

Subject islands, reconstruction, and the flow of the computation

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Subjects were traditionally analyzed as strong islands; however, recent research has highlighted a remarkable variability in their island effects. Focussing on intransitive verbs and adjectives, we argue that the islandhood of subjects is determined by their status at the syntax-semantics interface: subjects qualify as islands when they are interpreted outside the predicative nucleus of the clause, in a categorical LF structure (in the sense of Ladusaw 1994); they are transparent for extraction when they undergo total reconstruction into the predicative nucleus of the clause, giving rise to a thetic structure. The thetic/categorical interpretation depends on various factors, most notably the stage-level vs. individual-level nature of the predicate. The interaction of different factors accounts for the observed variability of island effects, and is supported by our experimental evidence. We show that the transparency of reconstructed subjects need not be stipulated, but it falls out from a top-down oriented computation, in which movement dependencies are implemented by a storage-and-retrieval (top-down, left-right) mechanism.

Keywords: Subject island, reconstruction, categorical, thetic, top-down computation.

1. Introduction

In the traditional typology of island constraints originating from Ross's (1967) dissertation, subjects were classified as strong islands (cf. Szabolcsi & den Dikken 1999). Recent research has highlighted the fact that not all subjects give rise to equally robust islands effects; however, the precise assessment remains controversial to date, and different empirical generalizations have been proposed in the literature (see Stepanov 2007, Jurka 2010 for general discussion).

In this paper we investigate extraction from the subject of intransitive predicates in Italian (both unaccusative and unergative), and we propose that subjects qualify as

islands for extraction only when they are part of a categorical LF structure (in the sense of Ladusaw 1994), whereby they are interpreted outside the predicative nucleus of the clause; when instead they are included in a thetic structure, they undergo total reconstruction into the thematic position and they are transparent for extraction. As categorical subjects are necessarily presuppositional, our proposal subsumes the hypothesis that presuppositionality is the crucial factor in determining islandhood (Diesing 1992; Jiménez Fernández 2009).

The categorical vs. thetic interpretation of a clause is determined by the interplay of different factors, most notably the stage-level vs. individual-level nature of the predicate and, in Italian, the preverbal vs. postverbal position of the subject. The interaction of different factors naturally accounts for the inherent variability of acceptability judgments for sentences that are amenable to either a categorical or a thetic construal.

The link that we establish between transparency and subject reconstruction is at first blush conceptually problematic: it is unclear why extraction from a constituent should be sensitive to which link in that constituent's chain is relevant at the LF interface. As a matter of fact, in an architecture that adopts a covert cycle separate from overt syntax, such a connection could not even be stated. We show that the proposed constraint falls out naturally in a left-right (Phillips 1996, 2003, Richards 1999) and top-down oriented computation (Chesi 2007, 2012, Bianchi & Chesi 2006, Zwart 2009).

The paper is organized as follows. In the remainder of this section, we compare three recent proposals that reduce subject island effects to three different factors, and we argue that among these, only the presuppositionality-based account (Diesing 1992, Jiménez Fernández 2009) is potentially compatible with the observed variability of acceptability judgments. In § 2 we review Diesing's (1992) reduction of island effects to the derived LF position of presuppositional noun phrases, and the reinterpretation that Ladusaw (1994) offered in terms of categorical vs. thetic structures.

In § 3 we advance the central hypothesis that only categorical (non-reconstructed) subjects are islands for extraction, whereas thetic (reconstructed) subjects are not. This Extraction from Subject Constraint (ESC) makes precise empirical predictions: since individual-level predicates are only compatible with a categorical structure, we

expect their subjects to uniformly block extraction; on the contrary, stage-level predicates are compatible with either a categorical or a thetic structure, and therefore they are predicted to have a non-uniform behavior. In § 3.1 - § 3.2 we present experimental evidence from Italian, showing that subjects of intransitive i-level predicates are uniformly islands, irrespective of their position, whereas subjects of intransitive stage-level predicates can be transparent, but only if they are postverbal; we also show that this conclusion holds both for unaccusative and for unergative predicates, although for the latter, certain additional factors must be taken into account.

The lack of transparency of the preverbal position indicates that in Italian, the preverbal subject of an intransitive predicate is interpreted as categorical; we provide evidence that English behaves differently in this respect, and allows a preverbal subject to be interpreted as either categorical or thetic. In § 4 we suggest that this cross-linguistic difference is related to the availability of a postverbal ‘free inversion’ position in Italian, which is clearly non-categorical. We discuss a natural implementation of the categorical/thetic divide in terms of a dedicated ‘subject of predication’ position in the preverbal field (Cardinaletti 2004, 151-154), later reinterpreted by Rizzi’s (2006) Subject Criterion. This concludes the empirical contribution of the paper.

In § 5, we turn to the theoretical motivation of the hypothesized Extraction from Subject Constraint. Even though it seems problematic from the viewpoint of the standard bottom-to-top computation, we show that it falls out naturally if we reverse the direction of the computation from bottom-to-top to top-down. In § 5.1 we give a sketch of the top-down minimalist grammar that we adopt: in this grammar, a derived subject position is an island because its computation is nested within the computation of the superordinate phase. In § 5.2 we show that the top-down system allows for a very straightforward implementation of total reconstruction, which does not require undoing a previous step of the derivation; in § 5.3 we show how our Extraction from Subject Constraint follows directly from such a system. Finally, in § 6 we provide a synthesis and some concluding remarks.

1.1. The controversial assessment of subject island effects

In the Principles and Parameters framework, subjects were considered absolute islands for extraction, and their islandhood was derived from very general constraints like Huang's (1982) Condition on Extraction Domains, Kayne's (1983) Connectedness Condition, or Chomsky's (1986) Barriers system.

In the more recent minimalist literature, it has been suggested that subject island effects are *selective*, since certain types of subjects seem to be exempt from them. However, from the empirical viewpoint the assessment is controversial, and consequently, different syntactic factors have been argued to be relevant. We briefly review three prominent proposals (§ 1.1.1 - § 1.1.3).

1.1.1. External vs. Internal Merge. According to Takahashi (1994) and Stepanov (2007), subjects qualify as islands when they occupy a derived position. This is illustrated by a contrast like (1): in (1a), the preverbal subject is in a derived Spec-TP position and blocks extraction of the wh-phrase *who*; in (1b), instead, the post-copular subject is in the external Merge position, and it is transparent for extraction.

- (1) a. [?]*Who does [a picture of *t*] hang on the wall? (Stepanov 2007, (1a))
b. Who is there [a picture of *t*] on the wall? (Stepanov 2007, (31))

In Takahashi's analysis, the islandhood of derived subjects follows from the interplay of two independent constraints:

(2) *Chain Uniformity Condition*

Chains must be uniform: adjunction to a part of a non-trivial chain is not allowed.

(3) *Shortest move*

Movement must target the closest landing site.

