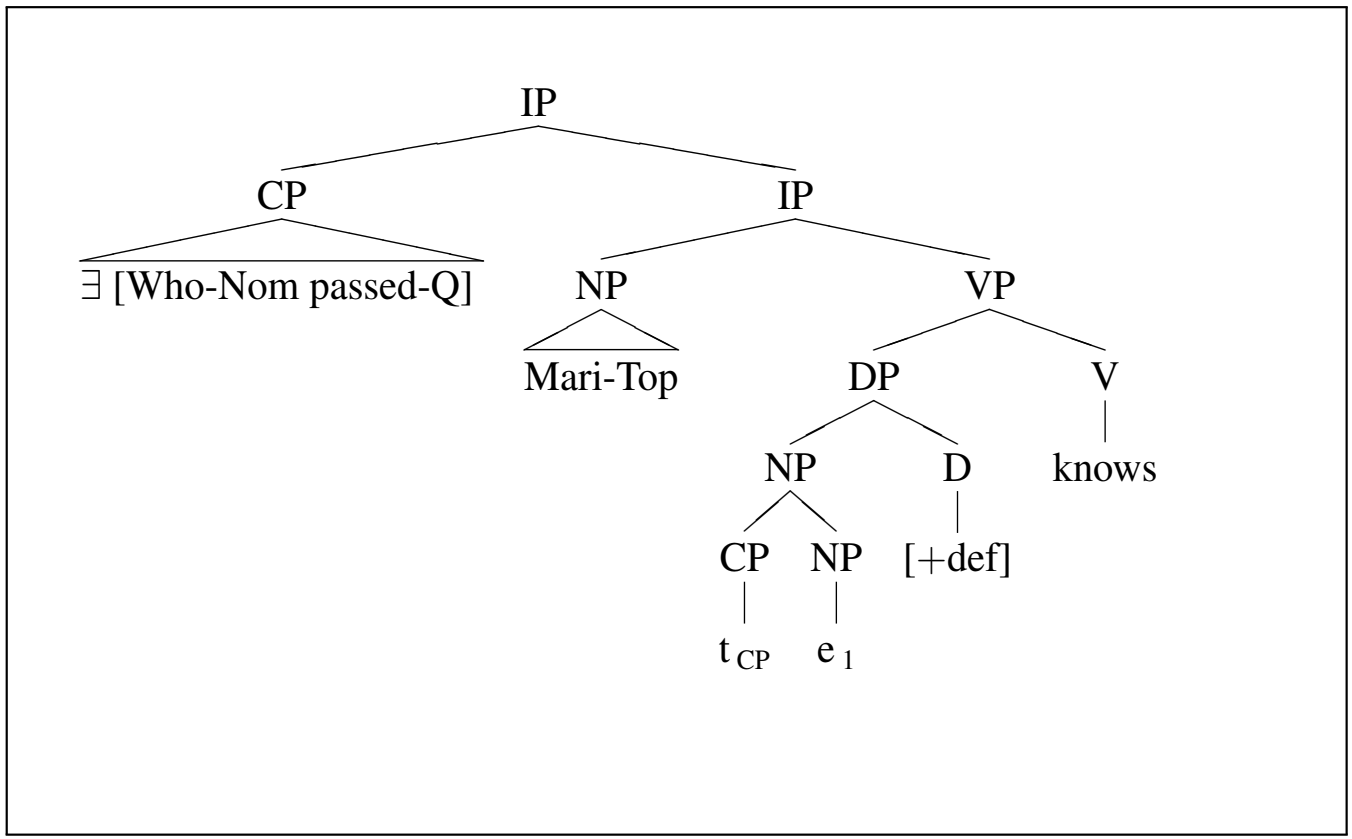
The first step towards the integration of the IHRC idea and the interrogative syntax is the notion of answerhood by Lahiri (2002), who also uses 'interrogative raising'. The meaning of the raised Q is slightly shifted. It gets the answer layer on top of the question meaning and receives the additional restriction of being relevant in the context.

(4) a. p is an answer to Q (i.e., Ans(p, Q)) iff $\exists$ S $\in$ Pow(Q) [p = $\cap$S]

b. The meaning of a raised Q: λp. [Ans(p, Q) & C(p)]

For Lahiri, the raised question meaning in (4b) serves as the domain for a QVE adverb. I use the idea of the raised question, but instead of applying a QVE adverb to its meaning, I choose to existentially close it at the CP level. The result is a proposition (i.e., no longer a set of propositions) that says there is a relevant (i.e., true) answer to the question. The existentially closed CP can be conjoined with the matrix clause.

