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Analysing 'Wh' Echo Questions: A typological perspective with special reference to Hungarian[1]

Abstract

The study of Hungarian has provided and continues to offer important insights into how different aspects of lin-guistic structure may interact. As a classic discourse-configurational language in which syntax and information structure are closely related, research on Hungarian such as Laczkó (2017) has revealed much about discourse functions and how these can be encoded in the syntax. An important thread running through this research is the study of 'wh'-question formation, not least because 'wh'-questions have played such a crucial part in the devel-opment of modern syntactic theory. In this paper, I turn to a type of 'wh'-question which surprisingly has received relatively little attention: the 'wh' Echo Question, or 'wh'-EQ. I provide what is, to the best of my knowledge, the first exploration of the relevant typological space, before presenting the first analysis of 'wh'-EQs in the framework of Lexical-Functional Grammar (LFG), taking Hungarian as the major case-study lan-guage. In order to provide a full analysis of 'wh'-EQs cross-linguistically, I develop a consistent representation of speech acts in the LFG framework. This new approach offers a way to represent information about speech acts that is crucial to the analysis of not only 'wh'-EQs but also reporting constructions (quotation) more generally. In turn, this work opens the door to exploring issues relating to the representation of discourse structure and pragmatics more widely within the LFG framework.
Keywords: echo questions, Lexical-Functional Grammar, typology, insubordination, quotation

1 'Wh' echo questions cross-linguistically

It is true to say that echo questions (EQs) are something of a Cinderella phenomenon when it comes to syntactic analysis. This may seem surprising given the important role that the analy-sis of questions has had in the development of syntactic theory over the past half century or more. It also represents an omission given the important communicative function that echo ques-tions have: they are used to request repetition/clarification. The majority of work on echo questions which exists focuses on data from a single language or perhaps a very small number of closely related languages that form non-echo 'wh'-questions in the same way; a broader ty-pological overview is missing from the literature. One reason for this gap is surely the lack of

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available data on echo questions from typologically diverse languages: it is a fact that most grammars lack a systematic description of echo-question formation; the most notable exceptions are those descriptive grammars that are based on the Lingua Descriptive Studies Questionnaire (Comrie & Smith 1977). It is primarily upon this body of work that I base the following, which provides, to the best of my knowledge, the first typological perspective on 'wh' echo question ('wh'-EQ) formation. I begin by defining and exemplifying 'wh'-EQs with reference to their features in English before going on to explore their formation in other languages.

An echo question is a request for clarification relating to the previous utterance. By quoting many of the addressee's own words, the speaker signals there is some issue and that clarification of some kind is required. A 'wh'-EQ specifically identifies a particular part of the sentence as being at issue,[2] as in (1b).

(1) a.   Charlie put the bike outside.
     b.   Charlie put **what** outside?   ['wh'-EQ]

Before narrowing in on 'wh'-EQs, it is instructive to first consider what all echo questions – both 'wh' and yes/no – have in common. In any context appropriate to production of an echo question, the interlocutors minimally share the following information:

- that there are at least two interlocutors (Speaker A and Speaker B);
- that Speaker A produced an utterance, i.e. some event of speaking previously occurred; and finally,
- that Speaker B had a problem with Speaker A's utterance and requires repetition/clarification, at which point Speaker B produces an echo question.

When Speaker B utters the echo question, this involves them reporting (quoting) Speaker A's speech act (most likely this will be an assertion) whilst simultaneously signalling which aspect of it they have a problem with by producing a matrix-scope question (Ginzburg & Sag 2000). In this sense, all echo questions are inherently parasitic: one speech act is embedded within another.

A 'wh'-EQ differs from a non-echo 'wh'-question in English by having the question word appear in situ (i.e. in the position associated with the grammatical function that it bears) rather than ex situ in the syntactically prominent fronted position; compare the position occupied by *what* in (1b) and (2). A further difference is that subject–auxiliary inversion is not a feature of a 'wh'-EQ. This is unsurprising given the lack of an ex-situ 'wh'-phrase in clause-initial position.

(2) **What** did Charlie put outside?   [non-echo 'wh'-question]

The result then is that the syntax of a 'wh'-EQ such as (1b) is far more like that of a declarative (1a) than that of its non-echo 'wh'-question counterpart (2). We shall see that this is not unique to English: data from a range of languages indicate that 'wh'-EQs have declarative or non-'wh'-question features. Any analysis must account for this apparent paradox.

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[2]   In this it differs from a yes/no or polar EQ (*Charlie put the bike outside?* with appropriate intonation), which queries the entire proposition expressed by the first speaker.

The central puzzle I seek to explore can therefore be stated as: How does a 'wh'-EQ come to be interpreted as a request for information when its syntax does not appear to be consistent with it being a 'wh'-question? The strategies used to form 'wh'-EQs in different languages initially appear to be quite disparate, but in addressing the question I have just posed, a surprisingly unified picture emerges. In this paper, I provide an initial exploration of the typological space, before supplying the first Lexical-Functional Grammar (LFG) analysis of 'wh'-EQs, with particular reference to 'wh'-EQ formation in Hungarian. My first task therefore is to identify and classify 'wh'-EQ formation strategies, before moving on to exploring the features that 'wh'-EQs share and determining how these can be captured in formal terms.

