Fragment questions: A direct interpretation approach*

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Kim, Jong-Bok. 2021. Fragment questions: A direct interpretation approach. *Linguistic Research* 38(3): 445-468. Ellipsis typically occurs in declarative sentences, but can also appear in questions including fragment questions (FQs) like *What about Mimi?* in English or *Mimi-nun* 'Mimi-TOP?' in Korean. These fragment questions also have some understood materials unexpressed, but induce a full sentential question meaning. This paper reviews some key properties of such FQs in Korean, and then discusses possible arguments for a move-and-delete sentential approach. After reviewing challenging issues for the sentential approach, the paper then offers a direct interpretation (DI) approach, which refers to no sentential sources but to discourse structure. It suggests that this DI approach is a more feasible direction for the analysis of FQs in Korean. **(Kyung Hee University)**

Keywords   fragment question, fragment anwer, direct interpretation, question-under-discussion

1. Introduction

Fragments in dialogues are quite ubiquitous in daily language uses, as illustrated by the following example in Korean:

(1) A: Mwues-ul   mek-ko   sip-e?
       what-ACC   eat-ACC   would.like-ACC
       'What would you like to eat?
    B: Sakwa.
       apple
       'I would like to eat an apple.'

The fragment answer here is an incomplete sentence but receives a propositional meaning such that the responder wants to eat an apple. In addition to such a fragment answer, responses can be a fragment question (FQ), as seen from the following dialogue:

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(2) A: Mimi-ka   mwues-ul masi-ess-e?
       Mimi-NOM what-ACC drink-PST-QUE
       'What did Mimi drink?
    B: Khephi. 'coffee'
    A: Momo-nun?
       'Momo-TOP'
       'What about Momo?'

The FQ *Momo-nun*, accompanied by the topic marker *-(n)un*, includes no expression to mark it as a question, but induces the meaning of a question sentence, 'What did Momo drink?'

Fragments involving ellipsis have received much attention in generative grammar. There have been two main strands to account for the analysis of fragments: deletion-based sentential approaches and direct interpretation (DI) non-sentential approaches. The sentential approaches assume that fragments are derived from full-sentential source together with move-and-delete operations (see, among others, Hankamer 1979; Morgan 1989; Merchant 2005; Weir 2014). For example, the Korean fragment answer in (2B) is derived from its sentential source constructed on the basis of its antecedent, as given in the following:

(3) [FocP Coffee [~~Mimi-NOM___drink-PST-DECL~~]].

This putative source starts with the putative declarative sentence such that Mimi drank coffee. The focused NP *coffee* then moves to the Spec of FocP and the remaining clause undergoes deletion, yielding the fragment answer *Khephi* 'coffee' (Merchant 2005). Within this view, the meaning of each fragment is thus derived from the corresponding full sentential structure, observing the usual mapping process between syntax and semantics.

Meanwhile, the nonsentential DI approaches assume that the complete syntax of a fragment is just a projection of the fragment itself (see, among others, Barton 1990; Ginzburg and Sag 2000; Culicover and Jackendoff 2005; Jacobson 2016; Kim and Abeillé 2019). Within this view, the fragment answer *Coffee* can be projected into a sentential utterance with a simple syntactic structure like the following:

(4) [$_S$ [$_{NP}$ Khephi 'coffee']].

With this simple syntax, the propositional meaning of the fragment is attributed to a special mapping mechanism.[1]

In what follows, the paper first discusses some key properties of fragment questions (FQs) in Korean. In the next section, it then examines a possible move-and-delete approach that posits a sentence source for each FQ, while referring to traditional arguments for such a sentential approach. After looking into several challenging facts for this movement-based sentential approach, the paper then provides a discourse-based direct interpretation approach that directly licenses the projection of FQs.

2. Basic properties

Like other languages, Korean employs three key types of questions: *wh*-question, *yes-no*, and alternative questions.[2]

(5) a. Mimi-ka   mwues-ul   ilk-ess-ni?
       Mimi-NOM   what-ACC   read-PST-QUE
       'What did Mimi read?'
    b. Mimi-ka   sinmwun-ul   ilk-ess-ni?
       Mimi-NOM   newspaper-ACC   read-PST-QUE
       'Did Mimi read a newspaper?'
    c. Mimi-ka   sinmwun-ina capci-lul   ilk-ess-ni?
       Mimi-NOM   newspaper-or magazine-ACC   read-PST-QUE
       'Did Mimi read a newspaper or a magazine?'

All these three types of question require a question mood marking in the final verb. FQs differ from these three types in that they have no morphosyntactic verbal ending. Consider another dialogue:

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1   For instance, Culicover and Jackendoff (2005) introduce syntax-semantics rules that allow the fragment orphan XP to function as an utterance (U) 'embedded in an indirectly licensed (IL) proposition and the orphan to be semantically linked to an appropriated antecedent (through the function *F*) provided by the context. See Culicover and Jackendoff (2005: 25) for details.