To illustrate the effects of (2) and (3), consider a potential derivation for (1a). After the subject [*a picture of who*] has moved to Spec-IP, we cannot directly extract the wh-phrase *who* from it, because this movement would violate Shorted Move:

- (4) * who does [_{IP} who [_{IP} [_{DP} a picture of <who>] [_{VP} <DP a picture of who> hang on the wall]]]? (Stepanov 2007, (8b))

On the other hand, if we try to extract the wh-phrase stepwise by adjoining it first to the subject DP, as in (5), the derivation violates Chain Uniformity:

- (5) * who does [_{IP} [_{DP} **who** [_{DP} **a picture of <who>**]] [_{VP} <_{DP} **a picture of who**> hang on the wall]]]? (Stepanov 2007, (9))

On the contrary, intermediate adjunction is possible when the subject DP occupies the base position, as in (1b)-(6) (in this case, the Chain Uniformity is not violated):

- (6) Who is there [_{DP} **who** [_{DP} **a picture of <who>**]] on the wall?

Thus, the derivation can proceed cyclically and finally converge.

1.1.2. External vs. internal argument. Note that Takahashi's proposal predicts that *all* subjects occupying a derived position are islands. But this prediction is called into question by the following data, from Chomsky (2008, (6)-(7)):

- (7) * Of which car did [**the (driver, picture) t**] cause a scandal?
(8) Of which car was [**the (driver, picture) t**] awarded a prize?¹

Chomsky (2008) argues that, irrespective of their base or derived position, subjects are islands only if they are external arguments, as in the active sentence (7), but not when they are internal arguments, as in the passive sentence (8). Chomsky's account of this generalization rests on two hypotheses:

- i. The A-movement of the subject to Spec-TP and the A'-movement of the wh-phrase proceed in parallel, since they are both triggered by probes located in the C head. Therefore, the wh-phrase is extracted from the base subject position.
- ii. Extraction from the base internal argument position is possible because vP does not qualify as a phase and the internal argument position can be searched by probes on C; on the other hand the PP complement in the external argument, generated in the v*P phase edge, is not in the search domain of v*.

¹ As the reader will immediately notice, the acceptability of (8) contrasts with the unacceptability of Stepanov's (1a). A crucial difference concerns the stranding of the preposition *of* in (1a) as opposed to its pied piping in (8). For discussion, see notes 12 and 41.

Consequently, extraction in (7) is impossible since the v*P phase edge can not be searched for the PP complement/goal.

1.1.3. *Discourse-linking*. Chomsky's approach predicts that all external arguments are islands for extraction. But even this empirical generalization has been challenged in the literature. In particular, Jiménez Fernández (2009) points out the following contrast in Spanish, involving two instances of extraction from a (derived) external argument (Jiménez Fernández 2009, (57b), (60a)):²

- (9) a. ¿ [De qué cantante] te parece que [algunas fotos t] han escandalizado
of which singer you seem that some pictures have shocked
a la audiencia?
to the audience
- b. ??¿De qué cantante te parece que [las fotos t] han escandalizado a la
of which singer you seem that the pictures have shocked to the
audiencia?
audience

The difference is that in (9a), the subject is an indefinite introduced by a weak determiner (*algunas* 'some'), whereas in (9b), the subject is definite (and specific). Accordingly, the author proposes that the crucial property determining islandhood is Discourse-linking, in the sense of Pesetsky (1987). D-linking is a special kind of existence presupposition, whereby the subject denotation is, or belongs in, a set of entities that is already familiar in the context (in (9b), a set of pictures).³ The proposal is that the features of Definiteness and Discourse-linking turn a DP into a strong phase, which is impenetrable for any external probe: whence its islandhood.

² An anonymous LI reviewer pointed out that the contrast can be replicated in Italian:

- (i) Di quale cantante ti sembra che [alcune foto_] hanno scandalizzato il pubblico?
of which singer 2.SG seem that some photos have shocked the audience
- (ii) * Di quale cantante ti sembra che [le foto_] hanno scandalizzato il pubblico?
of which singer 2.SG seem that some photos have shocked the audience

³ If the subject is quantificational, its denotation is a quantifier that lives on (Barwise & Cooper 1981) a set of entities already familiar from the context.

1.1.4. *Experimental evidence.* Jurka (2010) and Jurka et al. (2011) experimentally investigated the predictions of the first two approaches in a number of languages (German, English, Japanese). Their findings from German do not support the Takahashi-Stepanov hypothesis, because in situ external arguments turn out to be significantly less transparent than internal arguments. Chomsky's approach isn't confirmed either, because in English, extraction from derived subjects shows no significant difference according to whether the predicate is unaccusative/passive vs. unergative/transitive.

The authors take this evidence to support the original CED-based asymmetry between subjects and internal arguments, and derive it from Nunes & Uriagereka's (2000) Multiple Spell-Out account of strong islands. The authors observe, however, that some CED-violating extractions are actually accepted by the subjects. Thus, the experimental investigation shows that the subjects' acceptability judgments do not directly mirror the clearcut grammaticality opposition that the theoretical model predicts. Acceptability judgments seem to be affected by processing effects, which plausibly depend on the actual context in which the investigated grammatical structure is instantiated. Such contextual effects may also depend, at least in part, on 'global' interface properties of the clause: for instance, Jurka (2010, 78) notes that in German passive ditransitive structures, the *was-für* split in one noun phrase is judged more acceptable if the other noun phrase is definite.

We are convinced by Jurka's point that the experimental methodology is the only way to empirically assess the status of island effects in a rigorous way, and consequently, we decided to adopt this methodology in our study (see § 3.1). On the other hand, it seems to us that the theoretical approach adopted by Jurka does not allow him to incorporate in his analysis any contextual effects that might account for the nuanced acceptability judgments; in particular, the author does not investigate the potential role of a contextual factor like presuppositionality. In this study, we aim at developing a theoretical framework that may integrate purely grammatical constraints with contextual/interface factors in a single, coherent analysis.

1.2. A starting hypothesis

The three analyses that we reviewed in § 1.1.1 - § 1.1.3 agree w.r.t. two ‘extreme’ cases:⁴ on the one hand, an unmoved and non-D-linked internal argument is transparent for extraction, cf. (10); on the other hand, a D-linked external argument occupying a derived position blocks extraction, cf. (11). For ease of exposition, we abbreviate the three proposals with the following acronyms: Derived subject position (**DS**), External argument (**EA**), D-linking (**DL**).

(10) il personaggio di cui è stata pubblicata **[un’intervista _]** **-DS -EA -DL**
the personality of whom has been published an interview

(11) [?]* il personaggio di cui **[l’intervista_]** ha provocato uno scandalo **+DS +EA +DL**
the personality of whom the interview has raised a scandal

All the other cases in which the three factors disagree constitute a *grey area* where acceptability judgments are not clearcut: they are unstable from speaker to speaker, and from one example to the next. (12) is an illustrative paradigm.⁵

- (12) a. il personaggio di cui è stata pubblicata **[l’intervista _]** **-DS -EA +DL**
the personality of whom was published the interview
- b. il personaggio di cui **[l’intervista _]** è stata pubblicata ieri **+DS -EA +DL**
the personality of whom the interview was published yesterday
- c. il personaggio di cui **[un’intervista _]** è stata pubblicata ieri **+DS -EA -DL**
the personality of whom an interview was published yesterday⁶
- d. il personaggio di cui mi ha scandalizzato **[un’intervista _]** **-DS +EA -DL**
the personality of whom me scandalized an interview
- e. il personaggio di cui mi ha scandalizzato **[l’intervista _]** **-DS +EA +DL**
the personality of whom me scandalized the interview

⁴ Cf. Jurka (2010, § 3.1.3.4).

