Compositional derivation of Coordinated-Wh-Questions

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1. The Phenomenon and Analyses

Slavic, Hungarian and Romanian have multiple wh-questions formed by multiple fronting of the wh-phrases (1). Another type of multiple wh-questions – wh-phrases conjoined with the coordinator 'and' (2) (Browne 1972, Wachowicz 1974).

(1) Kto co kupił?
who what bought

(2) Kto i co kupił?
who and what bought

Puzzle: How come subject and object wh’s are coordinated in (2)? A subject and an object cannot be coordinated, so either (i) this coordination is ‘spurious’, or (ii) there is covert structure. I provide arguments for (ii).

My main claims:
Coordinated-Wh have very different syntax, and consequently, semantics:

- in Mult-Whs both wh-phrases are fronted within a single clause,
- in Coordinated-Whs two/more clauses are conjoined, with ellipsis in the first clause.

⇒ This allows for a compositional derivation of Coordinated-Whs – the coordinator is semantically contentful and conjoins two questions.

⇒ Alternative accounts that treat Coordinated-Whs as single clauses need to stipulate that ‘and’ is a semantically spurious element that only serves a structural purpose.

1.1. Present Analysis

My analysis is based on four novel observations – evidence for a bi-clausal analysis:

(i) Coordinated-Whs allow sentence-level elements between the wh-phrases (high speaker oriented adverbs, the clausal coordinator ‘a’) (Mult-Whs don’t).
(ii) Left Branch Extraction is restricted in Coordinated-Whs (but not in Mult-Whs).
(iii) Coordinated-Whs are associated with an existential presupposition, which can be associated with the ellipsis in the first conjunct.
(iv) Contrary to the claims in literature, Coordinated-Whs do allow multiple-pair readings, but only in multiple wh-fronting languages, and with an additional semantic effect as compared to the multiple-pair reading obtained with Mult-Whs.

Coordinated-Whs in non-multiple wh-fronting languages can only have single-pair interpretation.

Coordinated-Whs with single-pair readings:
Derivation: coordination of two (or more) single wh-questions, both wh-phrases fronted; the TP of the first clause elided under identity with the second clause.

(3) \[ \text{wh}_1 [\text{TP ... wh}_1 ...] \] & \[ \text{wh}_2 [\text{TP ... wh}_2 ...] \]

Interpretation: two conjoined questions.

(4) a. \[ \text{who [TP who bought something]} \] & \[ \text{what [TP pro bought what]} \]

b. Who bought something? And what did they buy?
Coordinated-WHs with multiple-pair readings

Derivation: coordination of a single and a multiple wh-question; multiple wh-fronting in the second conjunct (5a) is responsible for the multiple-pair reading found only in languages with multiple wh-fronting (also removes the need for the first wh-phrase to correspond to a null argument in the second conjunct); the two identical wh-phrases in the two conjuncts undergo ATB movement (5b).

(5) a. \[ \text{wh}_1 [\text{TP} \ldots \text{wh}_2 \ldots \] & \[ \text{wh}_1 \text{wh}_2 [\text{TP} \ldots \text{wh}_3 \ldots \] ]

b. \[ \text{wh}_1 [\text{wh}_2 [\text{TP} \ldots \text{wh}_1] \ldots \] & \[ \text{wh}_1 \text{wh}_2 [\text{TP} \ldots \text{wh}_1 \ldots \] ]

Interpretation: two questions, the first asking for the identity of a single wh-phrase, the second asking for the pairing.

(6) a. \[ \text{who [who [TP who bought something]]} \& \[ \text{what [TP what bought what]]} \]

b. \[ \text{Who bought something? And who bought what?} \]

1.2. Previous analyses

1.2.1. Monoclusal analysis

Coordinated-WHs derived in parallel to Mult-WHs with additional insertion of the coordinator after the wh-phrases have been fronted – the coordinator is spurious in (7)a and in (7)b.

(7) a. \[ \text{CP [CP wh}_1 \text{ & wh}_2] [\text{TP} \ldots \text{wh}_1 \ldots \text{wh}_2 \ldots \] ] (Gribanova, 2009)

b. \[ \text{CP}\text{wh}_1 \text{ & wh}_2 [\text{TP} \ldots \text{wh}_1 \ldots \text{wh}_2 \ldots \] ] (Merchant, 2007)


The insertion of a coordinator: to block whatever process is responsible for multiple-pair readings (e.g. absorption of Higginbotham & May, 1981, assumed to take place under structural adjacency in e.g. Gribanova 2009) = Coordinated-WHs in multiple wh-fronting languages, are predicted, and claimed, to have single-pair readings only – this prediction is wrong.