2   For the detailed discussion of FQs in Chinese and Spanish, see Wei (2018) and Stigliano (2021), respectively.

(6) A: Mimi-ka   mwues-ul ilk-ko   iss-ni?
         Mimi-NOM what-ACC read-CONN   exist-QUE
         'What is Mimi reading?'
     B: Sinmwun. 'newspaper'
     A: Momo-nun?
         Momo-TOP
         'What about Momo?'

Here, both the fragment answer and the following FQ are incomplete, but have full sentential meanings. The meaning resolution of the two is also linked to the *wh*-question. The same situation holds with alternative questions:

(7) A: Mimi-ka   sinmwun-ina capci-lul   ilk-ko   iss-ni?
         Mimi-NOM newspaper-or magazine-ACC read-CONN exist-QUE
         'Is Mimi reading a newspaper or a magazine?'
     B: Sinmwun./*Sosel. 'newspaper/novel'
     A: Momo-nun?
         Momo-TOP
         'What about Momo?'
     B: Capci./*Sosel. 'magazine/novel'

As seen from B's possible response to the full alternative question, the fragment answer to the alternative question needs to be one of the given alternatives (one of the two alternatives, neither or both). The FQ also needs to observe this constraint. The response to the FQ cannot be something like sosel 'novel', simply because it is not an alternative provided by the antecedent alternative question. The resolution of the fragments here is thus quite dependent upon the preceding antecedent. Polar-questions are not different:

(8) A: Mimi-ka   sinmwun-ul   ilk-ess-ni?
         Mimi-NOM newspaper-ACC read-PST-QUE
         'Did Mimi read a newspaper?
     B: Ung, ilk-ess-e. 'yes, read-PST-DECL'

   A: Momo-nun?

      'Momo-TOP'

      'What about Momo?'

The FQ here has only an NP marked with the topic marker *-(n)un* with no marking for the sentence type of question, but its meaning resolution is questioning if Momo also read a newspaper. The semantics of the FQ is again linked to the antecedent question even though no morphosyntactic expression indicates the form of question type. As we have noted so far, different from English glosses, FQ in Korean is marked with the topic marker *-(n)un*.[3] Its topic property can be supported from the fact that FQ cannot be an indefinite. For instance, an example like the following cannot function as an FQ in (8):

(9) A: #Han haksayng-un?

      one student-TOP

      '(lit.) What about a student?'

There are several facts indicating that the topic-marked FQ is a contrastive topic (CT), differing from canonical topic (Lee 2003).[4] As noted by Büring (2003), responses to multiple *wh*-questions typically allow CT answers:

(10) A: Nwu-ka   mwues-ul ha-ko   iss-e?

      who-NOM   what-ACC do-CONN exist-QUE

      'Who is doing what?'

     B: [Mimi-nun]$_{CT}$ ca-ko,   [Momo-nun]$_{CT}$ kongpwuha-ko iss-e.

      Mimi-TOP   sleep-and Momo-TOP   study-CONN   exist-DECL

      'Mimi is sleeping and Momo is studying.'

The fragment question also has a CT information. Büring (2003) notes that a CT represents a response to a question which is part of a larger strategy, i.e., a set of questions. The strategy aims to resolve a big issue evoked by the QUDs (question-under-discussion) in discourse. For instance, consider the following:

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3   Its intonational prominence is a LH contour pattern, different from the canonical topic HL tone. See Büring (2003).

4   See Kim (2016) for topic constructions in Korean.

(11) A1: Mimi-ka   mwues-ul masi-ko   iss-ni?
           Mimi-NOM   what-ACC   drink-CONN exist-QUE
           'What is Mimi drinking?'
      B1: Mimi-nun cha-lul masi-ko   iss-e.
           Mimi-TOP tea-ACC drink-CONN exist-DECL
           'Mimi is drinking tea.'
      A2: Momo-nun mwues-ul masi-ko   iss-e?
           Momo-TOP what-ACC drink-CONN exist-QUE
           'What is then Momo drinking?'
      B2: [Momo-nun] khephi-lul   masi-ko   iss-e.
           Momo-TOP   coffee-ACC drink-CONN exist-DECL
           'Momi is drinking coffee.'

The big issue evoked from the dialogues is 'What are Mimi and Momo drinking?' The CT question in (11A2) meets the felicity condition suggested by Constant (2014): the CT question needs to be 'part' of a larger strategy. That is, the discourse needs to have another question that can form a set with the CT question. The question of what Momo is drinking in (11A2) forms a set with the question of what Mimi is drinking.

The strategy is linked to the following properties of CT, noted by Constant (2014: 312-319):

(12) a. A CT cannot be exhaustive;
     b. A CT cannot be a maximal element like all;
     c. A CT must be interpreted contrastively.

FQs marked with the topic marker also display these properties. The following examples first show that FQs cannot be associated with a delimiter marker like *man* 'only':[5]

(13) A: Mimi-ka   mwues-ul ilk-ko   iss-ni?
         Mimi-NOM   what-ACC read-CONN exist-QUE
         'What is Mimi reading?'
      B: Sosel. 'novel'

_____

5   See Constant (2014) and Li (2015) for similar facts in Chinese FQs.

    A: Momo-nun/*Cap-man?

       Momo-TOP/*only

       'What about Momo?'