⁵ In this paradigm, a definite subject is taken to be D-linked and an indefinite to be at least potentially non-D-linked. This is a simplification, but it is not problematic for our illustrative purposes here (see further note 11 below).

⁶ An anonymous LI reviewer judged this example grammatical. We find it slightly better than (12b), but still worse than (10), and therefore we believe that it falls in the ‘grey area’. Given the unstableness of such judgements, our claims will be based on experimental results (§3.1).

- f. il personaggio di cui [un'intervista _] mi ha scandalizzato -DS +EA -DL
the personality of whom an interview me scandalized

We believe that this observation should be taken very seriously: it is an *empirical fact* to be explained, and not a failure to properly idealize the data. As a matter of fact, the grey area is much more extended than the small subset of clearcut cases like (10)-(11) (witness the fact that no consensus has been reached yet on a dichotomous empirical generalization).

Consider now from this perspective the three factors listed above. Factors DS and EA are categorical, in that they refer to easily identifiable structural properties of the subject: therefore, they predict different but equally consistent patterns of acceptability, and they cannot account for the observed grey area. Only factor DL is compatible with the observed variability, since as is well known, certain noun phrases are ambiguous between a D-linked and a non-D-linked interpretation.

On these grounds we assume, as a starting hypothesis, that D-linking (presuppositionality) is the crucial factor that is responsible for subject island effects, and we preliminarily hypothesize that factors (i) and (ii) may be relevant to the extent that they contribute to determine a D-linked interpretation of the subject.

2. Presuppositionality and island effects

Our starting hypothesis is not novel: the idea that presuppositionality induces islandhood was systematically explored by Diesing (1992), building on Fiengo and Higginbotham (1981). In this section, we briefly summarize Diesing's proposal and the reinterpretation of it proposed by Ladusaw (1994).

In exploring the interpretive properties of indefinite noun phrases, Diesing builds on Carlson's (1977) distinction between individual-level predicates – expressing a stable and characterizing property of an entity – and stage-level predicates, expressing a transitory property. Crucially, individual-level predicates only allow for presuppositional subjects, whereas stage-level predicates are compatible with both presuppositional and non-presuppositional subjects. For instance, the i-level predicate *altruistic* in (13a) induces a presuppositional interpretation of the subject bare plural (whereby the set of firemen is presupposed to be nonempty). On the contrary, the s-level predicate *available* allows for a reading whereby the existence of firemen is not

presupposed, but it is *asserted* that there exist some available firemen (in the circumstance of evaluation).

- (13) a. Firemen are altruistic. (i-level)
b. Firemen are available. (s-level)

The asymmetry is captured by Diesing in syntactic terms. On her analysis, individual-level predicates are control predicates, whose subject is generated outside VP; on the contrary, with stage-level predicates the subject originates within VP, and even if it raises to a VP-external position, it may undergo reconstruction. Diesing then proposes a Mapping Hypothesis whereby:

- a) VP-external indefinites receive a presuppositional interpretation;
b) VP-internal indefinites are non-presuppositional and get bound by a default existential closure applying at the VP-level.

This syntactic account of presuppositionality implies interesting consequences in the domain of island effects. By hypothesis, all presuppositional noun phrases occupy a VP-external position at LF, and such a derived position is not transparent for extraction:⁷ therefore, presuppositionality entails islandhood. As a matter of fact, the necessarily presuppositional subjects of i-level predicates are absolute islands (14a), whereas subjects of s-level predicates can be transparent for extraction (14b):

- (14) a. *Was sind für Schuhe wasserdicht? (i-level)
what are for shoes waterproof?
b. Was sind für Karotten im Kühlschrank? (s-level)
what are for carrots in-the refrigerator? (Diesing 1992, 40)

Although its empirical consequences are quite interesting, Diesing's Mapping Hypothesis seemed rather stipulative. However, Ladusaw (1994) proposed a reinterpretation of it in terms of the 'Brentanian' distinction between categoric andthetic judgments. To characterize these very roughly, we may say that athetic judgment is a simple judgment whereby we accept or reject the existence of an object (or eventuality); a categoric judgment is instead a compound judgment, whereby we

⁷ In Diesing's approach, this is because a noun phrase sitting in a derived position is not L-marked, and hence it qualifies as a barrier for extraction (in Chomsky's 1986 *Barriers* system).

first accept the existence of an object, and then we accept or reject the judgment that this object has a certain property (cf. Kuroda 1972, 2005).

Rephrasing this distinction in the terms of model-theoretic semantics, Ladusaw proposed thatthetic judgments correspond to semantic structures where the subject is neither quantificational nor referential, but it is interpreted as part of the description of an eventuality: therefore, it is interpreted within the predicative nucleus of the clause, where it falls in the scope of unselective existential closure.⁸ On the contrary, categorical judgments correspond to structures where the subject is quantificational and combines with a property (of type $\langle e,t \rangle$): therefore, the subject is compositionally external to the subtree which denotes the relevant property. Syntactically, this means that the subject is interpreted in different positions *at the interface*. The subject of athetic structure, even if it moves to IP for syntactic reasons, will undergo reconstruction into the base position, as schematically represented in figure 1. On the other hand, the subject of a categorical structure must occupy a high derived position at the interface; if we assume – *pace* Diesing (1992) and Kratzer (1995), and in line with more recent assumptions – that all subjects originate within v/VP, then the subject of a categorical structure necessarily raises from its thematic position (either overtly or covertly), and cannot undergo reconstruction into it (cf. figure 2).

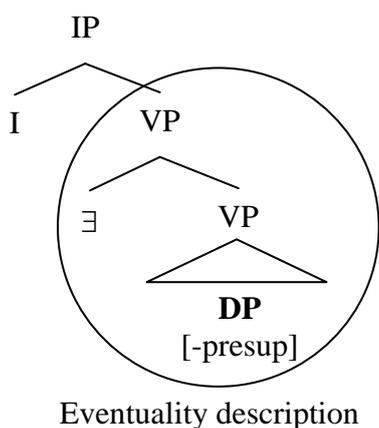


Figure 1 Thetic structure

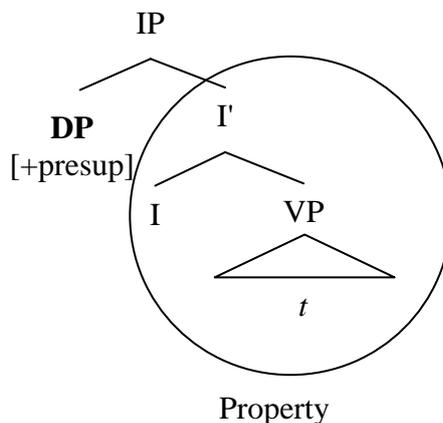


Figure 2 Categorical structure

⁸ Alternatively, a predicate-internal indefinite subject can be interpreted via predicate restriction in the sense of Chung & Ladusaw (2005).