1.2.2. Bi-clausal analysis

Coordination of two clauses (8) already in Browne (1972) and Wachowicz (1974) – on my account this derives single-pair readings.

(8) \[ [\text{CP wh}_1 [\text{TP} \ldots \text{wh}_1 \ldots ]] \text{ and } [\text{CP wh}_2 [\text{TP} \ldots \text{wh}_2 \ldots ]] \]

Rațiu (2009), Citko & Gracanin-Yuksek (2009): multidominance structure where TP is shared, due to a linearization algorithm the TP is pronounced in the second clause.

Haida & Repp (to appear), Citko & Gracanin-Yuksek (2009): only when one of the phrases is an adjunct the structure may be bi-clausal.

The main objection to (8): when the wh-phrases are both arguments in languages that do not have object pro-drop (Bulgarian), a null pro object has to be stipulated in the second conjunct (9) (Kazenin (2002), Gribanova (2009), Rațiu (2009)).

(9) \[ [\text{CP kakvo} [\text{TP pro podarihi t}]] \text{ i } [\text{CP na kogo} [\text{TP pro podarihi pro obj} t]]\]

\[ \text{what pro}_{\text{subj}} \text{ gave.2Pl and to whom pro}_{\text{obj}} \text{ gave.2Pl pro}_{\text{obj}} \]

“What did you give to someone and who did you give it to?”

Additionally (8) cannot derive multiple-pair readings and I show that a multiple-pair reading of a special
kind is present (Polish, Bulgarian, Russian, Romanian), and can be obtained if a single and a multiple wh-question are conjoined.

2. **Clausal coordination as evidence for bi-clausal structure**

2.1. **Sentence-level adverbs in Coordinated-WHs**

High speaker-oriented adverbs can occur in Coordinated-WHs (10)a, but not in Mult-WHs (10)b. The wh-phrases in Mult-WHs can be split by an intervening low adverb (10)d (the second wh-phrase is in e.g. SpecFocP), but speaker-oriented adverbs have to be structurally very high, i.e. higher than wh-phrases (10)c.

(10) a. Koj i naj-važno kakvo kazá? Bulgarian
   who and *most-importantly* what said
   'Who said something and most importantly what did they say?'
   b. *Koj naj-važno kakvo kazá?* who *most-importantly* what said
   'Who said most importantly what?'
   c. (I/A) naj-važno koz kakvo kazá? and *most-importantly* who what said
   'And, most importantly, who said what?'
   d. Koj posle kakvo kazá? who later what said
   'Who said later what?'

What the adverb modifies in the Coordinated-WH in (10)a is the question in the second conjunct.

Mult-WHs have to be mono-clausal, cannot behave like two clauses (10)b.

(Speaker-oriented adverbs in Bulgarian: po-važno 'more importantly', osobeno važno 'particularly importantly', za neštastie 'unfortunately', za štastie 'fortuitously', iznenađavač 'surprisingly', nerazbiraemo zašto 'not obviously why'. In Polish: najważniejsze 'most importantly', zwłaszcza 'importantly', niestety 'unfortunately', na szczęście 'fortunately', o dziwo 'surprisingly'.)

2.2. **Clausal Coordinators**

In Polish and Bulgarian, not only *i*, but also the coordinator *a* can be used (11). The coordinator *a* has an additional contrastive flavor – importantly *a* never conjoins constituents smaller than a full clause (12)a,b. It can conjoin questions (12)d. (Thus, (11) can be derived from (13).)

Monoclusal analyses would have to posit two semantically vacuous elements.

(11) Kto a najważniejsze co mówił o tobie? Polish
   who and most importanly what said about you
   'Who said something about you and what did they say?'

(12) a. Jan i*a Maria Polish
   narrow and long bridge

b. wański i*a długi mostek

c. Jan gral na gitarze i*a Maria grała na pianinie. Jan played on guitar and Maria played on piano
   'John was playing the guitar and Maria was playing the piano.'

d. Kto gral na gitarze i*a kto gral na pianinie? who played on guitar and who played on piano
   'Who played the guitar and who played on piano?'

(13) Kto mówił coś a najważniejsze co mówił o tobie? who said something and most importantly what said about you
   'Who said something about you and what did they say?'