The FQ, functioning as a CT, asks a question about an alternative value, and this is why it cannot refer to an exhaustive value here.

    FQs cannot also occur with a maximal element like *motwu* 'all':

(14) A: Mimi-ka   mwues-ul ilk-ko   iss-e?

        Mimi-NOM   what-ACC   read-CONN   exist-QUE

        'What is Mimi reading?'

     B: Sinmwun. 'newspaper'

     A: *Motun haksayng-tul-un?

        all student-PL-TOP

        '(lit.) What about all the students?'

Having a maximal expression as FQ violates the felicity condition for a CT: FQ needs to be part of the strategy to be resolved for a question like *Who is reading what?* The question of *What is Mimi reading?* is part of the strategy, but the question 'What do all students read?' cannot.

    The contrastive condition is also hold in fragment questions. The CT fragment needs to be in a contrast relation to a correlate previously introduced by the context. Consider the following exchange:

(15) a. yelcha-ka twu si-kkaci   chwulpalha-ci anh-ass-e.

        train-NOM two hour-until depart-CONN not-PST-DECL

        'The train didn't depart until 2 o'clock.'

     b. *Mimi-nun? 'Mimi-TOP'

The fragment question *Mimi-nun* here is infelicitous because the context provides no contrasting expression.

    All these facts indicate that topic-marked FQs in Korean have the properties of CT. In what follows, we first discuss possible supporting arguments for the approaches that derives FQs from sentential sources.

3. A sentential approach with move-and-delete operations

As for the analysis of FQs in Chinese and Spanish, Wei (2018) and Stigliano (2021) proposed sentential analyses with move-and-delete operations. In a similar manner, one could adopt a sentential approach for FQs in Korean. In the previous section, we have noted that an FQ can follow a *wh*-question, a polar-question, or an alternative question. For an illustration, consider an FQ referring to a *wh*-question:

(16) A: Mimi-nun mwues-ul   sa-ss-ni?
         Mimi-TOP what-ACC   buy-PST-QUE
         'What did Mimi buy?
     B: Kapang. 'bag'
     A: Momo-nun? 'Momo-TOP'

As noted, the resolution of the fragment answer as well as the FQ here hinges on the antecedent *wh*-question. The fragment answer has the propositional meaning such that Mimi bought a bag, and the FQ here has the meaning of 'What did Momo buy?'. At first glance, it seems to be reasonable to derive both of these propositional meanings from their sentential sources, as given in the following:

(17) a. [$_{FocP}$ Bag [Mimi-nun ___ bought]].
     b. [$_{TopP}$ Momo-nun [$_{CP}$ ____ what-ACC buy-PST-QUE]].

As represented here, the fragment answer *kapang* 'bag' is derived from the sentential source in (17a): the focused NP 'bag' first moves to the Spec of FocP and then the remaining clause is elided as a deletion process (Merchant 2005). In a similar manner, the FQ *Momo-nun* 'Momo-TOP', as suggested by Constant (2014) and Stigliano (2021), functions as a focus as well as a contrastive topic and undergoes a movement to the Spec of TopP, and the remaining clause is deleted. As assumed by Merchant (2001) and Merchant (2005), in both cases, the E feature, associated with focus, triggers this movement and deletion.

This type of move-and-delete approach may get support from several phenomena, which have been referred to for other elliptical constructions. The first supporting argument may come from the parallelism between topicalization and FQ. We could

observe that those that can be topicalized can also serve as FQs. Possible remnants for FQs in Korean are the constituents that can be topicalized. The following examples show us that not only arguments (subject, object, or oblique argument) but also an adjunct (a temporal or locative expression) can be topicalized:

(18) a. Sinmwu-un   [Mimi-ka   ilk-ko   iss-e].
        newspaper-TOP Mimi-NOM   read-CONN exist-DECL
        'As for the newspaper, Mimi is reading it.'

   b. Mimi-wa-nun   [Momo-ka   iyaki ha-ko   iss-e].
        Miwa-COMM-TOP Momo-NOM talk do-CONN exist-DECL
        'As for Miwa, Momo is talking with her.'

(19) a. ecey-nun   [Mimi-ka   ka-ss-ta].
        yesterday-TOP   Mimi-NOM go-PST-DECL
        'As for yesterday, Mimi went.'

   b. Seoul-ey-nun [Mimi-ka   ka-ss-ta].
        Seoul-at-TOP   Mimi-NOM go-PST-DECL
        'As for Seoul, Mimi went to Seoul.'

However, note that an expression within an island or a numeral classifier alone cannot be topicalized:

(20) a. *Senmwu-lo-nun [Momo-ka   [Mimi-ka   cwun-un   sosel-ul]
        present-as-TOP   Momo-NOM   Mimi-NOM give-MOD novel-ACC
        ilk-ess-ta].
        read-PST-DECL
        '(lit.) As for the present, Momo read the novel that Mimi gave .'

   b. *sey kwon-un [Momo-ka   sosel-ul   ilk-ess-ta].
        three CL-TOP   Momo-NOM novel-ACC read-PST-DECL
        '(lit.) As for three, Momo read novels.'