Following the large body of work on 'wh'-question formation, I assume the following typology, comprising three major strategies for forming (non-echo) 'wh'-questions: multiple ex situ (3a), single ex situ (4a), and in situ (5a).[3] Declaratives are provided in (b) for the purposes of comparison. A multiple ex-situ language is one in which all question phrases appear in a position of prominence; in Hungarian, question phrases appear immediately before the verb regardless of where they would be located in a comparable declarative. Catalan, like English, is a single ex-situ language: in a multiple 'wh'-question (containing multiple 'wh'-phrases) only one question phrase appears in a syntactically prominent position (in both languages, this is initial position) compared to the order attested in the corresponding declarative.[4] In an in-situ language like Japanese, question phrases by default occupy the same syntactic position as their non-question-phrase counterparts do in a declarative.

(3) Multiple ex situ: Hungarian
  a. János   **ki-t**   **ki-nek**   mutatott   be?
     János.NOM who-ACC   who-DAT   introduced.3SG VM
     'Who did János introduce to who?'
  b. János   be-mutatta   Mari-t   Anná-nak.
     János.NOM VM-introduced.3SG Mari-ACC Anna-DAT
     'János introduced Mary to Anna.'

(4) Single ex situ: Catalan
  a. A **qui** va   donar **què**, la Maria?
     to who AUX.3SG.PST give.INF what the Maria
     'To who did Maria give what?'
  b. La Maria va   donar una rosa a en Pep.
     DEF Maria AUX.3SG.PST give.INF a   rose to DEF Pep
     'Maria gave a rose to Pep.'

                                                    (Víctor Acedo-Matellán, p.c.)

(5) In situ: Japanese
  a. Norio-ga   **doko-de** Mayumi-ni   **nani-o**   erabimashita ka?
     Norio-NOM where-LOC   Mayumi-DAT what-ACC   chose   Q
     'What did Norio choose for Mayumi where?'

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[3] I adopt this terminology in order to be as theory-neutral as possible at this point.
[4] The subject is right dislocated in (4a) for information structure purposes.

    b.   Norio-ga   mise-de   Mayumi-ni   omocha-o   erabimashita.
             Norio-NOM   shop-LOC   Mayumi-DAT toy-ACC   chose
             'Norio chose a toy for Mayumi at the shop.'

In terms of syntax, English 'wh'-EQs look like a rather straightforward case of swapping one 'wh'-question formation strategy (single ex situ as in 2) for another (in situ as in 1b; compare with the Japanese example in 5). There are also languages which form both non-echo 'wh'-questions and 'wh'-EQs using the in-situ strategy, for example Gulf Arabic (Holes 1990).

'Wh'-EQs are not necessarily formed according to strategies that are familiar from non-echo 'wh'-question formation though. The data considered for this study indicate that at least two further strategies are attested; one involves the use of a quotative element (the Quotative Strategy), and the other a complementizer (the Complementizer Strategy).

The Quotative Strategy is used to form 'wh'-EQs in Japanese, which, like Gulf Arabic, is an in-situ language. Notice that the 'wh'-EQ in (6B) is identical to the non-echo 'wh'-question in (5a) except for the inclusion of a final quotative particle and the lack of a question particle. By quotative, I mean a construction, word, or morpheme which conveys the meaning 'X said …', as exemplified for a declarative in (7).

(6)   Speaker B utters a 'wh'-EQ formed using the Quotative Strategy: Japanese
        A: Norio-ga   mise-de   Mayumi-ni   omocha-o   erabimashita.
               Norio-NOM   shop-LOC   Mayumi-DAT toy-ACC   chose
               'Norio chose a toy for Mayumi at the shop.'
        B: Norio-ga   **doko-de**   Mayumi-ni   **nani-o**   erabimashita-tte?
               Norio-NOM   where-LOC Mayumi-DAT what-ACC   chose-QUOT
               'Norio chose what for Mayumi where?'

(7)   Japanese
        asatte-wa   zehi   dekiagarimasu-tte …
        the.day.after.tomorrow-TOP   definitely   ready-QUOT
        '"The day after tomorrow it will definitely be ready." (they say.)'

                                            (Suzuki 2007: 214)

The Complementizer Strategy for forming 'wh'-EQs is syntactically unusual as it involves the appearance of a complementizer – an element that usually introduces a subordinate clause – in an independent clause. In a language such as Basque, the presence of the complementizer particle -(e)la distinguishes the syntax of a 'wh'-EQ (8B) from its non-echo counterpart (9).

(8)   Speaker B utters a 'wh'-EQ formed using the Complementizer Strategy: Basque
        A: Mikelek   eskutitza   idatzi   du.
               Mikel.ERG letter.ABS   written AUX.3SG
               'Mikel has written the letter.'
        B: Mikelek   **zer**   idatzi   du-ela?
               Mikel.ERG what.ABS   written AUX.3SG-COMP
               '(That) Mikel has written what?'