¹ Note that the English *but* translates as *ale* in Polish, and *no* in Bulgarian.
2.3. Doubled question particles in Coordinated-WHs

Raţiu (2009): in Romanian the question marker oare can appear only once per clause. It can appear more than once in Coordinated-WHs, as in (14)c, but not in Mult-WHs (14)b.

(14) a. Oare cine ce va spune? Romanian
    oare who what Fut say
    'Who will say what?'

b. Oare cine *(şi) oare* ce va spune?
    oare who and oare what Fut say
    'Who will say something and what will he say?'

The Bulgarian question particle li presents a similar case. It can appear either once (15)a,c or more times in a Mult-WH (15)b, but in a Coordinated-WH it cannot appear only in the first conjunct (16)a. This reflects its distribution with full clauses (17).

(15) a. Koj li kakvo šte mi donese?
    who li what will me bring
    'Who will bring me what?'

b. Koj li kakvo li šte mi donese?
    who li what li will me bring

c. Koj kakvo li šte mi donese?
    who what li will me bring

(16) a. *Koj li i kakvo šte mi donese?
    who li and what will me bring

b. Koj li i kakvo li šte mi donese?
    who li and what li will me bring

c. Koj i kakvo li šte mi donese?
    who and what li will me bring

(17) a. *Koj li šte mi donese neštò i koj kakvo šte mi donese?
    who li will me bring something and who what will me bring
    'Who will bring me something and who will bring me what?'

b. Koj li šte mi donese neštò i koj kakvo li šte mi donese?
    who li will me bring something and who what li will me bring

c. Koj šte mi donese neštò i koj kakvo li šte mi donese?
    who will me bring something and who what li will me bring

2.4. Coordinating Yes/No question markers and wh-expressions

Browne (1972): Coordinated-WHs may involve yes/no-questions markers (e.g. Serbo-Croatian da li in (18)). He took this to be evidence for bi-clausal structure.

(18) Da li i gdje si ih video? Serbo-Croatian
    whether and where aux.2Sg them saw
    'Whether and where did you see them?'

In Polish the clause-initial marker czy (19)a cannot co-occur with wh-phrases (19)b:

(19)a. Czy studiujesz?
    whether study.2Sg
    'Do you study?'

b. *Czy co (gdzie) studiujesz?
    whether what (where) study.2Sg
    'Do you, and what do you study’

Yet, czy is found in Coordinated-WHs (20)a-b. I argue that in all Coordinated-WHs the TP is elided in the first conjunct irrespective of whether it is a yes/no- or a wh-question. (Languages may have preferences as to which
2.5. Left-branch extraction (LBE)

Left-branch extraction (LBE) is not possible in Coordinated-WHs, cf. (21)b. Polish allows left-branch extraction in regular Mult-WHs (21)a, so if Coordinated-WHs were also underlingly mono-clausal this difference would be unexplained.

(21) a. Jaki kto kupił samochód swojej żonie?
    which who bought car self’s wife
    ‘Who bought what kind of a car for his wife?’

    b. *[Jaki i kto kupił samochód swojej żonie?]
        which and who bought car self’s wife
        ‘What kind of a car someone bought and who bought what kind of a car?’

    (22) a is an example of LBE in Across-the-Board (ATB) movement, (22)b shows that ATB does not allow LBE when the “remnant” in the second conjunct and its “correspondent” in the first conjunct are identical (Citko 2006).

    (22) a. Jaki Jan kupił samochód a Marek sprzedał motor?
        which Jan bought car and Marek sold motor-bike
        ‘What kind of a car did Jan buy and what kind of a motor-bike did Marek sell?’

    b. *[Jaki Jan kupił samochód a Marek sprzedał samochód?]
        which Jan bought car and Marek sold car
        ‘What kind of a car did Jan buy and what kind of a car did Marek sell?’

    This illicit configuration is, however, needed to satisfy the identity requirement on ellipsis in a Coordinated-WH (23).

    (23) *[Jaki [t[pro kupił, samochód]] i [t, kto, [t kupił, t samochód]]]
        which bought car and who bought car
        ‘What kind of a car someone bought and who bought what kind of a car?’

    Thus, on a bi-clausal account involving ATB movement the incompatibility of Coordinated-WHs with LBE follows from the independent restriction on the remnants.

