**Wh-clustering and the role of coordination in Italian multiple wh-questions.**

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**Coordinated questions.** In Italian, adverbial multiple wh-questions require coordination (Moro 2011). Specifically, there are two different types of coordinated multiple wh-questions:

1. a. Vorrei sapere dove *(e) come hanno mangiato.  
   Want.COND.1SG know where and how have.3SG eaten  
   
b. Vorrei sapere dove hanno mangiato *(e) come.  
   Want.COND.1SG know where have.3SG eaten and how.  
   *I would like to know where did they eat and how.*

We refer to the first type as **high coordinated wh-questions** (1a) and to the second type as **low coordinated wh-questions** (1b). Existing analyses for these kinds of structures can be distinguished into **bi-clausal** and **mono-clausal**.

**Bi-clausal analyses.** In bi-clausal analyses the wh-phrases belong to different clauses. Both **high** and **low coordinated wh-questions** can be derived by means of the coordination of two separate clauses and the ellipsis of one of the two conjuncts (Browne 1972, Gracanin-Yuksek & Citko 2010, Tomaszewicz 2011a,b):

2. a. \[Coord[CP wh1[\ldots t1\ldots]] \& [CP wh2 [TP ...t1...]]\]  
b. \[Coord[CP wh1[TP ... t1...]] \& [CP wh2 [\ldots t2\ldots]]\]

**Mono-clausal analyses.** In mono-clausal analyses the wh-phrases are moved from the same clause. As for **high coordinated wh-questions**, Merchant 2007 and Gribanova 2009 proposed that the coordination is inserted between the wh-phrases after they have moved to CP, as in (3). As for **low coordination wh-questions**, Moro (2011) proposed that a coordinative head is merged above the moved wh-phrases, causing CP-splitting and subsequent remnant movement of the lower clausal constituent, as in (4):

3. a. \[CP wh1 wh2 [TP ... t1 ... t2 ...]]\]  
b. \[CP[Coord wh1 \& wh2] [TP ...t1...t2...]]\]  
4. a. \[CP wh1 [TP ... t1... wh2 ...]]\]  
b. \[CP wh2 [CP wh1 [TP ...t1...t2...]]\]  
c. \[Coord \& [CP wh2 [CP wh1 [TP ...t1...t2...]]]\]  
d. \[Coord[CP wh1 [TP...t1...t2...]] \& [CP wh2 t_k]]\]

**New data.** Italian coordinated wh-questions display the following previously unnoticed properties: [A] **high coordinated questions** disallow reason/purpose wh-phrases (5a), while **low coordinated wh-questions** do not (5b); [B] **high coordinated wh-questions** forbid the co-occurrence of argument and adjunct wh-phrases (6a), while **low coordinated wh-questions** do not (6b) [C] **high coordinated questions** allow for more than two wh-phrases (7a), whereas **low coordinated wh-questions** do not (7b):

5. a. *Vorrei sapere perché e dove avete mangiato.  
   Want.COND.1SG know why and where have.3PL eaten  
   
b. Vorrei sapere dove avete mangiato e perché.  
   Want.COND.1SG know where have.3PL eaten and why

   Want.COND.1SG know what and where have.3PL eaten  
   
b. Vorrei sapere cosa ha mangiato e dove.  
   Want.COND.1SG know what have.3PL eaten and where

7. a. Vorrei sapere come, quando e dove avete mangiato.  
   Want.COND.1SG know how, when and where have.3PL eaten  
   
b. *Vorrei sapere come avete mangiato quando e dove.
The complex behaviour illustrated in [A-C] comes unexpected under the current accounts. In particular, both mono-clausal analyses fail to predict the restrictions on the occurrence of reason/purpose wh-phrases and the restrictions on the co-occurrence of argument and adjunct wh-phrases in high coordinated wh-questions [5a;6a]. Additionally, bi-clausal accounts also fail to predict the ban on the occurrence of more than two wh-phrases in low coordinated wh-questions [7b]. The proposal. We propose that Italian high coordinated wh-questions are derived by means of an additional mechanism for multiple question formation: Wh-Clustering. According to this proposal, coordination is used to build a complex interrogative projection (henceforth, a Wh-Cluster) before entering the clausal derivation (8a); than, the Wh-Cluster enters the clausal derivation. Crucially, the instructions about the first-merge position of the Wh-Cluster are determined by the selectional properties of the elements contained in the Wh-Cluster (e.g. Wh-clusters containing Manner/Place/Time wh-phrases are merged below the VP [see Chomsky 1995, Bowers 2010]) (8b); finally, the Wh-Cluster is moved (pied-piped) to the CP, to check the interrogative features of the element it contains:

(8) a. \[\text{CoordP} \text{Wh1}\{\text{CoordP} \& [\text{Wh2}]\}\] Build the Wh-Cluster
b. \[\text{TP} [\text{VP} \{\text{CoordP} \text{Wh1}\{\text{CoordP} \& [\text{Wh2}]\}\}]\] Merge the Wh-Cluster
c. \[\text{CP} \{\text{CoordP} \text{Wh1}\{\text{CoordP} \& [\text{Wh2}]\}\} [\text{TP} [\text{VP} \text{t}_k]]\] Move the Wh-Cluster to the CP

Deriving [A]. Adverbial wh-phrases and reason/purpose wh-phrases are first-merged in two different positions. In particular, reason/purpose wh-phrases are merged directly in the CP (Rizzi 2001). We claim that these kind of wh-phrases cannot be clustered together, because the resulting instruction about the first-merge position of the wh-cluster would be ambiguous. Deriving [B]. For the same reason, argument and adjunct wh-phrases cannot co-occur in the same Wh-Cluster, since they are first-merged in different positions. Also in this case, the resulting Wh-Cluster would receive ambiguous instructions about its first-merge position. Deriving [C]. The ban on the occurrence of more than two wh-phrases in low coordinated wh-questions can be accounted for assuming the derivation in (4). Given this, it is impossible to derive the order in (7b):

(9) a. \[[\text{CP} \text{wh1} [\text{TP} ... \text{t}_1 ... \text{wh2} ... \text{wh3}]]\]
b. \[[\text{CP} \text{wh3} [\text{CP} \text{wh2} [\text{CP} \text{wh1} [\text{TP} ... \text{t}_1 ... \text{t}_2 ... \text{t}_3]]]]\]
c. \[[\text{CoordP} \& [\text{CP} \text{wh3} [\text{CP} \text{wh2} [\text{CP} \text{wh1} [\text{TP} ... \text{t}_1 ... \text{t}_2 ... \text{t}_3]]]]\]
d. \[[\text{CoordP} \text{wh1} [\text{TP} ... \text{t}_1 ... \text{t}_2 ... \text{t}_3] k [\& [\text{CP} \text{wh3} [\text{CP} \text{wh2} \text{t}_k]]]]\]
e. \[[\text{CoordP} \& [\text{CoordP} \text{wh1} [\text{TP} ... \text{t}_1 ... \text{t}_2 ... \text{t}_3]] k [\& [\text{CP} \text{wh3} [\text{CP} \text{wh2} \text{t}_k]]]]\]
f. \[[\text{CoordP} [\text{CP} \text{wh2} \text{t}_k] [\text{CoordP} \& [\text{CoordP} [\text{CP} \text{wh1} [\text{TP} ... \text{t}_1 ... \text{t}_2 ... \text{t}_3]] k [\& [\text{CP} \text{wh3} \text{t}_j]]]]\]]

On the other hand, since nothing forbids to built a Wh-Cluster containing more than two wh-phrase, high coordinated questions with more than two wh-phrases are allowed.

Conclusion. In this paper, after discussing some previously unnoticed properties of coordinated multiple wh-questions in Italian, we proposed a new mechanism for multiple wh-questions formation. The whole pattern of data can be explained assuming two possible derivations: low coordinated wh-questions are derived via CP-splitting and subsequent remnant movement (Moro 2011), while high coordinated wh-questions are derived via Wh-Clustering. A crucial requirement on Wh-Clusters is that they obtain the instructions about their first-merge position from the selectional properties of the elements that they contain. We also argue that Italian is not a genuine multiple wh-fronting language and that both these derivations can be regarded as strategies to circumvent the ban on multiple interrogative projections in the Italian left-periphery (Rizzi 1997).