Note that presuppositionality follows as a side effect of the thetic/categorical divide: the subject of a thetic structure – which asserts existence – must lack any existential presupposition (and *a fortiori* D-linking), whereas in a categorical structure, the subject must be presuppositional.

Furthermore, as noted by Carlson and Diesing, the nature of the predicate constrains the semantic structure: s-level predicates are compatible with either a categorical or a thetic structure, whereas i-level predicates are only compatible with a categorical structure. Hence, the subject of an i-level predicate is always presuppositional.

In the following section, we build on Ladusaw's proposal in order to link subject island effects to presuppositionality, and the latter, in turn, to the type of syntactic structure that is required at the interface with the interpretive component.

3. The Extraction from Subject Constraint

With this characterization of the syntax of categorical vs. thetic structures, we can now formulate a constraint on extraction from subjects:

(15) *Extraction from Subject Constraint (ESC):*

Only a subject occupying a thematic position *at the interface* is transparent for extraction.

In the Minimalist approach, a thematic position corresponds to an argument's 'first Merge' position. We maintain for concreteness that the thematic position of the subject is VP-internal with unaccusative predicates, and it is spec,vP with unergative predicates; however, even more refined hypotheses (e.g. Ramchand 2008) are compatible with our argument. We will provide experimental evidence to the effect that it is irrelevant for extraction whether the thematic position of the subject is the internal or external argument position.

This formulation immediately raises a fundamental question: why should extraction be sensitive to the interface status of the constituent from which we extract? We will return to this serious concern in § 5; in this section, we first discuss the empirical predictions of the ESC.

The ESC implies that only a subject that is totally reconstructed into a thematic position is transparent for extraction. In the light of the thetic/categorical opposition discussed in § 2, this amounts to the following constraint:

(16) Only the subject of a thetic structure is transparent for extraction.⁹

Recall now that individual-level predicates are only compatible with a categorical structure, whereas stage-level predicates are compatible with both a categorical and a thetic structure. We then have the following empirical predictions:

- (17) i. The subject of an individual-level predicate is never transparent for extraction.
 ii. The subject of a stage-level predicate is transparent only if it is part of a thetic structure (hence, non-presuppositional).

(17i) predicts clearcut unacceptability (it must be noted, however, that some predicates are ambiguous between an individual- and a stage-level interpretation: see Diesing 1992, ch. 2 for discussion).¹⁰ On the other hand, (17ii) leaves room for a fair

⁹ An anonymous LI reviewer pointed out that according to Ladusaw (1994) and Kuroda (1972, 2005), in Japanese categorical subjects are marked by *-wa*, and thetic subjects by *-ga*; (16) then predicts that *-wa* marked subjects should be islands, whereas *-ga* marked subjects should be transparent for extraction. Giving a minimal pair with extraction examples from *ga*-marked subjects from the existing literature, this prediction seems to be borne out: in (i), the *ga*-marked subjects is not an island for extraction (example from Saito 1994, 226, ex. (84b)), whereas in (ii), the *wa*-marked subject is (Shoichi Takahashi p.c.):

- | | | | | | | | |
|-------|---------------|---------|-------------------|--------|----------|--------------|----------------|
| (i)? | <i>Nani-o</i> | John-ga | [Mary-ga <i>t</i> | katta] | koto]-ga | mondai-da | to] |
| | what.ACC | J.NOM | M.NOM | bought | fact NOM | problem-is | Comp |
| | omotteru | no | | | | | |
| | think | | Q | | | | |
| (ii)* | <i>Nani-o</i> | John-ga | [Mary-ga <i>t</i> | katta | koto]-wa | mondai-da to | toomotteru no? |
| | | | | | TOP | | |

‘What does John think that [the fact that Mary bought *t*] is a problem?’

On the other hand, *wa*-marked phrases may not be a uniform class: cf. Kuroda (2005), Vermeulen (in press).

¹⁰ As an illustration, the individual-level adjective *simpatico* (likeable) becomes compatible with a phasal adverbial like *by now* when a specific ‘point of view holder’ is made explicit:

- (i) Gianni è (?* ormai) simpatico.
 John is (by-now) likeable

degree of variation: the acceptability of extraction will depend on whether the overall context favors a categorical or a thetic interpretation of the relevant sentence. Various factors may be at play in this. One relevant factor is the nature of the subject: if it is inherently quantificational, or it is a presuppositional definite description,¹¹ it has to be interpreted outside the predicative nucleus, forcing a categorical structure. In § 3.2 and § 4.2 we will discuss one structural factor that seems to be relevant in Italian, namely, the surface position of the subject.

In (18) we provide a prototypical paradigm to test the predictions (17). (18a) exemplifies extraction from an indefinite subject with an individual-level predicate: this is predicted to be unacceptable, because the structure is necessarily interpreted as categorical. (18b) exemplifies extraction from an indefinite subject with a clearly stage-level predicate (the stage-level interpretation is enhanced by the phasal adverbial *already*): this is predicted to be significantly more acceptable than (18a). Finally, (18c) exemplifies extraction from a definite subject of a stage-level predicate; assuming that the definite subject is presuppositional (cf. note 11), extraction is

(ii) Gianni mi è (ormai) simpatico.

John to-me is (by-now) likeable

¹¹ It must be noted that on Ladusaw's analysis definiteness does not necessarily imply presuppositionality (Ladusaw 1994, 5-6); as a matter of fact, the judgment about (18c) is not clearcut for our informants. It seems that, at least in English, definite noun phrases are not always interpreted as presuppositional (examples from Abbott 2001, (25)-(26)):

(i) There was the wrong address written on the envelope.

(ii) There was the air of the successful businessman about him.

(iii) There is the outline of a human face hidden in this puzzle.

Here, the definite article seems to mark uniqueness independently of familiarity/presuppositionality. We know of no comprehensive account of presuppositional and non-presuppositional definites (see Abbott 2001, Roberts 2003 for relevant discussion). One distinguishing criterion could be the following: if a definite can be replaced by a partitive phrase, it is presuppositional. From the perspective of the ESC, non-presuppositional definites are not expected to be islands. The unstableness of judgements with definite subjects probably relates to a potential ambiguity between a presuppositional and a non-presuppositional reading.

expected to be degraded w.r.t. (18b). Preliminary testing with some native speakers indicated that these predictions are on the right track.¹²

(18)[*Context: An art collector has ordered reproductions of a number of masterpieces: some big-size reproductions and a small-size one for each.*]

- a. ?* Of which masterpiece is [one reproduction_] absolutely perfect?
- b. Of which masterpiece is [one reproduction_] already available?
- c. ? Of which masterpiece is [the small-size reproduction_] already available?

In order to systematically test these predictions, we performed an experiment with native speakers of Italian, which is reported in the next subsection.

3.1. Experimental evidence

In preparing the experimental materials, two syntactic properties of Italian had to be taken into account.

First, in main interrogative clauses subject inversion is obligatory, and a non-inverted subject is strongly marginal ((19a-b); cf. Rizzi 1996). On the other hand, under long-distance movement of the interrogative phrase, subject inversion is not mandatory (19c):

- (19) a. Quale libro avrà comprato Gianni per Maria?
 which book will-have bought John for Mary
- b. ?? Quale libro Gianni avrà comprato per Maria?¹³
 which book John will-have bought for Mary?

