

## STRONG ISLANDS AND CYCLIC TRANSFER

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**Definitions.** In this talk we will explain successive-cyclic movement and strong island effects by adopting the following definitions (notice the non-standard definition of PIC).

(1) *Label.* When two objects  $\alpha$  and  $\beta$  are merged, a subset of the features of either  $\alpha$  or  $\beta$  become the label of the syntactic object  $\{\alpha, \beta\}$ . A label: (i) can trigger further computation and (ii) is visible from outside the syntactic object  $\{\alpha, \beta\}$ .

(2) *Probing Algorithm.* The label of a syntactic object  $\{\alpha, \beta\}$  is the feature(s) which act(s) as a Probe of the merging operation creating  $\{\alpha, \beta\}$ . Lexical items are intrinsic probes.

(3) *PIC (Phase Impenetrability Condition).* When a phase is concluded, only its label remains accessible to further syntactic computation.

We also assume that CPs (and possibly  $v$ Ps, but crucially not DPs) are phases, namely points of transfer to the interpretative component.

**Successive Cyclic Movement.** Suppose that the intermediate step of successive cyclic movement is an instance of unprobed merge. Given the Probing Algorithm in (2), no Probe means no label, so the first step of successive cyclic movement yields an unlabeled syntactic object (cf. Chomsky 2013 for a related proposal). This is a problem since the derivation needs to proceed. Let us make a representative example (the derivation of 4) to see how this problem can be fixed.

(4) Which student do you think John met?

Step 1: The *wh*-phrase is internally merged as a case of unprobed merge. No label results ( $\emptyset$  is a convenient notation to say that a label is absent).

(4') [ $\emptyset$  [Which student] [C John met  $t_{\text{which student}}$ ]]

Step 2: cyclic transfer takes place. Under the simplified PIC, only the label C remains, *not the syntactic object under the label*. So, 'which student' and the label C do not form a constituent any more after cyclic transfer, since the syntactic object to which 'which student' was attached in the former cycle has been transferred. The label C and 'which student' now belong to the working space of the new phase. Under the reasonable assumption that by the end of the computation any material in the working space needs to be merged into the structure, both these elements need to be integrated into the new structure under construction.

Step 3: The label of the (now inaccessible) embedded clause, namely C, is probed by the selecting verb 'think'. The structure gets a label from the probe (V), under the assumption that selection is a form of probing (the dashed line indicates the material that has been transferred):

(4'') [ $v$  think [C \_ \_ \_ ]]

Step 4: 'which student' remains in the working space until a suitable probe kicks in and it can merge with it: this is the matrix C.

(4''') [C Which student [C do you think [C \_ \_ \_ ]]]?

Consequence to be discussed: strictly speaking, successive cyclic movement is *not* a two-step movement. After the so-called intermediate step, the *wh*-element is not properly *moved* further. Rather, 'which student', since it survives in the computation when the structure it was merged to is transferred, is kept in the working space, ready to be merged in the new phase.

But why is this derivation impossible with strong islands?

**Free relatives are strong islands.** Our starting point is the sharp contrast between (5) and (6), which are modeled after examples in Rizzi (1982).

(5) ?[To whom]<sub>i</sub> do you wonder what John sent  $t_{\text{to whom}}$ ?

(6) \*[To whom]<sub>i</sub> did you destroy what John sent  $t_{\text{to whom}}$ ?

The derivation of the indirect question in (5) is a licit case of successive cyclic movement, but for the presence of a Relativized Minimality effect (Relativized Minimality is an independently motivated condition and cannot be reduced to PIC). But why is extraction from the free relative in (6) sharply ungrammatical? When 'what' is merged with 'John sent', 'what', being a lexical item and as such being an intrinsic probe, provides the label to the embedded structure, which is a DP (cf. Cecchetto and Donati 2015). A DP, unlike a CP, is not cyclically transferred. This suffices to explain the strong island effect in (6): 'to whom' is not detached from the DP it was originally merged to, therefore it cannot enter the working space. The label-less node created by the unprobed movement of 'to whom' does not disappear

from the derivation, and this blocks any further computation (under the definition of label in 1, a node without a label cannot be selected since it is not visible).

(6') \*<sub>e</sub>[[To whom] [<sub>DP</sub> what [<sub>TP</sub> John sent *t*<sub>what</sub> *t*<sub>to whom</sub>]]]

**Other strong islands: full relatives.** This account of the islandhood of free relatives extends to full relatives under the specific version of the raising analysis proposed by Cecchetto and Donati (2015), as we will show in details.