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(9)   Basque
     Mikelek   **zer**   idatzi   du?   [non-echo 'wh'-question]
     Mikel.ERG   what.ABS   written   AUX.3SG
     'What has Mikel written?'

(10a) demonstrates the more usual use of the complementizer particle -(*e*)*la* in a subordinate clause (enclosed in square brackets). This is a complementizer particle which marks that the subordinate clause is declarative. If the subordinate clause were interrogative, a different complementizer -(*e*)*n* would be used instead (10b).

(10)   Basque
    a.   [Mikelek   eskutitza idatzi   du-ela]   esan duzu.
       Mikel.ERG   letter.ABS   written   AUX.3SG-COMP said   AUX.2SG
      'You have said [that Mikel has written the letter].'
    b.   Gizonak [Mikelek   **zer**   idatzi du-en]   galdetu du.
       man.ERG Mikel.ERG what.ABS written AUX.3SG-COMP asked   AUX.3SG
      'The man has asked [what Mikel has written].'

These data seem to muddy the waters further: they show not only that a 'wh'-EQ can contain a complementizer in an independent clause, but also that that complementizer may actually mark the clause as being declarative and not interrogative. Once again we find that, as in English, 'wh'-EQ syntax has more in common with declaratives than other types of questions.

    The form of the complementizer in Basque encodes specific information about the type of speech act involved: the -(*e*)*la* affix indicates that a subordinate clause is/was asserted by the subject of the main clause, in line with Krifka's (2014) claim that verbs of saying subcategorise for clauses that denote speech acts. 'Wh'-EQs are questions, but the presence of such a complementizer is consistent with the utterance being an assertion. I return to the issue of why this should be in Section 2.

    It is important to recognise that it is not necessarily the case that only a single 'wh'-EQ formation strategy is available in a particular language. In Catalan, a single ex-situ language (4a), 'wh'-EQs containing one or more 'wh'-phrases can be formed using the Quotative Strategy or the in-situ strategy (11B), which Hualde (1992) presents as alternative versions of the same structure. According to Rigau & Prieto (2005), as well as the Quotative Strategy (12a), the Complementizer Strategy is also available in Catalan (12b). Note that 'wh'-EQs formed using the Quotative Strategy are not interpreted as yes/no questions so, for example, (10B) is not interpreted as "Did you say that you were going where?" Hualde (1992: 24) states: "Usually, the answer to a ['wh'-EQ] is simply the element that is questioned. The answer to a [yes/no EQ] is usually *sí* 'yes' or *no*."

(11)   Catalan
    A: vaig   al   port
       go.1SG   to.DEF port
      'I'm going to the harbour.'
    B: (Dius   que) vas   a   **on**?   ['wh'-EQ: Quotative/in situ]
       say.2SG that go.2SG to where
      '(You say that) you are going where?'

                                                            (Hualde 1992: 19)

(12) Catalan

    a.   Dius   que has   parlat amb **qui**?   ['wh'-EQ: Quotative]
         say.2SG that have.2SG spoken with who
         'You are saying that you have spoken with whom?'

    b.   Que has   parlat amb **qui**?   ['wh'-EQ: Complementizer]
         that have.2SG   spoken with who
         '(That) you have spoken with whom?'

                                              (Rigau & Prieto 2005: 25)

The data considered for this study indicate that there is no one-to-one correspondence between 'wh'-EQ and non-echo 'wh'-question formation strategies: it is not possible to predict exactly which 'wh'-EQ formation strategy will be used based on the strategy used to form non-echo 'wh'-questions in a particular language. Table 1 summarizes the findings of my investigation into 'wh'-EQs in a set of typologically and geographically distinct languages which represent the three main types of (non-echo) 'wh'-question formation strategy identified in the literature.

'wh' strategy	Language	Language family	'wh'-EQ strategy	Source(s)
multiple ex situ	Basque	isolate	ex situ + complementizer	Saltarelli (1988)
	Hungarian	Uralic	ex situ (+ complementizer)	Kenesei et al (1998)
	Turkish	Turkic	ex situ + quotative	Kornfilt (1997)
single ex situ	Amele	Trans New-Guinea	in situ	Roberts (1987)
	Catalan	Romance	in situ (+ quotative/ complementizer)	Hualde (1992), Rigau & Prieto (2005)
	Koromfe	Niger-Congo	in situ	Rennison (1997)
in situ	Gulf Arabic	Afro-Asiatic	in situ	Holes (1990)
	Japanese	Japonic	in situ + quotative	Hinds (1986)
	Persian	Indo-Iranian	in situ	Mahootian (1997)

Table 1. Comparison of 'wh'-EQ and non-echo 'wh'-question formation strategies in a sample set of nine languages exemplifying the three major types of non-echo 'wh'-question formation strategy attested cross-linguistically. Brackets indicate optionality in column 4. Language names are as they appear in the sources listed.

The following generalizations can be made about 'wh'-EQ formation on the basis of the information in Table 1.

- If a language forms non-echo 'wh'-questions using either the in-situ or the single ex-situ strategy, a 'wh'-phrase appears in situ in a 'wh'-EQ.
- If a language forms non-echo 'wh'-questions using the multiple ex-situ strategy, a 'wh'-phrase appears ex-situ in a 'wh'-EQ.