In (20a), the topicalized one is associated with the one in the relative clause while the topicalized numeral classifier in (20b) is associated with the head noun *sosel-ul* 'novel-ACC'. Note that a VP cannot be topicalized, either:

(21) a. Mimi-ka   sakwa-lul   mek-ko   siph-ta.
       Mimi-NOM   apple-ACC   eat-CONN   like-DECL
       'Mimi would like to eat an apple.'
    b. *[sakwa-lul mek-ko-nun] Mimi-ka   siph-ta.
       apple-ACC   eat-CONN-TOP Mimi-NOM like-DECL
       '(lit.) As for eating an apple, Mary would like to do.'

As expected, these expressions that cannot be topicalized are also disallowed as FQs, as seen from the following, respectively:

(22) A: Mimi-ka   mwues-ul   ilk-ko   siph-ess-ni?
        Mimi-NOM   what-ACC   read-CONN   like-PST-QUE
        'What did Mimi want to read?'
    B1: Sosel 'novel'.
    B2: *Sey   kay-nun?
        three   CL-TOP
        '(lit.) What about three?'
    B3: *sosel-lul   ssuko-nun?
        novel-ACC   read-CONN-TOP
        '(lit) What about writing a novel?'

Connectivity effects are often cited as supporting evidence for sentential analyses. For instance, case connectivity can be found in FQs.

(23) A: Mimi-ka   nwukwu-eykey senmwul-ul cwu-ess-ni?
        Mimi-NOM   who-DAT   present-ACC give-PST-QUE
        'To whom did Mimi give a present?
    B: Momo-eykey. 'Mimi-DAT'
    A: Minho-eykey/*wa-nun? 'Minho-DAT/COMM-TOP'

What we can observe here is that the FQ here needs to have the case matching effect with its correlate. That is, since the FQ is in a contrastive relation with the dative argument, it also needs to be marked with the DAT case. This effect can be captured by the postulation of a clausal source for the FQ:

(24) Mimi-ka   [Minho-eykey/*wa-nun]   senmwul-ul cwu-ess-ni?
     Mimi-NOM Minho-DAT/COMM-TOP   present-ACC give-PST-QUE
     'Did Mimi give a present to Minho?'

The goal argument must be marked with the DAT, not with a different semantic case marking like COMM (commitative). The postulation of such a sentential source thus can address the case connectivity effect in FQ.

Connectivity effects concerning binding also seem to support the postulation of a sentential source:

(25) A: Mimi-ka nwukwu-ul salangha-ni?
         Mimi-NOM who-ACC love-QUE
         'Who does Mimi love?
     B: Momo. 'Momo'
     A: Caki casin-un? 'self-TOP'

The reflexive FQ *caki casin-un* 'self-TOP' needs to have the same reference as the NP *Mimi-ka* 'Mimi-NOM'. One simple way to account for this binding condition is to have a sentential source like the following:

(26) Mimi$_i$-ka   caki casin$_i$-un salangha-ni?
     Mimi-NOM self-TOP   love-QUE
     'Does Mimi love herself?'

The source, constructed from the antecedent *wh*-question, then can easily tells us that the antecedent of the reflexive *caki casin* is the subject *Mimi-ka* 'Mimi-NOM'.

Island sensitivity is also often used as evidence for movement-based sentential analyses. This fact is related to what can be topicalized. As noted earlier, topicalization is sensitive to island constraints. Consider the violation of different island constraints:

(27) a. ku hoysa-ka   [elin haksayng-ul] koyongha-yess-ta.
        the company-NOM young student-ACC   hire-PST-DECL
        'The company hired a young student.'

      b. *elin-un   [ku hoysa-ka   [____   hasayng-ul] koyongha-yess-ta].
        young-TOP the company-NOM   student-ACC hire-PST-DECL
(28) A: ku hoysa-ka   [etten haksayng-ul] koyongha-yess-ni?
       the company-NOM which student-ACC   hire-PST-QUE
       'Which student did the company hire?'
    B: chakha-n haksayng. 'honest-MOD student'
    A: *elin-un? 'young-TOP'

The examples in (27) illustrate the violation of Left-Branch Extraction in topicalization. The dialogue in (28) shows us that FQ also observes this island constraint.

    The phenomena we have discussed so far seem to support sentential approaches, but there are also quite challenging facts for these sentential approaches with move-and-delete operations. What follows discusses the examples that can argue against these.

4. Arguments against sentential approaches

    We have observed several possible arguments for the sentential analyses. However, there are other facts that challenge movement-based sentential analyses. Wei (2018) and Stigliano (2021) proposed Topic movement to generate FQs in Chinese and Spanish. However, one question that arises from a topic movement analysis concerns FQs with no topic marker:

(29) A: Mimi-ka   mwues-ul ilk-ko   iss-ni?
       Mimi-NOM   what-ACC   read-CONN exist-QUE
       'What is Mimi reading?'
    B: Sinmwun. 'newspaper'
    A: Momo-to?
      Momo-also
      'Is Momo also reading a newspaper?'

