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Che and weak islands.

1. Introduction.

The study of locality has triggered much work on subtle, but stable, contrasts of acceptability between minimally different structures, giving empirical substance to the theoretical literature (Rizzi 1990, 2004, Manzini 1992, 1997, 1999 and much related work).

A very minimal, and yet very clear contrast involves the different forms of the inanimate wh-element in Italian. The wh-element *che*, functioning in colloquial varieties as a reduced variant of *che cosa* (what), is not extractable from weak islands, in contrast with the complete form *che cosa*, and the other reduced form *cosa*. This is clearly illustrated by negative island contexts:[1]

(1)a   Che cosa hai detto?
       'What did you say?'

   b Cosa hai detto?
      'What did you say?'

   c Che hai detto?
      'What did you say?'

(2) a   Che cosa non hai detto?
        'What didn't you say?'

   b Cosa non hai detto?
      'What didn't you say?'

   c * Che non hai detto?
       'What didn't you say?'

The same contrast holds at the level of relative acceptability for more robust weak islands such as the wh-island: extraction of *che cosa* and *cosa* is degraded, but extraction of *che* sounds more severely deviant:

(3)a ?(?) Che cosa non sai come dire __?
           'What don't you know how to say?'

   b ?(?) Cosa non sai come dire __?
          'What don't you know how to say __?'

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[1] I believe that the contrast has been discovered by Rita Manzini, even though I was unable to identify the appropriate reference in her publications. In any event, the empirical observations and analytic ideas of this short note have been inspired by discussions that Rita and I had on asymmetries and the proper theoretical treatment of weak islands over the years.

c   *   Che non sai come dire __?
         'What don't you know how to say?'

The notation "?(?)" is meant to express the variability of the judgment across speakers, depending on lexical choices and other factors; here I use *not know* as the verb taking the indirect question; this choice may seem non-optimal, as it involves a negation, hence a negative island on top of the wh island; nevertheless, extractions from indirect questions selected by *not know* sound more natural than extractions from complements of *wonder* or other verbs taking indirect questions, so I will systematically use this kind of structures.

The asymmetry illustrated by (2) and (3) is very sensitive to minimal modifications. For instance, both the full and the reduced forms can be modified by *altro* (else); in this case, the contrast between *che* and the other forms disappears. All the forms sound fully acceptable in cases of extraction from a negative island:

(4)a   Che cos'altro non hai detto?
      'What else didn't you say?

   b   Cos'altro non hai detto?
      'What else didn't you say?

   c   Che altro non hai detto?
      'What else didn't you say?

And the three forms are equally marginal in cases of extraction from a wh island:

(5)a   ?(?) Che cos'altro non sai come dire __?
         'What else don't you know how to say?

   b   ?(?) Cos'altro non sai come dire __?
         'What else don't you know how to say?

   c   ?(?) Che altro non sai come dire __?
         'What else don't you know how to say?

In this paper I would like to relate the surprising properties of *che*, compared to *che cosa* and *cosa* to an hypothesis on the internal structure of these elements. The analysis will be expressed in terms of a theory of intervention locality based on Relativized Minimality, relying in particular on a fundamental factor which modulates the relative acceptability of extractions from weak islands, according to recent versions of this approach: the presence or absence in the moved wh-phrase of a lexical restriction.

2. The role of the lexical restriction.

The beneficial effect of the pied-piping of an overt lexical restriction in contexts of intervention is straightforwardly shown by the following facts in French. With wh-element *combien* (how much/how many) in object position, the lexical restriction connected to the wh-element by preposition *de* (of) can be pied-piped, or left in situ, with subextraction of *combien*:

(4)a [Combien de problèmes] a-t-il résolus __?
 'How many of problems did he solve __?

  b Combien a-t-il résolu [__ de problèmes] ?
  'How many did he solve of problems ?'

If these two options are tested in weak island environments, we get a clear contrast. Across an intervening negation pied-piping is fine and subextraction is deviant:

(5)a Combien de problèmes n'a-t-il pas résolus __?
  'How many of problems did he not solve __?

  b * Combien n'a-t-il pas résolu [__ de problèmes] ?
   'How many did he not solve of problems ?'