Summing up Section 2:

The occurrence of high speaker-oriented adverbs, the clausal conjunction a, the ‘doubling’ of yes/no-question-markers in Coordinated-WHs, the apparent coordination of yes/no-markers and wh-phrases and the restriction on LBE can be accounted for only on a bi-clausal analysis.

At this point there are two options: ellipsis or multidominance?


I argue that ellipsis can better account for the facts.
3. The role of preceding context and ellipsis in Coordinated-WHs

3.1. Existential presupposition in Coordinated-WHs

Coordinated-WH questions cannot be used as neutral information questions. They require preceding context in order to be uttered felicitously. (E.g. existential presupposition in (2) is Someone bought something.)

A Multi-WH can be asked out of the blue (24)B. For a Coordinated-WH (24)B’ there has to be enough information in the common ground to satisfy the existential presupposition → (25).

(24) A: Mary had her birthday yesterday. Polish
B: #Kto i co przyniósł Marii na urodziny?
who and what brought Mary.Dat for birthday
"Who brought what for Mary on her birthday?"
B’: #Kto i co przyniósł Marii na urodziny?
who and what brought Mary.Dat for birthday
"Who brought something for Mary and what did they bring?"

In (24), that Mary had a birthday does not entail that she received presents, so the presupposition of (24)B’ that someone brought something for Mary, cannot be satisfied.

In (25) the context update entails that Mary received presents.

(25) A: Mary had her birthday yesterday. Many people came and brought her presents. She is still opening the presents. Polish
B: Kto co przyniósł Marii na urodziny?
who what brought Mary.Dat for birthday
"Who brought what for Mary on her birthday?"
B’: Kto i co przyniósł Marii na urodziny?
who and what brought Mary.Dat for birthday
"Who brought something for Mary and what did they bring?"

Compare (26) and (27): the mere fact that many people came to the exhibition does not entail that any of them liked it.

(26) A: Many people came to the exhibition. Polish
B: #Komu i co się podobało?
who and what.Nom self pleased
"Who liked something and what did they like?"

(27) A: Many people admired paintings at the exhibition. Polish
B: Komu i co się podobało?
who and what.Nom self pleased
"Who liked something and what did they like?"

In the next section: the elided constituent in the first conjunct is structurally represented and interpreted.

3.2. The focus pronounal ‘to’

To (uninflected demonstrative pronounal, lit. ‘this’) in (28)B refers anaphorically to the event in (28)A. It is a topic/focus particle in Slavic (e.g. Šimík 2009); see the translation of (28)B as a cleft in English. It has clausal scope (Progovac 1998, Citko 2000); I assume it appears higher than TP.

(28) A: Janek przyniósł Marii bukiet. John brought Maria.Dat bouquet
B: O tak! I to już w niedzielę. Oh yes! And TO already on Sunday
"Oh, yes, and it was on Sunday that he did it."

The pronounal to is anaphoric to the preceding proposition – the antecedent has to be represented
linguistically. It can occur in a Coordinated-WH (29), but not in between the wh-phrases in a Mult-WH, only preceding all wh-phrases (30). The presence of to in the second conjunct in (29) means that there is an appropriate linguistic antecedent for it in the elided first conjunct (31).

(29) Koj i to kakvo kupi?
    who and TO what bought
    'Who bought something and what was it that they bought?'

(30) … (i to) kaj (*to) kakvo kupi?
    and TO who TO what bought
    '… and what was it that who bought?'

(31) [ who [ who [TP who bought something] & [ TO who what [TP who bought what]]]

To in answers to Coordinated-WHs – Kazenin (2002): the coordinator is meaningless because it is not found in answers to Coordinated-WHs; subject and object cannot be conjoined (32). However, a Coordinated-WH allows for an answer with to (32)C. (The pronominal to refers back to the proposition expressed by the first conjunct that the Vandals conquered some city). A Mult-WH does not allow for an answer with to (33)B, but requires a listing of pairs (33)C.

(32) A: Kto i jakie miasto podbił?
    who and which city conquered
    B: *Wandalowie i Rzym (podbili).
    Vandals and Rome (conquered)
    C: Wandalowie i to Rzym.
    Vandals and to Rome
    'Vandals, and it was Rome (that they conquered)'

(33) A: Kto jakie miasto podbił?
    who which city conquered
    B: #Wandalowie i to Rzym.
    Vandals and to Rome
    C: Wandalowie Rzym, Gepidowie Kluž, Wizygoci Leon, Goci Weronę, …
    Vandals Rome, Gepids Cluj, Visigoths Leon, Goths Verona, …

Conclusion from Section 3:
Coordinated-WHs introduce an existential presupposition absent from Mult-WHs: the backwards ellipsis in the first conjunct is interpreted and covertly represented.