The FQ with a LH prosodic contour here refers to the fragment answer *sinmwun* and asks if Momo also read a newspaper. The FQ has no topic reading, but instead has a focus value asking if Momo also is an alternative value for the set of questions for 'x

reads a newspaper'. This implies that FQ does not always involve topicalization. The only constraint that holds for FQ seems to be a contrast relation between the FQ and its correlate.

We have noted that case connectivity effects could give arguments for sentential analyses. However, note that FQs can have no case matching effects in an example like the following:

(30) A: Mimi-ka   nwukwu-lang   kyelhonha-yess-e?
         Mimi-NOM who-COMM   marry-PST-QUE
         'Whom did Mimi marry?'
     B: Minho-lang. 'Minho-COMM'
     A: Momo-wa-nun? 'Momo-COMM-TOP'

The fragment answer *Minho-lang* has the same commitative case form with the correlate *nwukwu-lang*. However, the felicitous FQ here has a different morphosyntactic form even though it also marks a commitative role. This implies that the FQ and its correlate are not in the exact syntactic isomorphism. The following also violates the isomorphism condition in case marking:

(31) A: Mimi-ka   nwukwu-*(eykey)   X-mas khatu-lul   ponay-ss-e?
         Mimi-NOM who-DAT   X-mas card-ACC send-PST-QUE
         'To whom did Mimi send a X-mas card?'
     B: Minho-eykey. 'Mini-DAT'
     A: (?)Momo-nun? 'Mono-TOP'

The FQ here has no case marking at all. In the language, structural cases like NOM and ACC can often be dropped, but not the DAT, as shown in the *wh*-question here. This again shows that the exact isomorphism is too strong a requirement in constructing sentential sources.

We have seen that island constraints could serve as strong arguments for movement-based analyses. However, note that island sensitivity can also be violated in FQ:

(32) A: hoysa-ka   [pwule-lul ha-nun salam-ul]   chach-ko   iss-tey.
       company-NOM French-ACC do-MOD person-ACC   seek-CONN do-DECL
       'It is said that the company looks for a person who speaks French.'
    B: Tokile-nun?
       German-TOP
       'What about German?'

(33) A: [changuyseng-i pwuchokha-kiey] kecelha-yess-ni?
       creativity-NOM lack-because   reject-PST-QUE
       'They rejected it because it lacks creativity.'
    B: tokchangseng-un?
       originality-TOP
       'What about originality?'

As seen from these two examples, FQ can be insensitive to the Complex Island Constraint as well as the Adjunct Island Constraint. This again challenges movement-based analyses.

5. A direct interpretation approach

5.1 Key ideas

Different from movement-based approaches, DI (direct interpretation) approaches assume no sentential sources for fragment answers or fragment questions. That is, the approaches induce propositional meaning of incomplete utterances with no underlying syntactic structures (Ginzburg 2012; Sag and Nykiel 2011; Kim 2015a; Kim and Abeillé 2019). Within this view, fragments are directly projected into Ss with no derivational processes. Their semantic resolution refers to the structured discourse.

The key assumption of DI approaches is that non-sentential utterances like fragments, functioning as salient utterances, are resolved to the contextual parameters of the DGB (Dialogue Game Board) where the contextual parameters are anchored and where there is a record of who said what to whom, and what/who they were referring to (see Ginzburg 2012). DGB monitors which questions are under discussion (QUD), what answers have been provided by whom, etc. As the dialogue progresses, the value of QUD

is constantly being updated and the relevant context offers the basis for the interpretation of fragments. For example, uttering the question *What is Mimi reading?* will activate the following information:

(34)
$$\begin{bmatrix} \text{FORM} \left\langle \text{What is Mimi reading?} \right\rangle \\ \text{SYN S} \\ \text{SEM } \lambda_x \big[read(i, x) \big] \end{bmatrix}$$

With this utterance, DGB, as updating the contextual information, also evokes two relevant attributes SAL-UTT (salient-utterance) and MAX-QUD (maximal-question-under-discussion):

(35)
$$\begin{bmatrix} \text{DGB} \begin{bmatrix} \text{MAX-QUD } \lambda_x \big[read(i, x) \big] \\ \text{SAL-UTT} \left\{ \begin{bmatrix} \text{SYN} \mid \text{CAT NP} \\ \text{SEM } x \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

The feature MAX-QUD, representing the question currently under discussion, takes as its value questions. SAL-UTT, taking as its value syntactic as well as semantic information, represents the utterance which receives the widest scope within MAX-QUD. In the present context, the wh-question thus asks what Mimi is reading (QUD) and this information linked to the *wh*-phrase (the index value) functions as the SAL-UTT (a focus establishing expression). *Wh*-questions will evoke QUDs identical to their meanings, but the QUDs evoked by declarative sentences differ from their meaning. For instance, in the dialogue in the following, the declarative sentence can also evoke a QUD. For instance, the declarative sentence *Mimi is reading Harry Potter* can evoke a QUD such that 'Who is reading Harry Potter.