**Adverbial clauses that are strong islands because they are free relatives.** Temporal, locative, manner and conditional clauses have been argued to be free relatives (Caponigro 2003), as suggested by their semantics and by fact that crosslinguistically they are typically introduced by *wh*-words (*when*, *where*, *how* and the counterpart of *if*). This creates a systematic labeling ambiguity between the indirect question reading in the *a.* sentences and the adverbial reading in the *b.* sentences, which fully parallels the labeling ambiguity between free relatives and indirect questions illustrated in (7):

- |      |  |   |
|------|--|---|
| (7)  | <i>a.</i> I wonder [ <sub>CP</sub> what John sent] | <i>b.</i> I destroyed [ <sub>DP</sub> what John sent] |
| (8)  | <i>a.</i> I wonder how she feels                   | <i>b.</i> I feel how she feels                        |
| (9)  | <i>a.</i> I wonder where he will tell me to go     | <i>b.</i> I will go where you will tell me to go      |
| (10) | <i>a.</i> I wonder when you will leave             | <i>b.</i> I will eat when you will leave              |
| (11) | <i>a.</i> I wonder if he will leave                | <i>b.</i> I will leave if you will tell me so         |

Obviously the explanation for the strong islandhood of the free relative in (6) above straightforwardly extends to the strong islandhood of adverbial clauses in (8b) to (11b), if they are indeed free relatives.

**Other strong islands: peripheral adverbial clauses.** There are adverbial clauses that are not easily amenable to a free relative analysis, though. These include peripheral adverbial clauses in the sense of Haegeman (2003, 2010). These clauses structure the discourse, typically by introducing an explicit premise to the assertion made in the main clause, as in (12).

(12) If you thirsty, there is beer in the fridge

We propose that peripheral adverbial clauses are genuine adjuncts, where adjunction is defined as unprobed Merge (cf. Hornstein 2009). Therefore when peripheral adverbial clauses are merged, an unlabeled object is formed. Given the definition of label in (1), an unlabeled object can be tolerated at the root, because the root does not need to be selected and no further computation takes place inside it. This simple assumption explains both the islandhood status of peripheral adverbial clauses and a neglected binding fact. Their islandhood is explained because they can be merged only very high (immediately below the unlabeled root node), therefore any instance of movement out of them, as in (13b), would be an instance of lowering movement.

- (13) *a.* He hates his situation, if you want to know the truth.  
*b.* \*What does he hates his situation, if you want to know *t*?

The same analysis explains the surprising violation of Principle C in (14): the *if*-clause, being unprobed, must be attached at the root, thus higher than the matrix subject:

(14) *a.* He<sub>i</sub> stayed at home, if John<sub>i</sub>'s car is in the backyard

In (15), where the *if*-clause expresses the condition under which the matrix clause is true or false, there is a Principle C violation, since the *if*-clause, an adverbial free relative, can be attached in a dedicated position in the IP layer, hence lower than the matrix subject.

(15) \*He<sub>i</sub> stayed at home if John<sub>i</sub>'s car needed to be fixed

**Other strong islands: reason clauses.** While some other types of adverbial clauses might be peripheral (these include concessive and adversative clauses), a reason clause like (16) is neither a free relative (for semantic reasons, cf. Bhatt & Pancheva 2006) nor peripheral, but it is still a strong island:

(16) \*Whom do you sweat because you talk to *t*<sub>whom</sub>?

In order to explain the islandhood of (16) we will build on the observation that 'because' is periphrastic (because = the cause being that), therefore the underlying structure from which the *wh*-phrase should be extracted is not a CP but a DP. This prevents the cyclic transfer that allows successive cyclic movement in (4) above.

**Further development.** If time allows, we will explore a distinct consequence of the definition of PIC in (3). In (3) the head of the phase (say, *v*) does not have a special status and would be trapped into the phase after cyclic transfer. This raises the question of how to derive V to T. In our approach V can move unprobed to the edge of *v*P and, since it is a lexical item and an intrinsic probe, it can label the resulting structure. This predicts that T selects V, not *v*. We will motivate this change of perspective by showing cases in which inflection is sensitive to the fine grained semantic features of the lexical entry of the verb.