4. Coordination of a single and multiple wh-question in Coordinated-WHs

4.1. Multiple-Pair Readings

The claims that Coordinated-WHs do not have multiple-pair readings cannot be correct:

(34) Povečeto gosti donesoha nešto, no ne znam kaj i kakvo. Bulgarian
    most guests brought something but not I know who and what
    'Most guests brought something, but I don't know who bought what.’

(35) Na sobranii mnogie vyskazali svoju točku zrenija na etu problemu, no Russian
    at meeting many presented self's point vision on this problem, but
    ja ne pomnju po porjadku kto i čto skazal.
    I don't remember on order who and what said
    'At the meeting many people presented their views on the problem, but I don't remember
    who said what one after another.’

(36) Kto i co po kolei mówil na zebraniu?
    who and what in order said at meeting
    'Who said what after one another at the meeting’
(37) Cine ști ce a spus pe rand la ședință?
Who and what has said on turn at meeting?
'Who said what after one another at the meeting?'

4.2. A special kind of a Multiple-Pair Reading - Felicity requirements on the conjuncts

The derivation that I proposed in (5) predicts that multiple-pair readings should occur with Coordinated-WHs, but in contrast to regular Mult-WHs such questions first ask for the identity of a single wh-phrase and then for the pairing.

(38) Who bought something? And who bought what? (English paraphrase)

The first conjunct, being a single wh-question, has to be felicitous with respect to the context – contrast between the use of a universal quantifier in (39) and a majority quantifier in (40):

(39)  

Majoritatea invitatiilor va aduce ceva, dar nu ştiu cine ști ce va aduce.
The majority of the guests will bring something but not know_{1Sg} who and what will bring.

(40)  

#Toată lumea va aduce ceva, dar nu ştiu cine ști ce va aduce.
Everyone will bring something but not know_{1Sg} who and what will bring.

(40) is not felicitous because the single wh-question ("Who will bring something") is redundant; it is known that everyone will.

(41)  

A: Everyone bought something
B: Who bought what?
B': # Who bought something and what did they buy?

(42)  

A: Most people bought something
B: Who bought what?
B': Who bought something and what did they buy?

The second conjunct also has to be felicitous with respect to the context. It will be infelicitous if the answer to the question in first conjunct already answers the second. The infelicity of (44) suggests that it cannot simply be a single-pair version of (43).

(43)  

Kto kogo pierwszy uderzył? (asked about two people)
Who whom first hit

(44)  

#Kto i kogo pierwszy uderzył? (asked about two people)
who and whom first hit

(45)  

#Who hit someone first? And who hit whom first? (asked about two people)

4.2.1 Felicity requirements on the conjuncts – Degree questions

Ellipsis under identity = the first conjunct needs to contain a predicate identical to that in the second conjunct + null pronoun to match the null pronoun/wh-trace in the second conjunct.

If the interpretation of the null argument in the first conjunct as an indefinite is not felicitous, the whole Coordinated-WH will not be felicitous.

Null measure phrase arguments are infelicitous with predicates such as mieć n wzrostu (‘to have n in height’, meaning ‘to be n tall’, where n stands for a numeral and a unit of measurement) or mieć n lat (‘to have n years’ meaning ‘to be n years old’):

(46)  

#Kto i ile ma wzrostu?
who and how much has height

#‘Who measures ∅ in height and how much do they measure in height?’ (single-wh + single-wh)
#‘Who measures ∅ in height and who measures how much in height?’ (single-wh + multiple-wh)

Cf. #Who is tall to some degree and how tall are they?
Compositional derivation of Coordinated-WHs, Barbara Tomaszewicz, Frankfurt am Main, 14.12.2011

(47) #Kto ilе ma lat?
   who and how_many has years
   ‘Who is ∅ years old and how old are they?’
   (single-wh + single-wh)
   ‘Who is ∅ years old and who is how old?’
   (single-wh + multiple-wh)
   Cf. #Who is old a number of years and how old are they?

The first conjunct in (46) asks who has any height at all, and the first conjunct in (47) asks who is of any age at all, both of which are nonsensical. The corresponding Mult-WHs are perfectly fine:

(48) Kto ilе ma wzrostu?
    who how_much has height
    ‘Who is how tall?’