As noted, within this DI view, fragments are the sole daughter of an S-node, licensed by the following construction (cf. Ginzburg and Sag 2000; Kim 2015b; Kim and Abeillé 2019):
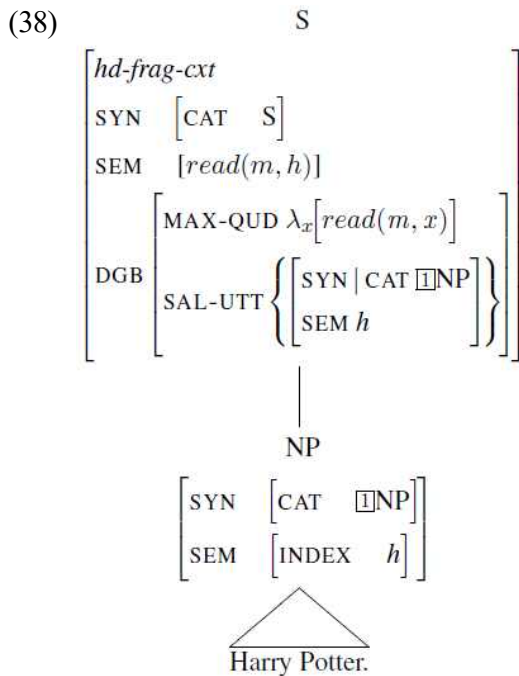
(36) Head Fragment Construction:
Any category can be projected into a NSU (non-sentential utterance) and function as a salient utterance (SAL-UTT).

This can be formalized in the HPSG feature system as following:

(37) Head-Fragment Construction

$$
\begin{bmatrix}
\textit{hd-frag-cxt} \\
\text{SYN S} \\
\text{DGB} \begin{bmatrix} \text{SAL-UTT} & \left\{ \begin{bmatrix} \text{SYN} & [\text{CAT} & \boxed{1}\,] \\ \text{SEM} & [\text{INDEX} & i] \end{bmatrix} \right\} \end{bmatrix}
\end{bmatrix}
\rightarrow
\begin{bmatrix}
\text{SYN} & [\text{CAT} & \boxed{1}] \\
\text{SEM} & [\text{INDEX} & i]
\end{bmatrix}
$$

The construction basically allows any maximal projection (functioning as a salient utterance) to serve as a NSU (non-sentential utterance) with no reference to ellipsis. This simple syntax, following the philosophy of Simpler Syntax Hypothesis (Culicover and Jackendoff 2005; Ginzburg and Sag 2000), allows a fragment to serve as the sole daughter of an S-node. For instance, the NP *Harry Potter* then serve as a proper answer to the above *wh*-question. Since the fragment answer is a focus expression linked to the salient utterance of the previous *wh*-question (DGB), it can be projected as a head-fragment construct together with the relevant dialogue information, as given in the following:

(38)

$$
\text{S}
$$

$$
\begin{bmatrix}
\textit{hd-frag-cxt} \\
\text{SYN} & \begin{bmatrix} \text{CAT} & \text{S} \end{bmatrix} \\
\text{SEM} & [read(m,h)] \\
\text{DGB} & \begin{bmatrix} \text{MAX-QUD} \ \lambda_x \begin{bmatrix} read(m,x) \end{bmatrix} \\ \text{SAL-UTT} \left\{ \begin{bmatrix} \text{SYN} \mid \text{CAT} \ \boxed{1}\text{NP} \\ \text{SEM} \ h \end{bmatrix} \right\} \end{bmatrix}
\end{bmatrix}
$$

$$
\text{NP}
$$

$$
\begin{bmatrix}
\text{SYN} & \begin{bmatrix} \text{CAT} & \boxed{1}\text{NP} \end{bmatrix} \\
\text{SEM} & \begin{bmatrix} \text{INDEX} & h \end{bmatrix}
\end{bmatrix}
$$

Harry Potter.

This fragment answer is a well-formed stand-alone clause licensed by the Head-Fragment Construction that requires the CAT value of the fragment to be matched to that of the SAL-UTT. This salient NP then matches with the salient NP of the *wh*-question evoked as the QUD, yielding the proper semantic resolution.

This resolution process is equivalent to the view that the meaning of a question is a function that yields a proposition when applied to the meaning of the answer, as given in the following (Krifka 2001; Ginzburg and Sag 2000; Jacobson 2016):[6]

(39) a. meaning of the QUD: $\lambda_x[read(m, x)]$
   b. meaning of the fragment answer *Harry Potter*: h
   c. fragment answer applied to the QUD: $\lambda_x[read(m, x)](h) = [read(m, h)]$

The fragment answer is thus properly resolved to yield a propositional meaning. The analysis, requiring neither clausal sources nor movement operations, utilizes the information evoked from the context.

As noted, uttering a question evokes a new QUD, indicating that the speaker tries to resolve the QUD. One thing worth noting is that the uttered QUD can also evoke sub-QUDs introduced by logical inferences (Büring 2003). For instance, the question of *Who reads what?* will have several sub-QUDs such as *Who reads Harry Potter? who reads a newspaper? who reads a magazine?*, etc. Also note that uttering a question explicitly establishes a matching QUD, but at the same time can implicitly introduce other related QUDs or accommodated QUDs. Consider the following dialogue:

(40) A: What time do you want to depart?
    B: Around 11 pm. The cheapest one.