Head-internal Relative Clauses



∃ [Who-Nom passed-Q] = ∃p [p ∈ {q: Ans(q, Who-Nom passed-Q) & C(q) }]
= There is a proposition p such that p is a relevant answer to the question 'who passed'.

Our goal here is to interpret the sentence *Mari knows who passed* as the concealed meaning of *Mari knows the people who passed* and to make the E-type pronoun mean something like the relative clause *the people who passed*. We can achieve this by supposing that the E-type pronoun above to refer to the maximal entity x such that the proposition that x passed constitutes a relevant answer to the question of who passed.

(5) Let g:= [1 $\rightarrow$ λx. Ans(x passed, {q: : $\exists$y & q = y passed}) & C (x passed)]
$\|$ Mari-wa [$_{\text{DP}}$ t $_{\text{CP}}$ [$_{\text{NP}}$ e_1 $_{<e,t>}$] e (+def)]] sitte-iru $\|^g$ = the proposition that Mari knows the maximal x such that the proposition that x passed is a relevant answer to the question of who passed.
$\approx$ the proposition that Mari knows the people who passed.

Interim Summary

- Embedded questions in Japanese can be nominalized in the manner similar to head internal relative clauses.
- At this point, I am willing to say they **can** be but need not. When they are QVE-modified with classifiers, they are nominalized. We do not have strong evidence that suggests that they are always nominalized.
- As for the analysis of concealed questions, Japanese cases do not offer anything particularly new or original. There are many analyses out there; Romero (2005, 2006), Nathan (2006), Frana (2006).
- It would be also interesting how floated quantifiers work with NPs that are interpreted as concealed questions. This has not been tried out yet.

Not all question-embedding predicates are the same. In general, *inquiry*-type verbs **can** yield concealed question meaning, as shown in (6), but curiously, the concealed question interpretations are not available with relative clauses; see (7).

(6) a. Emily asked Fred's age. $\approx$ Emily asked how old Fred is.

b. George checked Hanna's address. $\approx$ George checked where Hanna lives.

(7) a. ?? Emily asked the people who passed. $\not\approx$ Emily asked who passed.

b. George checked the books that got lost. $\not\approx$ George checked which books got lost.

Predicate Types

The same pattern is replicated in Japanese: QVE-inducing classifiers are not compatible with *inquire*-type predicates.

（１８） 真理はパーティーの開始時間を尋ねた。＝　真理はパーティーが何時から始まるか尋ねた。

（１９） 香奈は圭の住所を調べた。＝　香奈は圭がどこに住んでいるか調べた。

（２０） *真理は試験に受かった学生を尋ねた。（intended: 真理はどの学生が試験に受かったか尋ねた）

（２１） *香奈は借り出された本を調べた。（intended: 香奈はどの本が借り出されたか調べた

（２２） *?真理はどの学生が試験に受かったか、１０人ほど／全員尋ねた。

（２３） *?香奈はどの本が借り出されたか、１０冊ほど／全部調べた。

（２４） 香奈は借り出された本を調べあげた。（intended: 香奈はどの本が借り出されたか調べあげた。

（２５） 香奈はどの本が借り出されたか、１０冊ほど／全部調べあげた。

The notion of 'semantic selection' has become a tricky issue under the current proposal. As repeated below, there are extra DP/NP layers between the interrogative CP and the question-selecting predicate, and these intervening phrase markers make the matter of 'selection' a problem much more complex than usual.

There is another problem closely related to the 'selection' issue. In the proposed syntactic structure, the interrogative CP is, at least syntactically speaking, an adjunct and is buried within a complex NP, which is standardly assumed to be an island for movements. Therefore, it is predicted that movement out of this type of CP would cause a Subjacency violation. This prediction is not borne out, unfortunately...

Movements out of embedded questions with QVE classifiers do not seem bad. Meanwhile, I have not gotten consistent judgments on (28), extraction out of a 'doubly headed' structure.

（２６）*冷蔵庫に$_1$ 光司は真理がt_1 ケーキを入れておいたのを食べてしまった。

（２７）?その試験に$_1$ 光司は誰がt_1 受かったか、１０人ぐらい知っている。

（２８）＃その大切なアルバムを、 光司はどこにt_1 しまったかその場所を、思い出せなくて困っている。

Multiple Wh-questions

QVE effects with multiple-wh questions present yet another challenge.

（２９）　そのパーティーで誰が誰と踊ったか、５組ぐらいは覚えている。

（３０）　そのパーティーで誰が誰と踊ったかその組み合わせを覚えている。

（３１）　うちの学科でどの学生が何について研究しているか、３人ぐらいしか知らない。

（３１’）　??うちの学科でどの学生が何について研究しているか、３つぐらいしか知らない。

（３２）　うちの学科の学生が何について研究しているか、３人ぐらいしか知らない。

（３２’）　?うちの学科の学生が何について研究しているか、３つぐらいしか知らない。

Multiple Wh-questions

What kind of 'external nominal head' can a multiple-wh question have?

