On the Typology of Multiple Coordinated Questions In Syrian Arabic

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Introduction:
Syrian Arabic (SA) offers a unique possibility to understand better the syntax/semantics mapping of multiple coordinated questions (MCQ).
SA has an intriguing diversified typology of **MCQ** involving **obligatorily selected arguments, under three patterns:**

(I)   **ʃu   u   l-meen** ʕata ʕali inbareħ ?   (Fronted pattern)
        what and to-who gave Ali yesterday?
         'For which x, x is a thing, and for which y, y is a person, ali gave x to y'

(II)   **ʃu**   ʕali ħatˤ **u   ueen**?   (Split pattern)
         what Ali put **and where**
         'For which x, x is a thing, and for which p, p is a place, Ali put x in p'

(III)   ʕali ʕata **ʃu   u   l-meen** inbareħ ?   (In-situ pattern)
         Ali   gave   what and   to-who yesterday ?
         'For which x, x is a thing, and for which y, y is a person, ali gave x to y'

MCQ constructions are important with respect to Law of Coordination of Likes (LCL) (Williams 1981), as they involve a violation of LCL: a general constraint on coordinated structures dictating that only phrases of the same category or the same grammatical function can be coordinated. The non-interrogative counterpart of (I) is not possible, as shown in (1a) :

(1a)   * syiːara u   l-yamen ʕata ʕali inbareħ
           Car   and to-yamen gave Ali   yesterday
         Intended but impossible under this word order: 'Ali gave the car to Yamen yesterday.'

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A **M**ultiple **C**oordinated **Q**uestions (MCQ) is an information seeking question that contains, at least, two coordinated wh-phrases. In the literature, MCQs are generally interpreted as yielding a single-pair reading. Pair-list reading of MCQ is generally not possible[2]. This idea, has been challenged[3].

Until very recently[4] MCQ have long been investigated mainly in in languages where movement of all wh-phrases to initial position is obligatory (**MWF l**anguages), as in (2a):

(2a) Co   komu Jan dał?
      what   whom Jan gave   Liptak (2011:3)
       "What to whom did Jan give?"
(2b) Co i   komu Jan dał?   Polish
      what and whom Jan gave   Liptak (2011:3)
       "What and to whom did Jan give?"

The main generalization was that MCQs with obligatory arguments as in (2b), are only available in MWF languages. Languages of this class form MCQs with obligatory, mixed and with non-obligatory *wh*-phrases, all coordinated in sentence initial position.

(2c) Kto i   jak   naprawił zlew?   Polish
      who and how fixed   sink   Liptak (2011)
       "Who and how fixed the sink?"

(2d) Co   i   kiedy kupil   Adam?   Polish
      what and when buy.3SG.PST Adam.NOM   (Fuchs (2015))
      'What and when did Adam buy?

(2e) Gdzie i   kiedy Jan się   urodził?   Polish
      where and when Jan REFL born   Liptak (2011)
       'Where and when was Jan born?'

-   The main questions MCQ initiate

The main research questions that any typology of MCQ must answer are:

1-   Do MCQ violate the LCL[5] or not?
Analyses diverge on this issue. Comorovski (1996) for example proposed an analysis that ignores LCL, but most of the proposals in the literature like (Ratiu (2011), Graçanin (2007), etc.) tend to analyze MCQ in accordance with LCL.

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[2] Gracanin-Yuksek (2077), Jung (2018) Gazdik (2022), among others.
[3] Ratiu (2011), Aljani (2020).
[4] Recently, researchers started to investigate MCQ in other languages. Korean (Jung (2018) and Kwon (2021), Mandarin Zhang (2007) and Hsu (2015), Japanese Ishi (2014), Kasai (2016).
[5]

2-   MCQ with two obligatory *wh*-phrases, are they monoclausal or multi-clausal?
Comorovski (1996), Kazenin (2002), Zhang (2007) , Merchant (2007), among others for mono-clausal accounts.
Kasai (2016), Liptàk (2011), Citko (2013), Citko and Graçanin-Yuksek (2013), Citko and Graçanin-Yuksek (2015) among others for a bi-calusal accounts.

3-   How does the syntax/semantics mapping of MCQ work?
Haida & Repp (2011), Ratieu (2011).

-   MCQ in SA

SA, as all other Arabic varieties, is not a MWF language:
(3)   ***ʃu   l-meen**   ʕata ʕali inbareħ ?
           what   to-who   gave Ali yesterday?
         'What did Ali give to whom yesterday?'