In the context of extraction from an indirect question, pied-piping is also degraded to some extent, but the contrast persists and is clearly detectable at the level of relative acceptability:

(6) a ? Combien de problèmes ne sait-il pas comment résoudre __?
   'How many of problems doesn't he know how to solve __?

  b * Combien ne sait-il pas comment résoudre [__ de problèmes] ?
   'How many doesn't he know how to solve of problems ?'

These minimal pairs clearly show that the lexical restriction plays a crucial role in facilitating extraction from a weak island environment.

Italian does not have the equivalent of the *combien de NP* structure: the wh-element equivalent to *combien, quanto/quanti*, directly takes an NP complement without the mediation of a preposition, and agrees with it in gender and number; nevertheless, the NP can be extracted via *ne* cliticization:

(7)a Quanti problemi hai risolto __?
  'How many problems did you solve ?'

  b Quanti ne hai risolti __?
  'How many of-them did you solve?

In case of extraction from a wh-island, the equivalent of (7)a is slightly marginal, whereas the equivalent of (7)b is more severely degraded:

(8)a ? Quanti problemi non sai come risolvere __?
  'How many problems don't you know how to solve?'

  b * Quanti non sai come risolverne __?
   'How many don't you know how to solve?'

We see different and interacting factors at work here, but a general conclusion which seems justified is that, all other things being equal, extraction of a lexically restricted wh-element is

more acceptable than extraction of a bare wh-element. The contrast in (8) suggests that the trace of a lexical restriction (after *ne* cliticization) does not count to determine an improvement.

3. Featural Relativized Minimality.

In terms of the featural characterization of Relativized Minimality developed in Friedmann, Belletti & Rizzi (2009), based on Starke (2001) and Rizzi (2004) (in turn elaborating on Rizzi 1990; see also Belletti & Guasti 2015 for an overview of the results of this approach in the acquisition of A-bar dependencies), the two structures of (6) have representations like the following, in which +Q is the familiar morphosyntactic feature involved in the attraction of wh-elements in questions, and +N designates a wh-phrase in which a lexical restriction is present:

(6') a ? Combien de problèmes   ne sait-il pas   comment   résoudre   __?
       'How many of problems   doesn't he know how to solve   __?
          +Q+N   +Q   __

    b * Combien   ne sait-il pas   comment   résoudre [__ de problèmes] ?
      'How many   doesn't he know how   to solve __ of problems ?'
       +Q   +Q   __

Let us consider the following definition of featural Relativized Minimality (fRM):

(9) In … X … Z … Y … a local relation between X and Y is disrupted when
i. Z structurally intervenes between X and Y, and
ii. Z shares relevant morphosyntactic features with X

"relevant morphosyntactic features" are those involved in the local relation under scrutiny. As we are looking at movement dependencies, "relevant morphosyntactic features" are those which trigger movement: in (6'), +Q and +N. The relevance of +Q is straightforward: it is the feature attracting wh-elements to the left-periphery. As for +N, Friedmann, Belletti & Rizzi (2009) argue that the latter participates in attracting movement in that in many languages lexically restricted wh-phrases have distinct landing sites with respect to bare wh-elements, typically in the higher part of the cartography of CP.

The most straightforward piece of evidence comes to the North Easterns Italian dialects (such as Bellunese) in which lexically restricted wh-elements are pronounced before the rest of the clause ("Of which boy have you spoken?"), whereas bare elements are pronounces clause-finally ("Have you spoken with whom?"). According to Munaro's (1999) analysis, both types of wh-elements are moved to the left periphery to two distinct positions, according to the following partial map:

(10) … +Q, +N …… X …… +Q …. IP

Wh movement is followed by remnant movement of the IP to the intermediate position X, so that the lower +Q position ends up being spelled out at the end of the clausal structure. Regardless of the formal details of the analysis, the basic distributional properties of the two types of wh-elements provide straightforward evidence for differentiating the landing site of

lexically restricted and bare wh-elements. Such a differentiation is supported by numerous kinds of evidence in other languages (Villata, Rizzi, Franck 2016, text below ex. (3)).