One possibility is 'NP-Gen NP' where the genitive NP corresponds to the first wh. But then, how come this genitive NP can agree (and often more naturally so) with the classifier?

（３３）　警察は、どの犯人がどこに隠れているか、そいつらの隠れ場所をもう突き止めているらしい。

（３４）　警察は、どの犯人がどこに隠れているか、**ほぼ全員**突き止めているらしい。

（３５）　?警察は、どの犯人がどこに隠れているか、**ほぼ全箇所**突き止めているらしい

（３６）　警察は、犯人達の（それぞれ異なる）隠れ場所を、??〜?***ほぼ全員／ほぼ全箇所**突き止めたらしい。

（３７）　うちの学科の外国人学生の出身国を、?〜??**１０人ぐらいなら／１０カ国ぐらいなら**挙げられる。

A possible answer has something to do with exhaustivity. It has been claimed that in a multiple-wh question, exhaustivity applies more strongly to the first wh than to the remaining ones.

(8) a. Who gave what to Jane for her birthday?

b.

Who?	What?
Anna	flowers
Bertha	flowers, a book, a cake
Carla	a mug cup
Dahlia	a pen

(9) a. Anna gave her flowers, Bertha flowers and a book, Carla a mug cup, and Dahlia a pen.

b. Anna gave her flowers, Bertha flowers, a book, and a cake, and Dahlia a pen

Our intuition says that (9b) is certainly a partial answer, while we tend to be more lenient about (9a); strictly speaking, not 100% complete, but the sense of partiality is quite weak.

The situation is practically the same with cumulative questions. Imagine, for instance, that one asks (10) instead of (8a).

(10) What did Jane's friends give to her for her birthday?

When we compare (9a) and (9b) as an answer to (10), the same contrast is felt: (9a) seems much less partial than (9b).

The asymmetry in exhaustivity makes an important impact on QVEs. QVE adverbs modify exhaustivity (with numeral classifiers) or sometimes stress it (with the universal Q like *zen-in* 'all people), and this operation should target the expression that induces exhaustivity, which is the 'sorting key' (of Kuno 1982) of the distribution; the first Wh in a multiple-Wh question or the definite plural in a cumulative Wh-question. This exhaustivity asymmetry is, I speculate, the source of the preference of the sorting key expression exhibited by QVE adverbs.

An Alternative Analysis

An alternative analysis: Even with QVE numeral classifiers, we always 'count' answers (i.e., propositions) as proposed by Lahiri (2002). Instead of counting propositions directly, we count entities that uniquely define the answer propositions.

(11)

Individual	Answer
Anna	Anna passed
Bertha	Bertha passed
Carla	Carla passed
Dahlia	Dahlia passed

A QVE-inducing numeral classifier counts the passers, by which it indirectly counts the answer propositions that are isomorphic to the passers.

The challenge 1: Similar isomorphism can be established between entities and sub-questions (in the sense of Beck and Sharvit 2002) just as easily as was the case with entities and answers.

(12)

Individual	Sub-question
Anna	Did Anna pass?
Bertha	Did Bertha pass?
Carla	Did Carla pass?
Dahlia	Did Dahlia pass?

Therefore, the analysis can offer no account for the selectivity of QVEs that we observed earlier: *inquire*–type predicates do not allow QVEs with numeral classifiers.

An Alternative Analysis

Numeral classifiers in Korean work very much like their Japanese counterparts. Considering many other syntactic properties that are shared by the two languages, it is quite surprising that Korean numeral classifiers cannot be used as QVE adverbs.

(13) a. Swu-nun [nwu-ka cwukessnun-ci] anh-ta
Su-Top [who-Nom died-Q] know-DCL
'Su knows who died.'

b. * Swu-nun [nwu-ka cwukessnun-ci] **say-salam-cengto**
Su-Top [who-nom died-Q] three-CL-about
anh-ta
know-DCL
'For about three of the people who died, Su knows that they died.'

An Alternative Analysis

It turns out that Korean fails one of the three 'nominal' tests with embedded clauses, namely the availability of 'doubly headed' interrogative clauses with overt demonstrative NPs.

(14) * Kyeongchal-un [nwu-ka unhayng-ul telessnun-ci] **ku**
Police-Top [who-Nom bank-Acc robbed-Q] that
pemin-ul anh-ta
perpetrator-Acc know-DCL
'The police know who robbed the bank, the culprit.'

This pattern is predicted by the nominal analysis of embedded questions but not by the alternative analysis.

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