- The Quotative Strategy is employed to form 'wh'-EQs in all three kinds of 'wh'-strategy languages (in situ, single ex situ, and multiple ex situ).

In this paper, my primary aims are to provide an initial exploration of the typological space and to offer the first LFG analysis of 'wh'-EQs, with special reference to Hungarian. The information in Table 1 of course may not represent a comprehensive picture of the possibilities; the generalizations I provide above await further investigation and consideration in relation to data from other languages. However, given how little work is currently available on the typology of 'wh'-EQs, I set out the generalizations that have emerged from my survey in the hope that this might stimulate more work on this neglected topic.

I turn now to 'wh'-EQ formation in Hungarian, which I shall take as my case study in this paper. As indicated in Table 1, Hungarian can employ one of two 'wh'-EQ formation strategies. The syntax of a Hungarian 'wh'-EQ may be identical to that of a non-echo 'wh'-question (multiple ex-situ strategy used to form both), or the Complementizer Strategy may be used to form the 'wh'-EQ, in which case the only relevant difference between a non-echo 'wh'-question and a 'wh'-EQ would be the presence of *hogy* 'that', as a comparison of a 'wh'-EQ (13B) and its non-echo 'wh'-question counterpart (14) reveals. (The verb modifier *meg* is a perfectivizing particle.)

(13) Speaker B utters a 'wh'-EQ formed using the Complementizer Strategy/ex situ: Hungarian
    A: Anna   meg-találta   a   válasz-t.
          Anna.NOM VM-found.3SG the answer-ACC
          'Anna found the answer.'
    B: (Hogy) Anna   **mi-t**   talált   meg?
          that   Anna.NOM what-ACC found.3SG VM
          '(That) Anna found what?'

                                          (Kenesei et al 1998: 12)

(14) Hungarian
    Anna   **mi-t**   talált?   [non-echo 'wh'-question]
    Anna.NOM what-ACC found.3SG
    'What did Anna find?'

                                            (Kenesei et al 1998: 18)

It was noted above that Basque has two different complementizers which mark whether a subordinate clause is declarative or interrogative; see (10). In Hungarian, the complementizer *hogy* occurs in both declarative (15a) and interrogative (15b) subordinate clauses. In this sense, the Hungarian data are less revealing with respect to certain features of the Complementizer Strategy than the Basque data. Inclusion of the complementizer *hogy* does not by itself unambiguously mark a 'wh'-EQ like (13B) as either interrogative or declarative; *hogy* is found in both types of clause, which indicates that a 'wh'-EQ formed according to this strategy has, like its English counterpart, syntax that is not consistent with it being a (non-embedded) 'wh'-question despite being interpreted as one. An analysis of *hogy* as being a declarative marker in the case of a 'wh'-EQ is consistent with what has been observed more generally, that is, that the syntax of 'wh'-EQs regularly displays declarative characteristics.

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(15) Hungarian
    a.   István   gondolja   [hogy János   fel-hívta   Mari-t].
           István.NOM think.3SG   that   János.NOM VM-called.3SG Mari-ACC
           'István thinks that János called Mary.'

                                                      (Mycock 2006: 221)
    b.   István   meg-kérdezte [hogy **ki**   **ki-t**   hívott   fel].
           István.NOM VM-asked.3SG that   who.NOM who-ACC called.3SG VM
           'István asked who called who.'

At first blush, the set of strategies used to form 'wh'-EQs, including those found in Hungarian, may seem to be a disparate, possibly unrelated bunch. In the next section, I explore how they may be linked and, in particular, what the Hungarian data reveal.

2   Analysing 'wh'-EQ formation strategies

As shown in (14) a single question word appears immediately before the verb in a non-echo 'wh'-question in Hungarian. A question word is required to occupy the immediately preverbal Focus position regardless of its grammatical function. This immediately preverbal position hosts Focus material, which includes question words as well as non-interrogative focal elements. If there are multiple question words in a single clause, they appear immediately before the verb. Therefore, I classify Hungarian as being a multiple ex-situ language. I set aside here the issue of precisely which syntactic position(s) those question words that do not appear adjacent to the verb occupy. For illuminating discussion of this issue, see Laczkó (2017) and references therein.

As discussed in Section 1, 'wh'-EQs can be formed using one of two strategies in Hungarian. They can be identical in form to the equivalent non-echo 'wh'-question, i.e. the ex-situ strategy can also be used to form 'wh'-EQs. Alternatively, the Complementizer Strategy can be used; that is, despite being an independent clause, a 'wh'-EQ can include the complementizer *hogy*, as shown in (13B). *Hogy* is the complementizer used with both declarative and interrogative subordinate clauses; in this respect Hungarian is less transparent than Basque; see the discussion of (15). Regardless of this point though, the fundamental puzzle remains: 'wh'-EQs are interpreted as questions, but the presence of a complementizer is consistent with the utterance being a declarative subordinate clause.