¹² The examples in (18), like (8) above, involve pied piping of the preposition rather than extraction of the complement of the preposition. Their grammaticality the opposite of what one would expect in the light of Cinque (1990a, cf. 3), who argued that DPs, but not PPs, have the option of exploiting a null resumptive pronoun in case of apparent extraction from an island. According to Jurka (2010, ch. 5), the pied piping case is actually not an instance of extraction: the PP is base-generated in a hanging topic position, cf. (i) (Jurka 2010, 151):

(i) Of which cars was it the case that the hoods (of those cars) were damaged by the explosion?

However, it seems to us that such a non-extraction analysis can hardly account for the different degrees of acceptability in (18). A similar proposal by Longobardi (1991) is discussed below (examples (76)-(77)). See also note 41 for a different proposal on the pied piping/P-stranding contrast.

¹³ If the interrogative phrase is a bare *wh*-phrase, the deviance of (19b) is even stronger.

- c. Quale libro pensi che Gianni avrà comprato per Maria?
 which book (do you) think that John will-have bought for Mary?

Therefore, in order to be able to test the islandhood of preverbal subjects, we consistently used examples of long-distance *wh*-extraction from the subject of a complement clause.

Secondly, as is well known, Italian differs from English in allowing for ‘free subject inversion’:

- (20) È arrivato Gianni.
 is arrived John

Thus, in principle individual and stage-level predicates might combine with either a preverbal subject or a freely inverted subject. In designing our experiment, we did not make any assumption about a possible relationship between the surface position of the subject and its mapping into a categorical vs.thetic structure. Actually, free inversion is sensitive to a number of constraining factors when the subject is not narrowly focussed, as we will discuss in § 4.2. One syntactic constraint emerges with transitive predicates: these severely restrict the possibility of free inversion, especially when the internal argument remains within the VP (for discussion, see Belletti 2004 and Alexiadou & Anagnostopoulou 2001, 2007). For this reason, since it was impossible to fit them in the four conditions of our experiment, we did not consider transitive predicates, and we restricted our investigation to intransitives.

The experimental paradigms are exemplified in (21). We tested the possibility of long-distance *wh*-movement from a preverbal and a postverbal subject, both with individual-level predicates and with stage-level ones. The two types of predicates were discriminated by the possibility of co-occurrence with phasal adverbs like *già* ‘already’ and *ancora* ‘still’. Both unaccusative and unergative predicates were tested. Other factors were kept constant:

- a) the extracted *wh*-PP always contained a lexical restriction (this factor is known to favour extraction: cf. Cinque 1990a, Starke 2001 for discussion);¹⁴

¹⁴ As discussed in Cinque’s (1980) seminal paper, in Italian it is possible to extract from a DP only a genitive PP headed by the preposition *di* ‘of’ which qualifies as the *subject* of DP, i.e. occupies the

- b) the subject was always a non-partitive indefinite (since partitives are inherently presuppositional, cf. Enç 1991);
- c) the predicate was an adjective (only in one paradigm, an intransitive verb. The unaccusative/unergative opposition for adjectives is discussed in detail below.)

(21) [*Context: a discussion between two experts on constitutional law:*]

a. **[i-level, preverbal]**

Di quale articolo ritieni che **[una revisione_]** sarebbe incostituzionale?
 of which section (do you) think that a revision would be unconstitutional

b. **[i-level, postverbal]**

Di quale articolo ritieni che sarebbe incostituzionale **[una revisione_]**?
 of which section (do you) think that would be unconstitutional a revision

c. **[s-level, preverbal]**

Di quale articolo ritieni che **[una revisione_]** sarebbe ormai opportuna?
 of which section (do you) think that a revision would be by-now timely

d. **[s-level, postverbal]**

Di quale articolo ritieni che sarebbe ormai opportuna **[una revisione_]**?
 of which section (do you) think that would be by-now timely a revision

The data were collected with a controlled judgment elicitation technique.

The experimental items consisted of 8 paradigms like (21), with 4 variable combinations each (2 subject positions X 2 predicate types). The items were divided into four different experiments (Latin Square design): in every experiment each of the four conditions (a-d) was tested with two items, so that only one example was extracted from each paradigm. The items were interspersed with an equal number of fillers, with various degrees of acceptability, and were presented in a randomized order. All subjects performed the four experiments at different times via an on-line interface. They were asked to indicate the degree of acceptability of each presented sentence on a continuous bar with 400 points. Figure 3 shows a snapshot of the data presentation:

most prominent position within the DP. See also Longobardi (1991) and, for a recent reformulation, Cinque (2011). For further discussion of this constraint, see note 37 below.

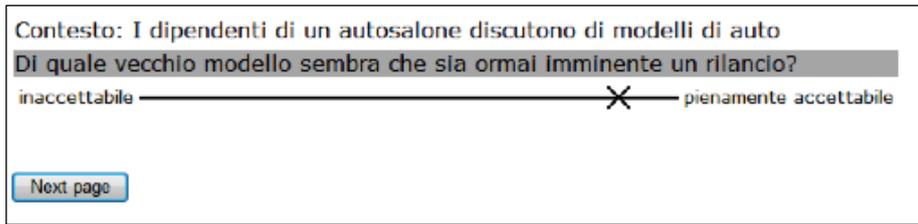


Figure 3 Experiment screenshot

The experimental subjects were 13 adult native speakers from Northern and Central Italy, who were recruited personally or by e-mail by the investigators.

The data were collected through an online interface implemented with Osucre (Van Acker 2007), and the results were analyzed with R using a within-subject analysis, 2-way ANOVA.

At first, we can observe a great variability in grammaticality judgments (Box Plot, Figure 4). Despite this, two interesting results emerged: first, although there is no significant dependence of acceptability on the verb type ($F(1, 12) = 3.411.5$ $p = 0.09$), there is a significant effect on subject position ($F(1, 12) = 8.58$ $p = 0.01$). Even more importantly, we found a strongly significant effect on the interaction between subject position and verb type ($F(1, 12) = 8.58$ $p = 0.003$), cf. also Figure 5.

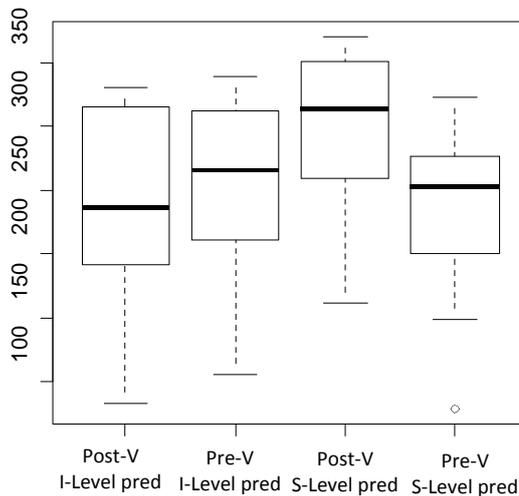


Figure 4 Box Plot A

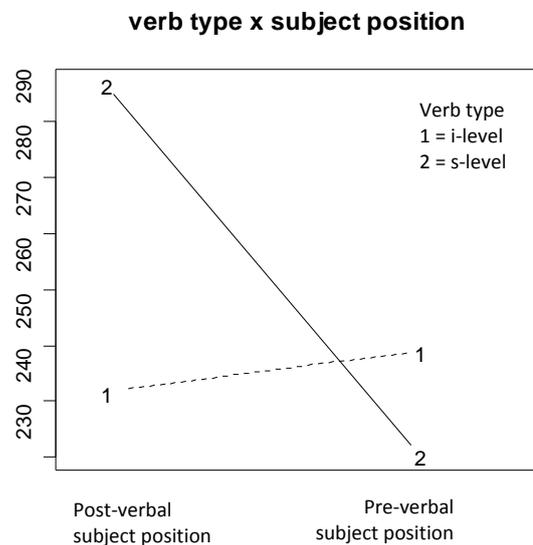


Figure 5 Variables interaction

3.2. Discussion

The experimental results show that by itself, the type of predicate (individual- vs. stage-level) is not a significant factor, while the pre- vs. post-verbal position of the subject is significant. When the two factors are combined, however, a much stronger asymmetry emerges.