As a dialogue participant, the responder accommodates a QUD like *What kind of tickets do you want?* and, as an answer to this QUD, B utters an NSU *The cheapest one.* Such an example illustrates that as a given dialogue moves, the updating processes of the DGB in question can continue to keep discourse coherence (Larsson et al. 2000).

---

6   This 'structured meaning' approach differs from the 'propositional set' approach where the meaning of questions denotes sets of propositions (see Hamblin 1973; Karttunen 1977; Groenendijk and Stokhof 1984).

5.2 Resolving fragment questions

We have seen that within the DI approaches, the resolution of NSUs including fragments is then dependent upon discourse, which can be described in terms of dialogues. The resolution of FQ is not different from that of fragment answers. Let's consider a FQ dialogue again:

(41) A: Mimi-ka   mwues-ul masi-ess-e?
          Mimi-NOM   what-ACC drink-PST-QUE
          'What did Mimi drink?
      B: Khephi. 'coffee'
      A: Wonmin-un?
          Wonmin-TOP
          'What about Wonmin?'

The discourse information evoked from the *wh*-question can be represented in a feature structure system, as in the following:

$$(42) \quad \begin{bmatrix} \text{DGB} & \begin{bmatrix} \text{MAX-QUD } \lambda_x\big[drink(m, x)\big] \\ \text{SAL-UTT} \left\{ \begin{bmatrix} \text{SYN} \mid \text{CAT NP} \\ \text{SEM } x \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

The fragment answer will then undergo the following resolution process:

(43) a. QUD from the *wh*-question: $\lambda_x[drink(m, x)]$
     b. meaning of the fragment *Kephi*: c
     c. fragment answer applied to the QUD: $\lambda_x[drink(m, x)](c) = [drink(m, c)]$

The meaning resolution indicates that the *wh*-question seeks a possible value for the variable of the salient NP *what*. The referent of the fragment answer serves as one possible value. This discourse information is updated by the FQ *Wonmin-un?* 'Wonmin-TOP'. The FQ first refers to the evoked DGB and forms its own QUD with the

replacement of the subject value with a contrasting value, *Wonmin*:

(44) a. QUD from the *wh*-question: $\lambda_x[drink(m, x)]$
    b. QUD from the FQ: $\lambda_x[drink(w, x)]$

One of the constraints in FQ, as noted earlier, is that the reference of the FQ is in a contrast relation with the referent evoked in the discourse. This in turn means that FQ is a subtype of the Head-Fragment Construction with its own constructional constraints:

(45) FQ Construction (↑*hd-frag-cxt*):
    The referent of FQ is in a contrast relation with another individual evoked in the discourse.

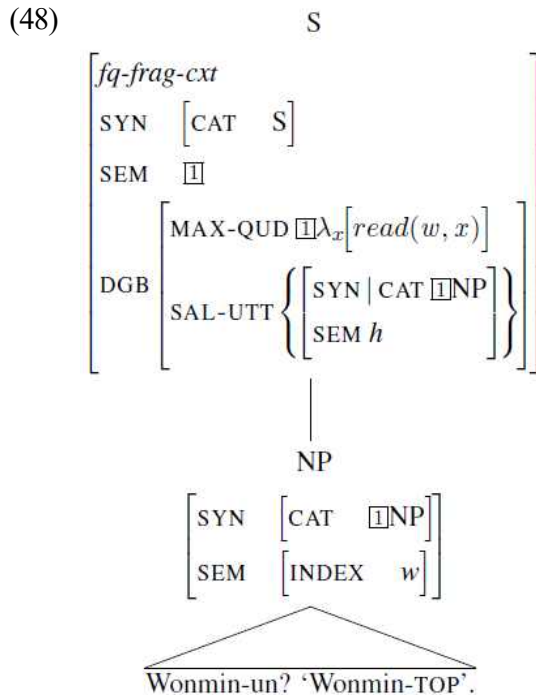This could be represented in a more formal way:

(46) FQ Construction (↑*hd-frag-cxt*):

$$\begin{bmatrix} \textit{fq-cxt} \\ \text{SEM} \quad \boxed{1} \\ \text{DGB} \mid \text{MAX-QUD} \; \boxed{1} \\ \text{CNXT} \begin{bmatrix} \textit{in-contrast-rel}(i, j) \\ j \in D \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \text{SEM} \quad [\text{INDEX} \quad i] \end{bmatrix}$$

This means that the FQ Construction is a subtype of the Head-Fragment Construction. Its semantics is identified with the MAX-QUD evoked from the context, and its contextual information includes the head-daughter's referent is in a contrast-relation with the referent *j*, which is also a member of the discourse D. This constraint means that the referent cannot be indefinite, but is a discourse old. This is, as noted earlier, why an indefinite NP cannot serve as an FQ:

(47) Etten haksayng-un?
    some student-TOP
    'How about some students?'