Why should a complementizer be present in an independent clause, in particular one which is interpreted as a question and a request for clarification? Key to solving this riddle is consideration of interrogative scope. I hypothesise that the presence of a complementizer in a 'wh'-EQ serves to indicate that the question word takes scope not just over the clause in which it appears, but rather it takes matrix scope. This fits with the observation that echo 'wh'-question phrases have "root" scope (see, for example, Reis 2012), and is consistent with what Kenesei et al (1998: 19) have to say about answers to 'wh'-EQs: "answers to ['wh'-EQs] follow the pattern established for answers to (genuine) [non-echo 'wh'-questions]". But what does it mean for a 'wh'-phrase to take matrix scope when there is no embedding verb or matrix clause? A 'wh'-EQ is an independent clause, after all. I propose that the key insight emerges when we consider together the various strategies that are available to form 'wh'-EQs cross-linguistically.

Recall that all echo questions are inherently parasitic: one speech act is embedded within another (Section 1). This may be reflected syntactically by the presence of a complementizer in a 'wh'-EQ formed according to the Complementizer Strategy, exemplified in (13B) for Hungarian, for instance. The presence of a complementizer in an independent clause is not a feature limited to 'wh'-EQs. Evans (2007) refers to this phenomenon more generally as in-subordination. Evans (2007: 367) defines insubordination as "the conventionalized main clause use of what, on prima facie grounds, appear to be formally subordinate clauses", a description which covers 'wh'-EQs formed according to the Complementizer Strategy. He further observes that insubordinated clauses "signal high levels of presupposed material in the in-subordinated proposition, i.e. signalling relatively specific presuppositions about the discourse context in which the sentence can occur … Specific examples of this use of insubordination are … reiterations" (Evans 2007: 410), which are defined thus:

> clauses of a subordinate form appropriate to embedding under a main clause such as 'I said [ ]' or 'I asked [ ]' may be used independently, with ellipsis of the main clause reporting the speech act. Here the context of mutually manifest repetition makes the restoration of the ellipsed speech act verb quite clear (Evans 2007: 418).

The characterization of 'wh'-EQs as a sub-type of reiteration is, I contend, crucial to understanding what the Complementizer Strategy is, where it comes from, and, ultimately, how it is to be best analysed. The presupposed material relevant to an echo question is that Speaker A previously performed a speech act of a certain type. This may be explicitly expressed. In fact, this is exactly the case in a language such as Japanese that employs the Quotative Strategy (6B), which the typological survey summarized in Table 1 showed is not alone in employing a morphosyntactic construction equivalent to "You said ..." to form 'wh'-EQs. When the Complementizer Strategy is employed to form a 'wh'-EQ in a language like Hungarian, no quotative expression is included. However, one can easily see how the two could be related given the point that Evans (2007) makes about the main clause reporting the speech act being presupposed material and the general propensity for this type of information to be omitted. This proposal is supported by the optionality attested in 'wh'-EQ formation in Catalan as reported in Rigau & Prieto (2005): either the "full" quotative (main clause including the speech act verb) is present (12a) or only the "subordinate" clause appears, distinguished by the presence of an apparently anomalous complementizer in an independent clause (12b).

The presupposed material that I have proposed can be omitted in a 'wh'-EQ is that expressed by a main clause such as "You said …". However, what this does not account for is the fact that what is not presupposed is that Speaker B is asking a question when they utter a 'wh'-EQ. This dimension of a 'wh'-EQ's interpretation must be accounted for in any analysis. In the next section, I provide the first LFG analysis of 'wh'-EQs, focusing on Hungarian.

3   LFG analysis of 'wh'-EQs

My analysis of 'wh'-EQs will concentrate on three aspects of linguistic structure as represented in the parallel architecture of LFG, shown in Figure 1, which are related to one another by functional projections (signified by arrows annotated with Greek letters). Two of these are levels of syntactic structure: phrase structure relations are represented at c(onstituent)-structure, and abstract grammatical functions and features are represented at f(unctional)-

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structure. Finally, there is semantic structure or s-structure. For the purposes of accessible and straightforward exposition, I have simplified the representations of these three structural levels in certain respects.[5]
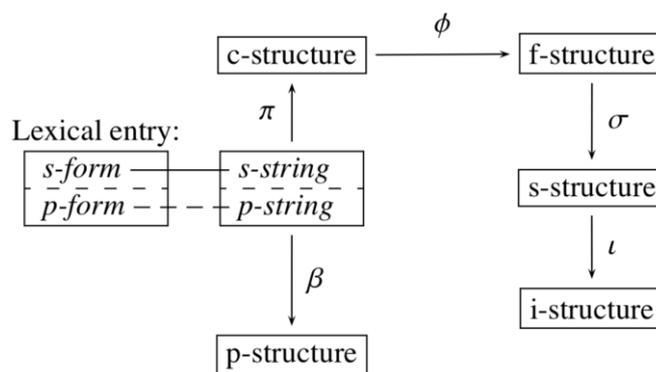

Figure 1. The architecture of Lexical-Functional Grammar (Mycock & Lowe 2013)

Adopting Laczkó's (2017) approach to the c-structure of Hungarian, according to which a Focus constituent such as an immediately preverbal question word is analysed as occupying SpecVP, the only major difference between the 'wh'-EQ in (13B) and a comparable non-echo 'wh'-question is the presence of the complementizer *hogy* 'that' and the CP projection which it heads. The crucial differences between 'wh'-EQs and their non-echo counterparts discussed previously are therefore not to be captured at the level of c-structure.