As shown in figure 5, in the case of individual-level predicates the different subject positions in conditions (a) and (b) do not yield a significant difference ($F(1, 12) = 0.33$ $p = 0.6$). This is consistent with the ESC, given that individual-level predicates can only inhabit a categorical structure; thus, even if the subject appears post-verbally, it cannot be interpreted in the thematic position at the interface. (There is actually independent evidence that free subject inversion is deviant with individual-level predicates; we return to this point in § 4.2.)

On the contrary, in the case of stage-level predicates the difference between extraction from a pre- vs. postverbal subject is highly significant ($F(1, 12) = 13.56$ $p = 0.003$). At first sight, this is not expected under the assumption that Universal Grammar allows for total reconstruction of the subject in thetic structures. In fact, the low degree of acceptability of extraction in condition (c) contrasts with the reported acceptability of extraction from preverbal subjects of stage-level predicates in English, as in e.g. (8), repeated here:

(8) Of which car was [the driver _] awarded a prize?

From the perspective of the ESC, the island effects observed in condition (c) leads us to hypothesize that in Italian, as opposed to English, preverbal subjects resist reconstruction even when the predicate is stage-level.

Interestingly, this hypothesis is independently supported by evidence concerning scopal interactions. It has long been noted that in Italian, contrary to English, preverbal subjects tend not to reconstruct into the scope of a lower operator. Consider for instance the contrasts in (22)-(24) (the English examples (22a) and (24a) are taken from McCloskey 1997, 207, (11)):

- | | |
|------------------------------------|---------------------------------|
| (22) a. Every player didn't score. | (\forall not $>$ \forall) |
| b. Ogni giocatore non ha segnato. | (* not $>$ \forall) |

- (23) a. A unicorn seems [*t* to be in the garden]. ($\sqrt{\text{seem}} > \exists$)
 b. Un unicorno sembra [*t* essere nel giardino]. (?*seem > \exists)

- (24) a. Most guests might be late. ($\sqrt{\text{might}} > \text{most}$)
 b. La maggior parte degli ospiti potrebbe essere in ritardo. (?* might > most)

(22) shows that a universally quantified subject can be interpreted in the scope of negation in English, but not in Italian. This implies that in English, the preverbal subject can reconstruct into a lower position (cf. McCloskey 1997, 207). In Italian, on the contrary, the preverbal subject seems to be frozen in place, and it cannot be interpreted in the scope of negation. Similarly, in the English example (23a) the existentially quantified subject can be reconstructed in the scope of the raising verb *seem*, whereas the same is impossible in Italian (23b). This evidence suggests the following descriptive generalization:

(25) In Italian, preverbal subjects tend not to reconstruct.

Intuitively, this tendency may be related to the availability in Italian of one further subject position, namely, the free inversion position; we refer in particular to free inversion under broad focus in declarative clauses.¹⁵ The exact nature of the free inversion position is controversial, and possibly different depending on the unaccusative/unergative divide. It may be the internal argument position (complement of V) with unaccusative predicates, and the external argument position (spec, VP/vP) with unergatives (cf. Longobardi 2000). Alternatively, Belletti (1988) argued that only indefinite subjects of unaccusative predicates fills the internal argument position, whereas definite unaccusative subjects, and all unergative subjects, are adjoined to VP. Independently of their exact location, there is evidence that freely inverted subjects are internal to the predicative nucleus of the clause (they are not preceded by

¹⁵ We leave aside inversion in matrix interrogative clauses like (19a), which might involve a different structural position (cf. Guasti 1996, § 5.6). We also leave aside narrowly focussed subjects, and in general, postverbal subjects that are preceded by an intonational break, which allow for inversion under different conditions than subjects under broad focus (cf. Pinto 1997) and have a different syntax (cf. Longobardi 2000, Belletti 2004).

an intonational break, and they undergo negative concord); hence, from the present perspective, they do not give rise to a categorical structure. The non-categorical status of postverbal subjects is independently argued for by Cardinaletti (2004, 151).

We can then reason as follows: plausibly, free inversion involves a more economical derivation than movement to the preverbal subject position.¹⁶ By local economy of derivations, free inversion will be chosen wherever possible, giving rise to a thetic structure; consequently, in any structure that allows for free inversion, a preverbal subject will be interpreted as categorical, and it will fail to reconstruct. That is, the fact that two surface subject positions are available leads to a ‘specialization’ which minimizes the reconstruction (or covert raising) steps.¹⁷ (25) can then be restated more precisely in the following terms: in any structure where free inversion is possible, movement to the preverbal subject position will disallow reconstruction. This line of reasoning leads us to expect that, when free inversion is syntactically blocked and movement is mandatory, the preverbal subject is not necessarily interpreted as categorical (cf. also Cardinaletti 2004, 152, (145)): hence, it should allow for reconstruction and satisfaction of the ESC. This prediction remains to be investigated. On the other hand, English lacks free inversion, and therefore, there is no more economical option than to move the subject to a preverbal position; then, the only way to obtain a thetic structure is by reconstruction. Therefore, preverbal subjects of stage-level predicates can be reconstructed (cf. (23a)/(24a)) and, by the ESC, they can be transparent for extraction (cf. (22)).

Going back to Italian, recall that the postverbal subjects of stage-level predicates in the last experimental condition (d) show the highest degree of transparency. This is

¹⁶ If the inverted subject is in a thematic position, this option is more economical by definition; if it occupies a Focus position in the left edge of vP (Belletti 2004), it remains within the phase boundary, whereas movement to the TP layer will require crossing the vP phase boundary.

¹⁷ A similar suggestion for German can be found in Bayer (2006, note 5): “It appears that even sentences with easily processable inverse scope such as Paul Hirschbuhler’s example *A flag was hanging from every window* seem to preferentially invoke the awkward reading in German such that *dass eine Fahne aus jedem Fenster hing* suggests that one and the same flag could hang from all the different windows. The distributive reading may be blocked by the word order option *dass aus jedem Fenster eine Fahne hing*.” For recent discussion, see Bobaljik & Wurmbrandt (2011).

predicted by the ESC, given that such postverbal subjects are internal to the predicative nucleus, and yield a thetic interpretation. Note that this conclusion holds irrespectively of whether the postverbal subject directly fills a thematic position or not: if it does not, it will nevertheless allow for reconstruction into the thematic (external or internal argument) position, so as to satisfy the ESC.