 So, +N contributes to finely modulating the target of wh-movement, and as such it is taken into account as a relevant feature in the computation of intervention relations.

One goal of this approach is that the featural definition of RM can also capture the gradation of judgments: when the featural overlap is full, i.e., the target and the intervener have the same featural specification, the disruption is maximal; when the featural overlap is partial, the disruption is less severe.

In both cases (6')a-b, the extracted element and the intervener have a relevant feature in common (+Q), and this causes the deviance of the structures; but in (6')a the target of movement is partially distinct from the intervener (we have an **inclusion** relation between X (+Q, +N) and Z (+Q)), and this captures the more acceptable status of the configuration compared to the totally non-distinct case (6')b, characterized by an **identity** of relevant features (+Q) on both X and Z.

As for the fact that the trace of the lexical restriction does not improve things in   (8)b, we can observe that under the copy theory of traces a full copy of the clitic, corresponding to the lexical restriction, is present in the representation of (8)b. Nevertheless, we may assume that for a feature to be taken into account in the calculation of locality, the feature must be internal to the phrase whose properties we are computing. In the case of the clitic trace, the feature is not fully internal in the sense that one of occurrence of *ne* is inside and the other is outside the wh-phrase:

(8)b'   [Quanti <ne>] non sai come risolverne   __
       +Q   <+N>   +Q   +N

If only fully internal specifications count, the clitic trace does not help here to improve things.

It is also important to notice that the negative island and the wh-island exhibit different levels of strength, particularly in cases in which the moved element is lexically restricted, such as (5)a and (6)a: in the negative island, extraction of the lexically restricted element produces a structure which sounds fully acceptable, as in (5)a (even though in dealing with such examples, speakers need an extra moment of reflection, to imagine a context in which the structure would be naturally produced; this could be made visible in reading time experiments, which would be worth conducting with systematicity in weak island environments), whereas the extraction of the lexically restricted element from the wh island is marginal, as in (6)a. The difference between the two cases probably resides in the fact that target and intervener share the same exact feature in (6)a (+Q), while they are characterized by features which, while both belonging to the same class of operator features, are distinct in (5)a (the target is +Q and the intervener is +Neg). The system clearly is sensitive to the feature class (Rizzi 2004), in that intervention effects are caused by interveners characterized by features belonging to the same featural class as the features characterizing the target; nevertheless, a higher level of disruption may be determined when the feature is identical, with respect to the case in which two distinct features belonging to the same class are involved. The featural distinction between target and intervener, combined with the +N specification of the target, may cause violations of negative islands   with lexically restricted

wh-phrases like (5)a to sound virtually perfect; whereas in cases of identity of the operator feature, as in the violation of wh-islands, we always perceive some degree of marginality, as in (6)a. An additional element in support of the view that distinct operator features on the target and intervener may determine weaker violations than identical operator features is provided by the observation that extractions from wh-islands through relativization in Italian yield, or approximate, full acceptability, in contrast with the marginality of extraction via main question formation, as pointed out in Rizzi 1982, ch. 2, p. 51 (+R is the criterial feature triggering movement in relatives, the analogue of +Q for questions):

(11)a Ecco un incarico che non so proprio   a chi potrei affidare   __
      Here is   a task   that I really dont know to whom I could entrust __
          +R, +N   +Q   __

   b ? Che incarico non sai proprio   a chi potresti affidare   __
     'What task   do you really not know   to whom you could entrust __
     +Q,+N   +Q   __

It may be conceivable to assimilate cases involving distinct attracting features belonging to the same feature class to the case of **intersection**, a set theoretic relation between target and intervener that has been shown to be more easily accessible to language learners than the relation of inclusion (Belletti, Friedmann, Brunato, Rizzi 2012). I will not pursue this possible development here.