To formulate MQs, SA has at its disposal three strategies, the first one is the *English* strategy, where only one wh-phrase is fronted while the other one is left in-situ:
(3a)   **ʃu**   ʕata ʕali inbareħ **l-meen**   ?
           what   gave Ali yesterday **to-who** ?
         'What Ali gave yesterday to whom'

The second one, the in-situ strategy, where all wh-phrases can stay in-situ:
(3b)   ʕali ʕata **ʃu   l-meen**   inbareħ ?
            Ali gave **what to-who** yesterday ?
         'What Ali gave yesterday to whom'

But surprisingly, and the third strategy, is to coordinate the *wh*-phrases in initial position, as it's the case in MWF languages[6], even more surprisingly the coordinated wh-phrases are obligatory arguments, as in (xx):

(4)   **ʃu   u   l-meen**   ʕata ʕali inbareħ ?   (2 Obligatory WH)
         what and to-who   gave Ali yesterday?
         'What and to whom Ali gave yesterday'

(4a)   **ʃu   u   ueen**   ħatˤ   ʕali?   (2 Obligatory WH)
         what and where   put.3.MS.PAST Ali
         'What and where did Ali put?'

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[6] Kazenin (2002), Merchant (2007), Haida & Repp (2010), Graçanin-Yuksek (2007) Ratieu (2011), Liptàk (2011), Citko (2013), Citko and Graçanin-Yuksek (2013), Citko and Graçanin-Yuksek (2015) among others.

Most importantly, SA can form MCQs **under three patterns** with obligatory arguments, mixed, and non-obligatory arguments. As we mentioned earlier, we will focus on MQ involving obligatory arguments under the three patterns, repeated below:

(I)   **ʃu   u l-meen** ʕata ʕali inbareħ ?   (*Fronted* pattern)
        what and to-who gave Ali yesterday?
         'For which x, x is a thing, and for which y, y is a person, ali gave x to y'

(II)   **ʃu**   ʕali ħatˤ   **u ueen**?   (*Split* pattern)
        what Ali put.3.MS.PAST **and where**
        'What and where did Ali put?'

(III)   ʕali ʕata **ʃu**   **u**   **l-meen** inbareħ ?   (*In-situ* pattern[7])
        Ali   gave what and   to-who yesterday ?
        '*What and to whom did Ali did give?'

- **MCQ in SA, monocausal or biclausal?**

In what follows, we will attempt to determine if each of our three patterns is mono-clausal or not. We will use two diagnostics. The first one, (Gazdik (2022)) the *Tentative question* diagnostic and the second one is the *object depictive* test, (Graçanin-Yuksek (2007) and (2017)).

- **Tentative question : Q_T**

The particle *ya tara* (Q_T) (I wonder)*,* converts a canonical question to a tentative one.
Tentative Q : The speaker does not necessarily expect the addressee to be able to resolve the issue raised, but still poses the question (Farkas 2020).
Q_T can occur only once per clause (with fronted and in-situ *wh*-questions) and should occur sentence initially:

(5)   ia tara meen ṣalaħ l-sjara/ʃu ?
        Q_T   who fixed the car/what?
        'I wonder, who fixed the car/what?'

(6a)   ia tara ʕali ʃtara ʃu inbareħ?
        Q_T   Ali bought what yesterday?
        'I wonder, what did Ali buy yesterday?'

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[7] It is a purely linear descriptive name, it does not imply that I consider the wh-phrases as not being moved from their thematic positions.

(6b)   ***ia tara** meen ṣalaħ   **ia tara** ʃu?
         Q_T   who   fixed   **Q_T**   what?
         'I wonder, who fixed what?'

With MCQ, it can occur with the two wh-phrases, in the fronted, split and the in-situ patterns, so it **indicates that all the three patterns of MCQ are bi-lcausal:**

(7)   **ia tara ʃu   u   ia tara l-meen** ʕata ʕali ?   (*Fronted* pattern)
        Q_T   what and Q_T   to-who gave Ali ?

(7a)   ia tara **ʃu**   ʕata ʕali   **u   ia tara l-meen** ?   (*Split* pattern)
        Q_T   what   gave Ali **and   Q_T to-who**?

(7b)   ia tara   ʕali ʕata **ʃu   u**   ia tara **l-meen** ?   (*In-situ* pattern)
        Q_T   Ali gave **what and Q_T**   to-who?
        'I wonder, for which x, x is a thing, and for which y, y is a person, ali gave x to y'

-   Second diagnostic: object depictive
Object depictives are available in languages that allow coordination of two clause-mate arguments, indicating the MCQ is mon-oclausal:

(8)   *What$_i$ and where did Kelly drink t$_i$ cold?