In addition to c-structure, there is another level of syntactic structure in the LFG architecture: f(unctional)-structure. The simplified f-structure for Speaker A's statement in the mini-dialogue that we are analysing (13A) appears in (16). I refer to this f-structure as *f*. The lines connecting functions within the f-structure indicate that one f-structure has two functions – a primary grammatical function such as SUBJ and a secondary discourse function such as TOPIC.[6] For example, the line connected to the f-structure for 'the answer' indicates that this is simultaneously Focus and object in this clause. I assume the value of the STMT-TYPE feature is by default *decl*(arative).[7]

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[5] Space considerations mean I am unable to discuss how prosody may distinguish 'wh'-EQs from other constructions, including non-echo 'wh'-questions, but note that the LFG architecture depicted in Figure 1, including as it does p-structure (see, for example, Dalrymple and Mycock 2011), permits this potentially important aspect of 'wh'-EQ structure to be captured in a future analysis.

[6] It has been proposed that information structure be represented as a separate structural level in LFG (see, for example, Dalrymple & Nikolaeva 2011), as assumed in the version of the LFG architecture presented in Figure 1. My proposed LFG analysis of 'wh'-EQs is compatible with either approach.

[7] This information could be associated with particular phrase structure configurations or verb forms.

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(16)

$$f\begin{bmatrix} \text{PRED} & \text{'find<SUBJ, OBJ>'} \\ \text{STMT-TYPE} & \text{decl} \\ \text{SUBJ} & \\ \text{TOPIC} & \{[\text{"Anna"}]\} \\ \text{OBJ} & \\ \text{FOCUS} & \{[\text{"the answer"}]\} \end{bmatrix}$$

The f-structure for the 'wh'-EQ (13B), formed according to the Complementizer Strategy, appears in (17). I refer to this f-structure as *fEQ* in order to distinguish it from the f-structure for the declarative *f* shown in (16).

(17)

$$fEQ\begin{bmatrix} \text{COMP-FORM} & \text{HOGY} \\ \text{PRED} & \text{'find<SUBJ, OBJ>'} \\ \text{STMT-TYPE} & \text{decl} \\ \text{SUBJ} & \\ \text{TOPIC} & \{[\text{"Anna"}]\} \\ \text{OBJ} & \\ \text{FOCUS} & [\text{"what"}] \end{bmatrix}$$

It may seem contradictory for a wh-EQ's f-structure such as (17) to have a STMT-TYPE value *decl*. However, Butt et al (1999: 19, fn. 1) state that clause type "does not reflect the type of speech act. Instead, it represents a very basic syntactic distinction among types of clauses according to their syntax", which is why it is included at f-structure, a syntactic level of representation. The value of STMT-TYPE is *decl* for the 'wh'-EQ (17) because it includes a complementizer otherwise found in subordinate clauses. While in Hungarian, the same complementizer is used for both declarative subordinate clauses and embedded questions (see 15), the Basque data support this analysis of a 'wh'-EQ formed according to the Complementizer Strategy as having STMT-TYPE value *decl*: in a Basque 'wh'-EQ, the declarative complementizer -(*e*)*la* rather than the question complementizer -(*e*)*n* must be used (see 8B). At the least, the presence of *hogy* does not unambiguously mark (13B) syntactically as an interrogative. The survey data reveal that the syntax of 'wh'-EQs has as much if not more in common with declaratives compared with interrogatives. I return to the reasons for this apparent anomaly shortly. At this point it suffices to say that the analysis in (17) is consistent with the broader picture, capturing the relevant syntactic features of a 'wh'-EQ formed according to the Complementizer Strategy. Butt et al (1999: 38) acknowledge that there are loose ends:

> while the encoding of the features COMP-FORM and STMT-TYPE are used to help in the formulation of wellformedness conditions in minor ways in the grammar, their primary reason for existence is a registration of information that is presumably useful for subsequent semantic analysis.

This "subsequent semantic analysis" will play an important role in understanding the structural features of 'wh'-EQs cross-linguistically.

As with their respective c-structures, the differences between the f-structures for a 'wh'-EQ and a comparable non-echo 'wh'-question are minimal. In key respects, the relevant f-structures are identical. In fact, they *are* identical when the 'wh'-EQ is not formed according to the

Complementizer Strategy in Hungarian but the ex-situ strategy is used instead. The f-structure analysis for the version of (13B) without a complementizer, which could be a non-echo 'wh'-question or a 'wh'-EQ depending on the context, is shown in (18). Notice that the STMT-TYPE value is *int*(errogative).

(18)
$$\begin{bmatrix} \text{PRED} & \text{'find<SUBJ, OBJ>'} \\ \text{STMT-TYPE} & \text{int} \\ \text{SUBJ} & \\ \text{TOPIC} & \{["Anna"]\} \\ \text{OBJ} & \\ \text{FOCUS} & ["what"] \end{bmatrix}$$

From the perspective of these syntactic (c-structure and f-structure) analyses therefore, there is little to nothing to distinguish 'wh'-EQs from their non-echo counterparts. Accounting for the difference between the declarative originally asserted by Speaker A and the 'wh'-EQ that Speaker B asked requires us to consider other aspects of grammatical structure. I propose, in line with the point made by Butt et al (1999: 38) quoted above, that semantic structure is central to analysing echo questions.