At this point, we can also reconsider the role of the two other factors that have been identified in the literature as conditioning factors for islandhood, as discussed in § 1.1.1 - § 1.1.2 above.

As for factor DS (derived vs. base position), we have seen that derived subjects qualify as islands only to the extent that the derived position favours a categorical interpretation of the subject: this is robustly the case in languages like Italian (cf. (25)), but not in English (cf. (18b), (22)).

As for factor EA (external vs. internal argument), we believe that internal arguments tend to be more transparent than external arguments because, for the most part, unaccusative and passive predicates describe a *change of state*, which cannot constitute a characterizing property of the internal argument: hence, these predicates qualify as stage-level, and they are compatible with a thetic structure.

In § 1.2, we have already argued that factor EA cannot account for the observed variation in acceptability judgements. Nevertheless, it is important to consider cases where the empirical predictions of our ESC differ from those of EA. It can be shown that unaccusativity is neither a necessary nor a sufficient condition for the transparency of the subject.

Cinque (1990b) identified a number of empirical tests to distinguish unergative vs. unaccusative predicates within the class of adjectives in Italian; we only consider three tests here. One standard unaccusativity test is the possibility of cliticization of *ne* out of the subject, as exemplified in (26a):

(26)a. Ne sono note le tendenze. (Cinque 1990b, (13b))

of-them are well-known the tendencies

b. * Ne è stata ingiusta la condanna. (Cinque 1990b, (17b))

of-them has been unjust the condemnation

Another unaccusativity test suggested by Cinque is the possibility for the adjective to occur in an adjunct *as*-clause:

- (27) a. Come era [prevedibile_], Gianni non è venuto. (Cinque 1990b, (43b))
 as was foreseeable, John did not come
 b. * Come era [possibile_]_, Gianni ha vinto. (Cinque 1990b, (44c))
 as was possible, John won

A third test is the selection of the particle *di* to introduce an infinitival complement, as exemplified in (28): only unaccusative adjectives select the particle.

- (28) a. Non gli era noto *(di) essere così famoso. (Cinque 1990b, (53a))
 not him was known *di* to-be so famous
 b. Mi è impossibile (*di) aiutarti. (Cinque 1990b, (54a))
 to-me is impossible *di* to-help you

Cinque also considered transparency for extraction to be an unaccusativity test.¹⁸ However, on closer inspection we can see that the subject of a stage-level predicate can be fully transparent for extraction (29a)-(30a) even if it fails the three unaccusativity tests (29b-d), (30b-d):

- (29) a. [Di quale legge] ritieni che sarebbe utile [una revisione _] ?
 of which law (do you) think that would-be useful a revision?
 b. ?* (Di questa legge), **ne** sarebbe utile [una revisione _].
 of this law, of-it would-be useful a revision
 c. ?* Come era utile, abbiamo controllato i documenti.
 as was useful, (we) have checked the documents
 d. E' utile (* di) discutere.
 (it) is useful (* di) to-discuss

¹⁸ In his note 9, Cinque gives the following examples:

- (i) Mario, di cui è nota/imminente una presa di posizione sul tema,...
 M., of whom is well-known/forthcoming a statement on the subject, . . .
 (ii)* Mario, di cui è pericolosa/ingiustificata una presa di posizione sul tema,...
 M., of whom is dangerous/unjustified a statement on the subject, . . .

As it happens, the unaccusative predicates in (i) are also stage-level, whereas the unergative predicates in (ii) are individual-level.

- (30) a. Di quale procedimento ritieni che sia ancora possibile **[una modifica_]**?
of which procedure (do you) believe that is still possible a modification
- b. ?* Ne è ancora possibile una modifica.¹⁹
of-it is still possible a modification
- c. * Come era [possibile]_, Gianni ha vinto. (= (27b))
as was possible, John has won
- d. E' possibile (* di) modificarlo.
(it) is possible *di* to-modify-it

Thus, unaccusativity is not a necessary condition for transparency (*pace* Cinque 1990b and Chomsky 2008).²⁰

The reverse dissociation is also observed: as shown in (31)-(32), if an unaccusative predicate is individual-level, its subject cannot be extracted from (*pace* Kratzer 1995), be it in preverbal or postverbal position. Individual-level unaccusatives are rare, and we exemplify here with verbal predicates (unaccusativity is witnessed by the selection of the *be*-auxiliary).

- (31)a.*[Di quale regione] sembra che **[alcuni dialetti _]** appartengano alla famiglia
of which area seems that some dialects belong in the Germanic
germanica?
group?

¹⁹ One anonymous LI reviewer finds (i)-(ii) marginally acceptable, with cliticization of partitive *ne*, instead of genitive *ne*:

- (i) ? (Di soluzioni), in questo momento, ne sono possibili tre.
of solutions, in this moment, of-them are possible three
- (ii) Di quelle borse, ne sono necessarie tre.
of those bags, of-them are necessary three

We agree that these are slightly better than the text example (30b), and we have no account for this contrast. It has long been noted that *ne*-cliticization is sometimes possible out of apparently unergative subjects; see Calabrese & Maling (2008, §6) for discussion and references. Note however that, for the purposes of our argument, *ne*-cliticization is just one of the possible tests for unaccusativity; even if it turned out to be unreliable, we could make our point by using Cinque's other tests.

²⁰ Note that in our experiment, two out of the eight experimental paradigms included the adjectives *necessario* (necessary) and *frequente* (frequent), which fail these unaccusativity tests.

- b. * [Di quale regione] sembra che vi appartengano [**alcuni dialetti** _]?
 of which area seems that in-it belong some dialects?
- (32)a. ?* [Di quale dialetto] sembra che [**molti tratti** _] derivino dal substrato celtico?
 of which dialect seems that many features derive from the Celtic substrate?
- b. * [Di quale dialetto] sembra che ne derivino [**molti tratti** _]?
 of which dialect seems that of-it derive many features?

The ungrammaticality of extraction in (31)-(32) shows that unaccusativity is not a sufficient condition for transparency either.

In order to experimentally prove the irrelevance of EA, we ran an additional test, with a design similar to the first experiment, but focusing only on the verb type (unergative vs. unaccusative): we only tested extraction from post-verbal subjects, and we constructed pairs of items differing only in the unergative vs. unaccusative predicate, as exemplified in (33).

- (33)a. [Di quale soprano] *risuonava* nel teatro [la mirabile voce _]? (*unergative*)
 of which soprano *sounded* in the theater the mirable voice _ ?
- b. [Di quale soprano] *si levava* nel teatro [la mirabile voce _]? (*unaccusative*)
 of which soprano *rose* in the theater the mirable voice _ ?

We constructed 8 minimal pairs of sentences like the one in (33). In constructing the experimental items, however, we realized that certain additional factors had to be considered. Recall that in order for a thetic structure to be allowed, the subject must receive a non-presuppositional interpretation. This is easier to obtain with unaccusative (change of state) verbs than with unergative (typically activity) verbs: in particular, extraction sounds deviant when the unergative subject is [+animate]. We believe that this is because the [+animate] subject of an activity verb is typically interpreted as a volitional causer, and hence its existence is presupposed w.r.t. the event described by the verb. However, with [-animate] subjects of ‘emission verbs’, as in (33), the subject is not presupposed, and a thetic interpretation is possible.