Let's consider the structure of the FQ in (41), which is licensed by the FQ

Construction:

(48)

$$
\begin{bmatrix}
\textit{fq-frag-cxt} \\
\text{SYN} \quad \begin{bmatrix} \text{CAT} & \text{S} \end{bmatrix} \\
\text{SEM} \quad \boxed{1} \\
\text{DGB} \begin{bmatrix} \text{MAX-QUD} \ \boxed{1}\lambda_x\big[read(w,x)\big] \\ \text{SAL-UTT} \left\{ \begin{bmatrix} \text{SYN} \mid \text{CAT} \ \boxed{1}\text{NP} \\ \text{SEM} \ h \end{bmatrix} \right\} \end{bmatrix}
\end{bmatrix}
$$

NP

$$
\begin{bmatrix}
\text{SYN} & \begin{bmatrix} \text{CAT} & \boxed{1}\text{NP} \end{bmatrix} \\
\text{SEM} & \begin{bmatrix} \text{INDEX} & w \end{bmatrix}
\end{bmatrix}
$$

Wonmin-un? 'Wonmin-TOP'.

As a subtype of the Head-Fragment Construction, the fragment functions as a salient utterance, projecting an NSU. The contextual information in (41) evokes the QUD of 'What did Mimi drink?' The CT value of the FQ then induces the QUD of 'What did Wonmin drink?'. The meaning of the FQ Construction is then identical to this question meaning.

Since the suggested analysis defines the interpretation of a FQ in terms of discourse (or evoked QUD), it offers a semantic/pragmatic account of FQ. This in turn means it requires no syntactic identity condition between an FQ and its correlate. We then expect examples where no exact Case matching between the two, which we have discussed earlier. Within the Case system of Korean suggested by Kim (2015b) and Kim (2016) and the discourse-based system that the FQ refers to, the FQ and its correlate can have different case forms as long as the two are compatible. For instance, the bare-case marked FQ is compatible with any case-marked correlate. The two are also compatible to each other if their semantic case roles are identical, as we have seen earlier.

In addition, this discourse-based account expects examples with no clear antecedent or even examples where the FQ does not refer to the preceding question exactly.

Consider the following:

(49) A: Mimi-ka   khephi-ul masi-ko   iss-e.

Mimi-NOM coffe-ACC drink-CONN exist-DECL

'Mimi is drinking coffee.

B: Wonmin-un? 'Wonmin-TOP'

The FQ here is ambiguous. It could mean if Wonmin is also drinking coffee. In this case, the FQ refers to the previous declarative sentence as its antecedent. Note that this FQ can also evoke a meaning like 'What is then Momo doing?' There is thus no linguistic antecedent to form its sentential source. The DI approach, referring to the discourse, can offer a viable way for this.

(50) a. meaning of the declarative antecedent: $[drink(m, c)]$

b. a possible QUD from the antecedent: $\lambda_y\lambda_x[drink(x, y)]$

c. a QUD from the FQ: $\lambda_y[drink(w, y)]$

As suggested by the analysis of Büring (2003), the discourse structure of CT (contrastive topics) allow us to build bigger QUDs like 'Who is drinking what?', 'What is Momo drinking?', 'What is Wonmin drinking', and so forth. Since the referent of the FQ is in a contrast relation with the referent of 'Mimi', which is already introduced in the discourse, the FQ can evoke the QUD in (50c).

Let us consider a more flexible example:

(51)   Context: Father came back home in the evening and saw his son being not at home:

A: Atul-un? 'What about the son?'

This FQ can have many different interpretations:

(52) a. Where is the son now?

b. Didn't he come back home yet?

c. Didn't he come back home from the school yet?

d. Didn't he come back from the trip yet?

The interpretation depends on the context. Note that the FQ, serving as a deep anaphor, cannot be felicitous if there are only those who are new in the context (seeing not his wife but a relative visiting his house). Further note that the denotation of this FQ cannot be out of blue or in a non-contrastive relation. This can be supported from the fact that the FQ can even refer to not the speaker's son, but the son of the relative visiting his home. In this case, the FQ would ask something like why you alone is visiting us without his son. The immediate extralinguistic context thus can affect the interpretation of the FQ in question.

Further note that since the present analysis directly generates FQ, it is expected that FQ involves no island-sensitive operations. Unlike the move-and-delete sentential analyses that need to avoid island insensitive facts by resorting to PF representations (as in Merchant 2005), the DI approach thus has no expectation that properties of unbounded dependencies involving topic are also projected in FQ.

6. Conclusion

We have seen that fragment questions (FQ) are widely-used elliptical constructions, that display form-function mismatches. In addition to their incompleteness, FQs have no overt expression marking that they would induce a question meaning. We have seen that, as suggested for FQs in Chinese and Spanish, there seem to be several supporting facts that may support the postulation of sentential sources under syntactic isomorphism. However, we have also noted that there are also facts that disfavor the movement-based sentential approaches. Noting not only empirical but also analytic difficulties of this direction, this paper suggests that a more viable direction is a DI (direct interpretation) approach that projects NSUs directly from fragment answers. The paper shows that once we have structured discourse (representing information like DGB, QUD, and salient information), we could have proper resolution of FQs without referring to sentential sources. The deep anaphora properties of FQs are better captured in this discourse-based DI approach.

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