Semantic structure is projected from f-structure via the functional projection σ according to the architecture of LFG, as shown in Figure 1. The semantic structure projected from the f-structure f in (16), which I refer to as f_σ as per convention, is:

(19)
$$f_\sigma \begin{bmatrix} \text{REL} & \text{find} \\ \text{EVENT} & [\ ] \\ \text{ARG}_1 & \begin{bmatrix} \text{DF} & \text{TOPIC} \end{bmatrix} \\ \text{ARG}_2 & \begin{bmatrix} \text{DF} & \text{FOCUS} \end{bmatrix} \end{bmatrix}$$

What semantic structures like (19) do not include is any specification of illocutionary force, which can be defined as the speaker's intention in producing the utterance. This highlights a wider issue that needs to be addressed, namely how information about illocutionary force is represented in LFG.

Proposals in the literature to date are few and far between, and those that are available have mainly involved including information about illocutionary force at a level of syntactic representation, so at the level of c-structure or f-structure. For example, Broadwell (2013) includes a c-structure position *Illoc* in his analysis of Copala Triqui. Sells (2007: 78, fn. 12), on the other hand, assumes that illocutionary information will be expressed in f-structure in LFG, while acknowledging that the semantic dimension of their contribution could be expressed as "part of the correspondence between the semantics and the c-structure" (Sells 2007: 87). At best, situating information about illocutionary force at a syntactic level of representation in the modular architecture of LFG represents a holding position: illocutionary force is not an aspect of syntactic structure though it can undoubtedly be related to it, a point made by Butt et al (1999) and Sells (2007). Parallels can be drawn between treatments of

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illocutionary force in LFG to date and the way that the representation of discourse functions has developed since it was first considered in LFG in Bresnan & Mchombo (1987). Early work represented discourse functions at f-structure, i.e. a syntactic level of representation. As Dalrymple & Nikolaeva (2011: 63) observe, "When this is done, f-structure is no longer a purely syntactic representation, but instead represents a combination of information structure and syntactic structure". King (1997) made the case for representing discourse functions at a separate level of representation, i(nformation)-structure, an approach which has been highly influential and is incorporated in the version of the LFG architecture depicted in Figure 1. I would argue that it is time to revisit how other aspects of pragmatics beyond discourse functions are represented within the LFG framework. Dalrymple & Nikolaeva (2011: 84–85) acknowledge this need as well: their approach to the analysis of information structure incorporates assumptions about "contribution from linguistic and pragmatic context", but they recognise that no formal explicit proposal regarding how this is to be treated within LFG exists. In this paper, I seek to make an early contribution to this thread of research in LFG.

I propose an approach expressed within the modular architecture of LFG that captures how the contributions of semantics (s-structure) and context come together. In order to do so, it is necessary to consider how to represent the speech acts that are involved in an interaction when a 'wh'-EQ is uttered. I take the declarative uttered by Speaker A in the mini-dialogue in (13) to be interpreted as "I assert to you X". The context provides a speech act 'frame' for the meaning associated with the relevant semantic structure. In the case of the declarative produced by Speaker A in (13), the speech act frame can be represented as in (20). The inclusion of f_σ in (20) represents how the s-structure projected from the f-structure f slots into the relevant speech act frame: f_σ is the actual semantic content of the clause uttered. The 'speech act frame' is proposed to be a separate level of representation projected post-s-structure in the LFG architecture which integrates s-structures with information about the context of the utterance (identity of utterer and addressee(s), etc.). I leave as open questions whether this level of representation would be projected from s-structure or i-structure, and how it would be incorporated into a wider-ranging treatment of pragmatics in LFG.

(20)
$$\begin{bmatrix} \text{ILLOC-REL} & \text{ASSERT} \\ \text{UTTERER} & \text{A} \\ \text{ADDRESSEE} & \text{B} \\ \text{CONTENT} & f_\sigma \end{bmatrix}$$

Speaker B responds to Speaker A's assertion with a 'wh'-EQ (13B). The semantic structure projected from f-structure *fEQ* is identical to that of the original assertion f_σ presented in (19) – the arguments bear the same respective discourse functions (topic and focus) and the verb makes the same meaning contributions. Of course, this identity between the two s-structures does not capture how the two differ fundamentally: the first is an assertion while the latter is a type of question, albeit one whose syntax may have much in common with a declarative subordinate clause. The presence of a complementizer – and the Basque data indicate that this is a declarative-marking complementizer – initially seems at odds with the presence of a question phrase in a 'wh'-EQ. However, this declarative marking is consistent with indicating that an *assertion* is being *quoted*. This is much more obviously the case when the Quotative Strategy is used to form a 'wh'-EQ ('You said that you saw WHO?').