(49) Kto ilе ma lat?
    who how_many has years
    ‘Who is how old?’

A null measure phrase = an odd reading as in (50) where it is naturally expected that all employees receive salaries. The only reading available for (50) asks who earns anything at all at the institute and how much money those people who do earn salaries make.

(50) #Kto i ile zarabia w waszym instytucie?
    who and how_many earns in your institute
    ‘At your institute, who earns ∅ and how much do they earn?’
    ‘At your institute, who earns ∅ and who earns how much?’

(51) Kto ilе zarabia w waszym instytucie?
    who how_many earns in your institute
    ‘At your institute, who earns how much?’

4.2.2 “Superiority” effects

Under certain conditions a null argument in the first conjunct excludes only one of the two available derivations of a Coordinated-WH, the coordination of a single and a multiple wh-question.

Mult-WHs in (52) and (53) do not show any syntactic superiority effects.

(52) a. Kto kiedy wysłał listy?
    who when sent.Prf letters
    ‘Who sent the letters when?’

(53) a. Kto i kiedy wysłał listy?
    who and when sent.Prf letters
    ‘Who sent the letters and when did they send the letters?’
    (single-wh + single-wh)
    ‘Who sent the letters and who sent the letters when?’
    (single-wh + multiple-wh)

In Coordinated-WHs - superiority effects? (53)b is not acceptable when we want to find out who, out of the people who were assigned this task, send out their batch of letters (single-wh + single-wh). Perfective form of the verb = the sending of the letters was a single event in the past.

(54) Kto i kiedy wysłał listy?
    who and when sent.Prf letters
    ‘Who sent the letters and when did they send the letters?’
    (single-wh + single-wh)
    ‘Who sent the letters and who sent the letters when?’
    (single-wh + multiple-wh)

When the verb is imperfective, the interpretation with multiple events of sending letters is available, therefore both Coordinated-WHs in (54) can have a multiple pair interpretation (e.g. in an office where several people’s job is to send out our letters).
(54) a. Kto i kiedy wysyłał listy?
   who and when sent imp letters
   ‘Who has been sending letters and when have they been sending letters?’ (single-wh + single-wh)
   ‘Who has been sending letters and who has been sending letters when?’ (single-wh + multiple-wh)

b. Kiedy i kto wysyłał listy?
   when and who sent imp letters
   ‘When has somebody been sending letters and who has been sending letters?’ (single + single-wh)
   ‘When has somebody been sending letters and who has been sending letters when?’ (single + mult)

**Conclusion from Section 4:**

Coordinated-WHs can have multiple-pair readings of a special kind – derived from a coordination for two questions: 1st asking for the identity of the wh-phrase, 2nd asking for the pairing.

This results in the felicity requirements on the conjuncts: the contrast between universal and majority quantifiers in the antecedents to sluices, the availability of a null argument (interpreted as an indefinite) in the first conjunct, the apparent superiority effects.

Even if a monoclausal analysis is amended to allow multiple-pair readings to obtain freely, these facts cannot be accounted for.

5. **Final note: Identity requirement on ellipsis**

I assume that languages may have different restrictions on which conjunct may be elided, but in order for the deletion of the first conjunct to be possible, at LF the elided TP has to be identical to the TP in the second conjunct (modulo copies of the QR-ed quantifier and the wh-expressions after movement):

(55) who something [TP who bought something] & who what [TP who bought what]

Some support – Browne (1972), and Gracanin-Yuksek (2007): English allows Coordinated-WHs only if the argument of the verb is optional as in (56)b in contrast to (56)a.

(56) a. Who [who sang] and where [did they sing where] *Who and where sang/did they sing?
   b. What [did you sing what] and where [did you sing where] What and where did you sing?

The identity requirement holds for all languages, but the choice of the conjunct targeted by ellipsis is language specific.

**English:**

(57) a. Who deleted my posts and why?
   b. *Why and who deleted my posts?
   c. *Who and why deleted my posts?

**Polish:**

(58) a. Kto skasował moje posty i dlaczego?
   who deleted my posts and why
   b. Dlaczego i kto skasował moje posty?
   c. Kto i dlaczego skasował moje posty?