In SA, object depictives are possible:
(9)   **ʃu**   akal ʔali **naj**?
        What ate   Ali **raw**?
        'What did Ali eat raw?'

(9a)   *keef akal ʔali naj?
         How ate   Ali raw

They are also possible with the fronted, the split and the in-situ patterns, which suggests that **their underlying structures are monocausal**:

(10a)   **ʃu**   u   keef ʔali akal **naj**?
        What and how Ali ate **raw**?

(10b)   **ʃu** ʔali akal **naj** u keef ?
        'What did Ali eat **raw** and how (did he ate it)?'

(10c)   ʔali akal **uʃ** naj u keef ?

did Ali eat what raw and (how he ate it)?'

A resume of the results for the the three patterns

Argument & argument	fronted	split	in-situ
Tentative question	biclausal	biclausal	biclausal
Object depictive	monocausal	monocausal	monocausal

These two tests shows that MCQ in SA, across the three patterns, have biclausal and monocausal properties. A similar case is Romanian, (Ratiu 2011). She argues that MCQ in Romanian have biclausal and mono-clausal properties.

- **The Analysis of MCQ in SA**

-Ellipsis
The advocates for a bi-clausal analysis of MCQ argue that these structures are derived by ellipsis, (PF deletion, or LF recycling).
-        LF recycling/copy, Giannakidou and Merchant (1998): a complementizer phrase is coordinated with a CP containing a *wh*-phrase in its specifier, in other terms, a structure containing a coordination of two CPs as in (11):

(11)   It's not clear [CP if [IP1]] and [CP when [IP2 the police arrested the demonstrators t_j]].

Based on Chung et al. (1995), G&M (1998) analyze (2) as involving -at LF- the recycling and coping of the antecedent IP2 in the ellipsis site of IP1 to reconstruct it and license the elliptical structure under identity[8], (with the pruning of t_j, avoiding vacuous quantification):

(11')   [CP if [IP1 ~~the police arrested the demonstrators~~ t_j]] and [CP when [IP2 the police arrested the demonstrators t_j]].

-        PF deletion, Merchant (2001): under this approach, the underlying structure of (12a) is taken to be (12b)
(12a)   What and when did you eat?
(12b)   LF: [What$_i$ [IP1 did you eat t_i]] and [when$_j$ [IP2 did you eat t_j]]?
(12b') PF: [When [IP1 did you leave]] and [why [IP2 did you leave]]?

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[8] The issue of what type of identity should be respected in order to license ellipsis has sparked a lot of discussion and continues to do so. Merchant (2001) considers that identity of isomorphism is of a semantic not of syntactic nature, Merchant (2001: 25-36)

Following G&M (1998) and Merchant (2001), IP1 is elided at PF under semantic identity with IP2.

Now, we will attempt to see if ellipsi predicts our MCQ (in English for ease of illustration):

I-   *What and to whom ali gave?*   (*Fronted* pattern)
II-   *What ali gave and to whom?*   (*Split* pattern)
III-   *Ai gave what and to whom?*   (*in-situ* pattern)

The *Fronted* and the *Split* patterns:

Ellipsis at LF: $[CP^1 \ Oblig^1_i \ [IP^1 \ E \ ]]$ and $[CP^2 \ Oblig^2_j \ [IP^2 \ Ali \ verb \ t_j \ ]]$
                $[CP^1 \ Oblig^1_i \ [IP^1 \ Ali \ verb \ t_j]]$ and $[CP^2 \ Oblig^2_j \ [IP^2 \ Ali \ verb \ t_j \ ]] => *LF$

1- missing obligatory argument in the first and second conjuncts (Goodall 1987)
2- a *wh*-phrase that binds nothing in the first conjunct.
3- a trace that is not bound in the first conjunct

Ellipsis at PF: $[CP^1 \ Oblig^1_i \ [IP^1 \ Ali \ verb \ t_i \ ]]$ and $[CP^2 \ Oblig^2_j \ [IP^2 \ Ali \ verb \ t_j \ ]] => *LF$
1- missing argument in the first and second conjuncts

Ellipsis can not account for first and second patterns of MCQ in SA.