Syntactic marking of a 'wh'-EQ as being a declarative clause thus serves to preserve information about the original speech act: Speaker A asserted the proposition that is simultaneously being quoted and being queried in Speaker B's subsequent 'wh'-EQ. Ellipsis of the matrix clause reporting the speech act in a 'wh'-EQ is consistent with the subtype of insubordination that Evans' (2017) refers to as reiteration, providing support for a developmental path of some 'wh'-EQ formation strategies from quotative construction to complementizer construction as the result of ellipsis. Recall that both the Quotative Strategy and the Complementizer Strategy are reported as being available in Catalan; see (12). Further ellipsis of the complementizer leaves us with the other alternative strategy available for 'wh'-EQ formation. In Hungarian this means that a 'wh'-EQ can be formed using the ex-situ strategy and is therefore token identical to its non-echo 'wh'-question counterpart. The 'wh'-EQ formation strategies identified in Table 1 and their distribution, including the optionality identified, suggest the following development path.

(21)   quotative   >   complementizer   >   ex-situ/in-situ
       construction   construction   'wh'-construction

On this approach, the main difference between the Quotative Strategy and the Complementizer Strategy is whether the matrix clause that reports the speech act is expressed or not. Recall that Krifka (2014) identifies verbs of saying as subcategorising for clauses that denote speech acts. 'Wh'-EQs formed according to the Complementizer Strategy do not include a verb of saying, but the relationship between the relevant speech acts remains the same. The challenge is to capture this in the analysis of 'wh'-EQs.

In previous work on the analysis of non-echo 'wh'-questions in the LFG framework (Mycock 2006), I took the presence of a question word in an ex-situ Focus position to introduce information (in formal terms, relevant meaning constructors) that provides instructions regarding how to combine the meaning of the proposition involved with the contribution of the question word and return the meaning of a question. I adopt a similar approach to the analysis of 'wh'-EQs, but propose that the latter differ crucially with respect to scope. This is captured in the proposed LFG analysis by the inclusion of a level of representation that provides the speech act frame, with (20) being an example.

In my analysis of 'wh'-EQs, I follow Krifka's (2014) work on embedding illocutionary acts in proposing that echo question 'wh'-phrases take scope over a different type of semantic object than their non-echo counterparts: specifically, the scope of a question phrase in a 'wh'-EQ is an illocutionary act rather than a proposition (as is the case when a question phrase appears in a non-echo 'wh'-question). Using the speech act frame approach I introduced earlier, the 'wh'-EQ (13B) can be represented as in (22). The whole sentence is a question – the 'wh'-EQ's illocutionary force is ASK as a result of its context, possibly in combination with a particular prosodic pattern whose contribution can be modelled with reference to p-structure (see Figure 1) – but embedded within this speech act is another, Speaker A's original assertion, which is the value of the matrix CONTENT feature.

(22)

$$
\begin{bmatrix}
\text{ILLOC-REL} & \text{ASK} \\
\text{UTTERER} & \text{B} \\
\text{ADDRESSEE} & \text{A} \\
\\
\text{CONTENT} & \begin{bmatrix}
\text{ILLOC-REL} & \text{ASSERT} \\
\text{UTTERER} & \text{A} \\
\text{ADDRESSEE} & \text{B} \\
\text{CONTENT} & f_\sigma
\end{bmatrix}
\end{bmatrix}
$$

This approach to the analysis of 'wh'-EQs in LFG holds no matter which formation strategy is used. Thus, the speech act frame approach captures what it is that all 'wh'-EQs have in common cross-linguistically.

Positing a distinct level of structural representation captures facts about 'wh'-EQs, their context dependence, their intrinsically reiterative nature, and declarative features of their syntax. The essential insight of Ross' (1970) Performative Hypothesis – that every sentence is associated with an explicit illocutionary act – is preserved in the proposed LFG analysis without situating information about the utterer, addressee, and speech act in the syntax (deep structure for Ross). Instead, this information is part of a semantic object, as defined by Krifka (2014). This approach enables the kind of 'parasitic' relation on which 'wh'-EQ formation, and more broadly reiteration, rely to be modelled in LFG.

4   Conclusion

In this paper I have considered how 'wh'-EQs are formed and how they can be analysed within the framework of LFG. Special attention was paid to the formation of 'wh'-EQs in Hungarian, building on the important body of work on Hungarian and its analysis within LFG by Tibor Laczkó. I have offered what is, to the best of my knowledge, the first definition of the typological space for 'wh'-EQ formation. In doing so, this work provides a typological framework for the description and further investigation of 'wh'-EQs cross-linguistically.

I have argued that, in order to provide a full analysis of 'wh'-EQs in Hungarian and other languages, it is necessary to develop a consistent representation of speech acts in the LFG framework that goes beyond the approaches adopted in the literature to date. Introducing a new level of representation at which such information can be represented has enabled me to formulate the first LFG analysis of 'wh'-EQs. My proposals are also applicable to the analysis of reporting constructions (quotation), 'wh'-EQs being a subtype of what Evans (2007) has identified as reiterations. The analysis proposed in this paper offers a way to represent information about speech acts, contributing to the ongoing discussion within LFG of how to represent discourse structure and pragmatics more generally.

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