Giannakidou and Merchant (1998): availability of ‘reverse sluicing’ = the availability of indefinite-DP drop. On the present analysis, it is predicted that languages which allow object drop in certain anaphoric contexts (59)a (Serbo-Croatian from Browne 1972) will always allow Coordinated-WHs (59)b, c:

(59) a. A: Da li je razbio staklo?
   whether aux broke glass
   ‘Did he break the glass?’
   b. Ko i šta razbio?
   who and what broke
   ‘Who broke something and what?’
   c. Šta i ko razbio?
   what and who broke
   ‘What did someone break and who did it?’

Languages like Bulgarian that do not allow object drop with specific NPs (61) vs. Polish (60) and do not allow superiority violations, do not allow Coordinated-WHs with a wh-object question in the first conjunct and a wh-subject in the second (65).

(60) Kupilem jabłko i zjadłem Ø.
    bought 1Sg apple and ate 1Sg
    ‘I bought an apple and ate (it).’

(61) Kupilem jabłko i zjadłem Ø.
    bought 1Sg apple and ate 1Sg
    ‘I bought an apple and ate it.’
(61) Kupih edna yabůłka i ja/*Ø izjadoh.
'bought.1Sg an apple and it ate.1Sg
'I bought an apple and ate it.'

(62) who something [TP who bought something] & what [TP pro bought what]

(63) who something [TP who bought something] & who what [TP who bought what]

(64) what [TP pro bought what] & who [TP who bought pro]

(65) what [TP pro bought what] & what who [TP who bought what]

In Bulgarian only the order ‘who and what’ is grammatical (66)a, b. ‘What and who’ in (66)c is bad, because being a coordination of two single wh-questions it has to contain an empty pronominal. (66)d, a coordination of a single and a multiple wh-question, is also excluded because the configuration does not allow for the ATB movement to take place, given that Bulgarian obeys superiority in multiple wh-fronting.

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Importantly, we predict that languages that do not allow multiple wh-fronting will always derive Coordinated-WHs via a conjunction of two single wh-questions = will only have single-pair readings.

Some more empirical evidence for my proposal that there is a null indefinite in the first conjunct and that ellipsis takes place under structural identity (indefinites being formally identical to wh-traces/copies) comes from definiteness verbal agreement in Hungarian.

Lipták (2003) observes that the verb in a Coordinated-WH in (67)a obligatorily exhibits indefinite agreement. She takes it as evidence that both wh-arguments belong to the same verb in the same clause, since (67)b displays obligatory definite agreement.

In (67)b definiteness marking on the verb results from the agreement with a null pro argument (the “it” in “how you do it”). The indefinite agreement in (67)a argues against an object drop analysis but is consistent with positing a null indefinite pronoun (“how you do something”) which the verb agrees with (or “how you do what”). Assuming that ellipsis takes place under syntactic identity an indefinite is required, e.g. for Chung et al. 1995, the indefinite is bound by existential closure similar to the wh-dependency in the sluice. An indefinite would satisfy the identity requirement for ellipsis, thus the agreement data does not per se speak against a biclausal analysis as Lipták (2003) concludes.

Crucially the link between the null pronominal element that I take to be an indefinite and the matching wh-pronoun in the other conjunct is that of anaphoric reference. Similar anaphoric relation is found in sluicing (Fiengo and May 1994, Merchant 2001, Comorovski 1996) between the deleted pronominal correlate in the sluice (‘him’ in (68)b) and the wh-phrase in the antecedent.

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(68) a. Who did the suspect call and when (did the suspect call him)?

b. [CP who did [TP did the suspect call t] and [CP when [TP did the suspect call him]]]
These null pronouns get to be interpreted as E-type pronouns, i.e. anaphoric, non-referential and unbound\(^2\). Even though in English the E-type pronoun has the same form as a regular pronoun, it does not need to be so in other languages. In Polish the use of a regular pronoun in the overt version of the sluice is ungrammatical and instead a special phrase consisting of a demonstrative and indefinite must be used.

(69) Do kogo podejrzany zadzwonił i kiedy (pro zadzwonił do tego kogoś/*niego)?
  to whom suspect called and when called to that someone/*him

(70) a. Kto (kupił coś) i co pro kupił?
  who bought something and what pro bought
  ‘Who bought something and what did they buy?’
  b. Kto (kupił coś) i co ten ktoś/*on kupił?
  who bought something and what that someone/*he bought
  ‘Who bought something and what did they buy?’

In both the overt version of the sluice in (69) and in the expanded Coordinate-WH in (70) a regular third person pronoun introduces a new referent, which results in ungrammaticality.