-          **Multi-Dominance**

The main idea of MD is that the syntactic structure is three-dimensional, and that any node can be shared by two mother nodes. " Sharing is in principle free, and a string may be shared either in a bulk or in a non-bulk manner, as long as the structure it appears in satisfies COSH, the only constraint on MD structures in the grammar that" (Graçanin-Yuksek 2007).

Constraint On Sharing (COSH)
For any a, M, and N,
where M ≠ N, and
i   M and N immediately share a, and
ii   M and N horizontally share a, and
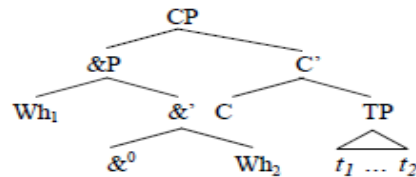iii   there is no node K that vertically shares a with both M and N
For any terminal node B, M completely dominates B iff N completely dominates B

COSH can be informally paraphrased as follows: **two mothers of a shared node that horizontally share it, must completely dominate identical sets of terminal nodes**.
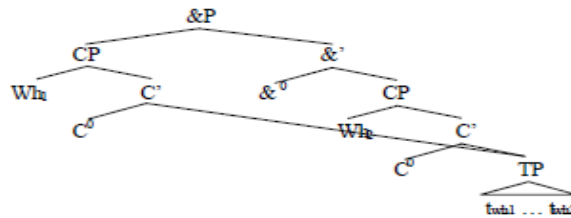
(13)   Mary wrote and Max read an article about syntax.

Citko and Gracanin-Yuksek (2013)   proposes a universal typology for MCQ:3 motivated structures.
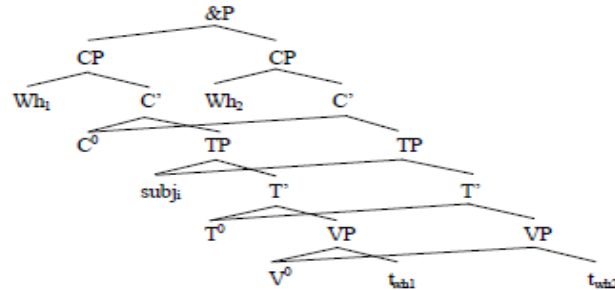

(a) *Mono-clausal CWHs*

(b) *Bi-Clausal CWHs with Bulk Sharing*

(c) *Bi-Clausal CWHs with Non-Bulk Sharing*

(a) Bulgarian, à la Zang (2007)
(b) Romanian (Ratiu 2011)
(c) English (Graçanin-Yuksek 2007)

Semantic problem for (b): each of the CP contains a free variable.
Ratiu (2011) solution, implicitly adopted by Citko and Gracanin-Yuksek (2013) and (2016) :
Constituents with two mothers:
Simultaneously Functional Application
If α is a branching node, $\{\beta, \gamma\}$ is the set of α's daughters, and δ is a branching node,
$\{\beta, \phi\}$ is the set of δ 's daughters and
i. $[[\gamma]]$ and $[[\delta]]$ are functions whose domain contains $[[\beta]]$ and

ii.   neither α dominates δ, nor δ dominates α, then
iii.   [[α]] = [[γ]]

[[δ]] = [[φ]] ─────────   ([[β]]

a. IP
b. [C'1 [IP] C'2]

A = ∃y [human (y) ∧ p = ^ discovered (y, z)] ∧ ∃z [thing (z) ∧ p = ^ discovered (y, z)]
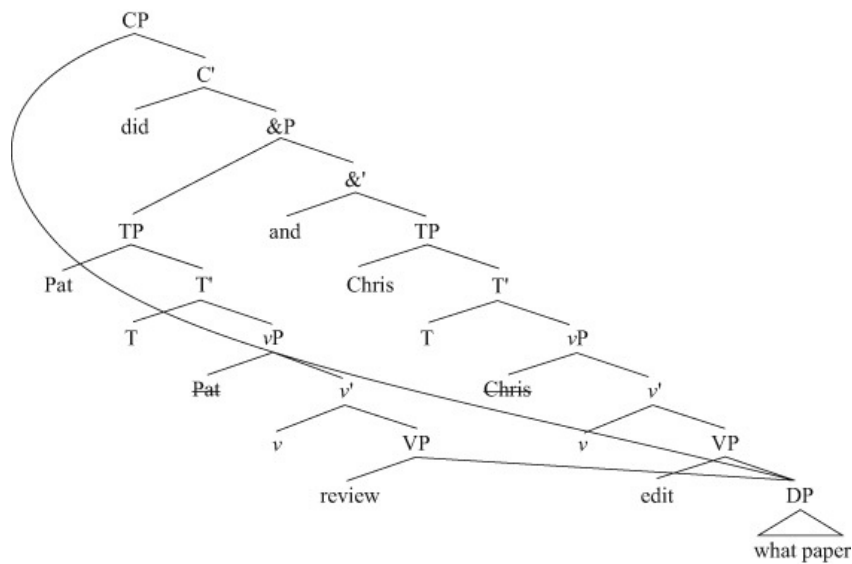⇒ ∃y ∃z [human (y) ∧ thing (z) ∧ p = ^ discovered (**y**, z)]