4. Che, cosa, and che cosa.

Back to our initial empirical observation, the structure of *che cosa* presumably is something like the following (see Manzini 2014 for a unified analysis of *che*-like forms occurring in the left periphery in different Italian dialects; see also Manzini & Savoia 2005):

(12)
$$\text{DP}$$
$$\text{Che}_{+Q} \quad \text{NP}$$
$$\text{cosa}$$

So, the first idea that comes to mind in connection with the two reduced forms *cosa* and *che* is that they correspond to (12) except for the lack of an overt occurrence of one or the other element. If that were the case, the very different behavior illustrated by (2), (3) would remain mysterious. But it should be noticed that there is a fundamental difference between the two reduced cases: *che* is the bearer of the Q feature, hence its presence is necessary to qualify the expression as an interrogative element (as in *che libro*, *che idea*, etc.: what book, what idea,…). Therefore, the representation of the reduced form *cosa* must necessarily contain a null occurrence of *che*, otherwise the phrase would not qualify as an interrogative element at all. So we must have

(13)
$$\text{DP}$$
$$\cancel{\text{Che}_{+Q}} \quad \text{NP}$$
$$\text{cosa}$$

(where the overstrike intends to express the silent nature of the element carrying the Q feature). On the other hand in the reduced form *che*, as the necessary Q feature is expressed on *che*, the lexical restriction expressed by the functional noun *cosa* in *che cosa* can presumably be dispensed with, and be radically absent. Therefore, simple considerations on the necessary specification of the Q feature lead to assuming significantly different representations for *cosa* and *che*. For *che*, we would thus have something like the following:

(14)   DP
                                             |
                                          Che$_{+Q}$

Under this analysis, here we have a bare, non-lexically restricted wh element, which is expected to pattern with other bare wh-elements such as *combien* in extraction environments. We can therefore capture the strong sensitivity of *che* to weak island environments, as well as the fact that *cosa* (represented as in (13)) is about on a par with *che cosa*.[2]

This analysis is supported by the observation in (4). If the element *altro* (other) is added to the structure, an analysis of *che* as a bare D becomes unavailable: the DP projection must expand to include the modifier *altro*. But presumably the modifier cannot occur alone, it must select and co-occur with the NP it modifies. So, when *altro* is present, we have to restore here a null NP *cosa*; therefore, the three cases are all akin to the full form (12), and the parallel pattern in the case of extraction from the weak island is thus to be expected.

Conclusion.

Intervention locality effects appear to be sensitive to the richness of the internal structure of the moved elements. In particular, lexically restricted wh-elements are easier to extract, when the lexical restriction is pied-piped, than bare wh-elements in weak island environments. In this short paper we have described and analyzed a minimal contrast between different forms of the inanimate wh-element in Italian: while the full form *che cosa* and the reduced form

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[2]In (12) and (13) the wh-element is lexically restricted in the sense that it contains an NP specification (as opposed to (14)); nevertheless, this specification is functional, expressed by the functional noun *cosa* (thing) not drawn from the contentive lexicon as *libro, idea* in in *che libro, che idea*, etc. (what book, what idea, etc.). Villata, Rizzi & Franck (2016) show that, in controlled grammaticality judgments expressed on a 7-point Likert scale, extraction of elements like *what* is systematically more degraded than extraction of elements like *what book* in French. Notice that we are now introducing a further and finer distinction in Italian, between wh-elements with a contentive lexical restriction (*che libro*), wh-elements with a functional restriction (*che cosa, cosa*), and wh-elements in which the lexical restriction is totally absent (*che*). In fact, the presence of a contentive lexical restriction, the presence of a functional restriction, and the radical absence of a restriction seem to correspond to three detectable levels of deviance in weak island contexts:

> (i)   ? Che libro non sai come procurarti?
>   'What book don't you know how to get?'
> (ii)   ?? Che cosa non sai come procurarti?
>   'What don't you know how to get?'
> (iii)   * Che non sai come procurarti?
>   What don't you know how to get?'

This gradation suggests that the feature calculus should be refined to also take into account the distinction between contentive and functional lexical restrictions. I will not discuss here how to better capture these facts.

cosa give rise to mild violations of locality, the other reduced form *che* triggers a strong violation, comparable in force to adjunct extraction, or subextraction of *combien* in French. This surprising asymmetry can be naturally captured by an analysis of the different internal structures of the three wh-forms, in interaction with a general approach to intervention locality based on featural Relativized Minimality.

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