I do not have an account of the semantics of this demonstrative+indefinite phrase and the anaphoric link between it and the wh-correlate, but this data draws attention to the fact that the ellipsis site contains a special pronominal element anaphoric to the wh-expression in the second conjunct whose properties are close to that of an indefinite.

An anaphoric link between an indefinite and a gap is characteristic of coordination structures. In (71) the missing subject in the second conjunct (a null pronominal) refers back to the preceding conjunct, but it cannot be a parasitic gap:

  the dog has someone fed and has it hit
  ‘Someone has both fed the dog and hit it.’
  b. Einer hat den Hund gefüttert und einer hat ihn geschlagen.
  someone has the dog fed and someone has it hit
  ‘Someone has fed the dog and someone has hit it.’

Johnson 2001: *einer (‘someone’) in (71)a has scope over the entire coordination, it refers to an individual of whom the properties named by both conjuncts are predicated, as opposed to (71)b.

I take structural identity (identical TPs with matching arguments: wh-elements and indefinite/e-type pronouns) to be a *prerequisite for ellipsis*, whether in the first or the second conjunct. It is not clear whether anything additional is required for the licensing of *backwards ellipsis*, a simple empirical fact is that some languages allow backwards ellipsis and some prefer to delete material in the first conjunct in coordinated questions.

English has backwards sluicing and so does Polish:

(72) a. I don’t know what, but John will have something. (Coppock, 2001)
  b. Nie wiem co, ale Jan coś przyniesie.
     not know.1Sg what but Jan something brings.Fut

Neither English nor Polish allows backward gapping:

(73) a.*Sue the lamb, but John will have the salmon. (Coppock, 2001)
  b.*Zuzanna baraninę, a Jan będzie jadł lososia.
     Zuzanna lamb but Jan will be.eating salmon

Polish allows VP/TP ellipsis of the remnant after topicalization in the first conjunct:

(74) a. Zuzanna baraninę, a Jan lososia będzie jadł.
     Zuzanna lamb but Jan salmon will be.eating
  b. *Sue the lamb, but John the salmon will have.

Furthermore, Polish easily allows forward ellipsis in Right-Node-Raising, whereas English doesn’t:

\(^2\) “Parallel to E-type pronouns anaphoric on other non-c-commanding quantifiers investigated in the literature on donkey anaphora, and parallel in particular to the pronouns occurring in similar cases of IP-deaccenting” (Merchant 2001, p…).
(75) a. Jack loves __ and Bill hates, his father.  
   b. *Jack loves his father and Bill hates __.  
   c. Jacek kocha swojego ojca, a Bill nienawidzi __.  
   Jacek loves selfs father but Bill hates

As observed before for (58) (‘Who deleted my posts and why?’), the Polish counterpart to (68), repeated as (76), is much dispreferred in comparison to the version with the ellipsis in the first conjunct:

(76) a. Who did the suspect call and when (did the suspect call him)?
(77) a. ?Do kogo zadzwonił podejrzany i kiedy?
   to whom suspect called and when
   b. Do kogo i kiedy zadzwonił podejrzany?
   to whom and when called suspect

I thus assume simply that languages differ in the preferred way to do ellipsis, and follow Phillips (2003) in assuming that “in backwards ellipsis and forward ellipsis alike, the relation between the ellipsis site and its antecedent is established as soon as both elements are present in the structure. […] However, I leave open the question of whether the interpretive relation between the gap and the antecedent in backwards ellipsis is resolved by a backwards copying operation, or by some other interpretive mechanism.”

6. Conclusion

I proposed a bi-clausal analysis: Coordinated-WHs are compositionally derived either via a conjunction of two single wh-questions or via a conjunction of a single- and a multiple wh-question.

The proposed analysis straightforwardly accounts for the several properties of Coordinated-WHs (some identified here for the first time) distinguishing them from standard Mult-WHs, i.e. the availability of:

- ‘high’ speaker-oriented adverbs,
- the strictly clausal coordinator a in Polish and Bulgarian,
- the distribution of yes-no markers,
- the anaphoric pronominal to,
- the presence of existential presupposition in Coordinated-WHs
- multiple-pair readings with an additional effect, which can be explained by a structure that coordinates a single and a multiple wh-question.

None of the above properties can be accounted for without stipulation on the monoclausal approach. Additionally, I avoid a major drawback of the monoclausal analysis, which is the treatment of the coordinator as a truth-conditionally meaningless element.

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