-   **The proposal** ,

-     First, under the assumption that the fronted and the split patterns have both monoclausal and biclausal properties,   (Ratiu (2011), any analysis should be able to account for these properties.

-     Second, I follow Citko (2011) and Citko& Gracanin-Yuksek (2021), in assuming that the same object may undergo both Parallel Merge (become multi-dominante) and Internal Merge:

(14a)   What paper$_i$ did Pat review t$_i$ and Chris edit t$_i$?
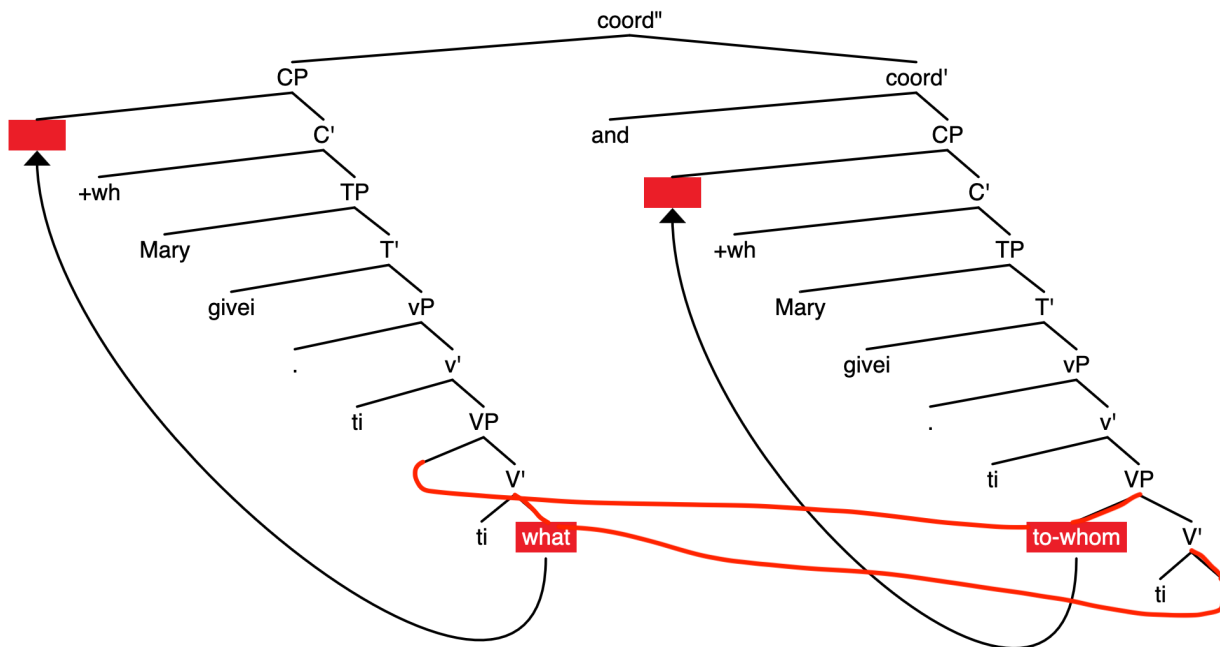(14b)

-     Third, any analysis should be able to account for the *it*-reading (Graçanin-Yukesk 2007) that indicates pairing of the wh-phrase, yielding SPR, PLR.

-       I take the LCL as a constraint on derivations.

The proposed structure below respects the LCL and can derive the split and the fronted pattern: The two wh-phrases are shared between the two clauses then undergo internally merged to Spec CP bypassing the problem of the missing arguments. Now, to derive the fronted pattern, the first TP, under syntactic identity, is sluiced, and to derive the split pattern, the second TP is sluiced. (Marlies 2011)

I-   *What and to whom ali gave?*   (*Fronted* pattern)
II-   *What ali gave and to whom?*   (*Split* pattern)

(15)

Open issues of the analysis:
-       How can we account for the in-situ pattern?

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