Another relevant factor is that in all of the examples that we constructed, a definite subject as in (33) sounded much more natural than an indefinite one. In this respect, the data differ from those of the first experiment, and they fall under a criticism raised

by Longobardi (1991, 82-85). Longobardi noted that in (34), extraction from a definite subject is better than from an indefinite one:

- (34) *quell'uomo politico, di cui ci ha telefonato *un segretario / ? il segretario*
that politician, of whom us has phoned a secretary/ the secretary

Longobardi argued that when the subject is definite, there is no real wh-extraction. The definite DP, whose head is a relational noun, allows a 'possessive' interpretation in which the possessor remains implicit, as in (35):

- (35) *A proposito di Maria, ci ha telefonato il segretario.*
speaking of Mary, us has phoned the secretary (= Mary's secretary)

According to Longobardi, the variant of (34) with a definite subject can be rescued by interpreting the wh-phrase as a topic-like constituent, "with the article marginally acting as a resumptive position for it". In other terms, the marginal variant is not a real instance of extraction.

Note however that 'possessor resumption' as in (35) is possible with a partitive subject, cf. (36a); in (36b), on the contrary, extraction of a wh-PP from a partitive subject is significantly degraded. This contrast is unexpected under Longobardi's account.

- (36) a. *A proposito di Maria, ci ha telefonato uno dei figli.*
speaking of Mary, us has phoned one of-the sons
b. ** Maria, di cui ci ha telefonato uno dei figli, ...*
Mary, of whom us has phoned one of-the sons

Therefore, we conclude that even with a definite subject, genuine extraction is involved. The reason why extraction is degraded when the subject is indefinite is due, we believe, to a confound: with a relational or inalienable possession noun, a non-partitive indefinite is marginal to begin with (compare, for example, *??un figlio di Maria* 'one son of Mary's' to *uno dei figli di Maria* 'one of Mary's sons', or ** una mole del castello* 'one mass of the castle' to *la mole del castello* 'the mass of the castle').

After constructing the pairs of experimental items, we split them in two pseudo-randomized lists (with a balanced number of items and fillers of various degree of

grammaticality) and we administered the lists to 20 adult native speakers from Northern and Central Italy, so that each subject was exposed only to one sentence per pair. The EA hypothesis predicts a significant difference between the two conditions, i.e. extraction from unergative subjects should be significantly worse than extraction from unaccusative subjects.

We analyzed the results using within-subject analysis, 1-way ANOVA, and we found *no significant effect of verb type* ($F(1, 19) = 0.007$ $p = 0.932$) with respect to grammaticality judgment; despite great variability, we could observe (boxplot Fig. 6) that in both conditions the median of judgments falls well above 3/4 of the grammaticality scale, and that the distribution of judgments is mostly within what we can call the “acceptability range”.

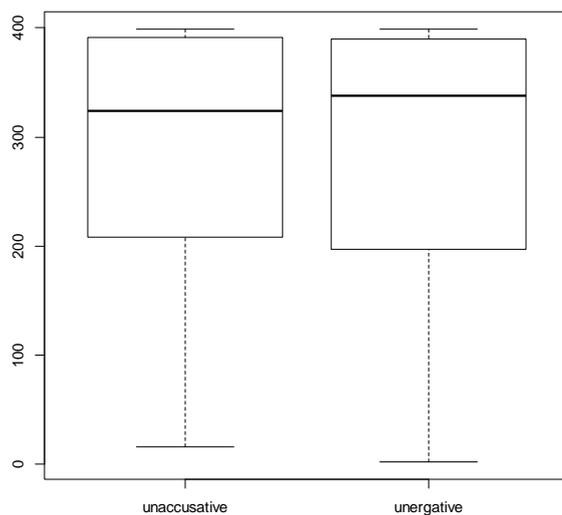


Figure 6 Box Plot B

These experimental results confirm that extraction from the postverbal subject of an unergative stage-level predicate is indeed possible, and that unaccusativity in itself is not a relevant factor.

To conclude, we surmise that internal argument status (EA) favours the transparency of the subject only to the extent that it favours a non-presuppositional reading in athetic structure.

4. Subject positions and the categorical/thetic divide

4.1. The Categorical Subject Criterion

Recall that we assumed above that all subjects originate within the ‘first phase’ vP, where argument structure is determined. On the other hand, a transparent syntax-semantics mapping can obtain only if the subject of a categorical structure is syntactically external to the predicative nucleus at the interface, whereas the subject of a thetic structure is internal to it (cf. figures 1-2). How can the syntax implement this opposition?

A specific proposal was advanced in Cardinaletti (2004, 151-154). Cardinaletti (1997, 2004) argued that there must be at least two distinct subject positions in the preverbal field. One argument is reported in (37): a referential subject can be separated from the predicate by a parenthetical clause (37a), whereas a semantically vacuous expletive cannot (37b):

(37) a. John/He, as you know, is a nice guy.

b. * There, as you know, was a man in the garden.

(Cardinaletti 1997, 45)

For this reason, Cardinaletti distinguished two subject positions:

(38) [_{SubjP} DP [(parenthetical) [_{AgrSP/TP} DP ...]]] (Cardinaletti 2004, (80))

The higher subject position is reserved for the element that qualifies as the *logical subject of predication*: by its very nature, this position cannot be filled by an expletive. The lower subject position, instead, implements subject agreement and checks Nominative Case.²¹ Cardinaletti argued that when a phrase fills Spec,SubjP, the sentence receives a categorial interpretation; when Spec, SubjP is empty, we obtain a thetic interpretation.

Rizzi (2005) rephrased Cardinaletti’s hypothesis in terms of the so called Subject Criterion. A criterion is a requirement which must be satisfied at the syntax-semantics

²¹ For Shlonsky (2000), the higher position checks the person feature, whereas the lower one checks the number feature. We leave for future research an investigation of this potential connection with the person feature.

interface: the specifier of a functional head endowed with a ‘scopal’ feature must be filled by a syntactic constituent sharing the relevant feature. In the case at hand, Rizzi proposed the criterial head *Subj* of (38) carries an [aboutness] feature which must be matched by a DP filling its *Spec* at the interface.

Note that it is an intrinsic property of criterial configurations that the element satisfying a criterion cannot be removed from the criterial position («criterial freezing»: Rizzi 2006, 2010), which means that it cannot undergo further movement steps and, crucially for our purposes, it cannot undergo reconstruction. We will then adopt the following reinterpretation of the Subject Criterion:

(39) The Subject Criterion implements the categorical/thetic opposition:

- i. When a subject moves to the criterial position (*spec,SubjP*), at the interface it is interpreted as external to the predicate, giving rise to a categorical structure.
- ii. When a subject moves to the lower non-criterial position, it is totally reconstructed into the thematic position,²² so that at the interface it is included in the predicative nucleus, in the scope of existential closure. This gives rise to a thetic structure.²³

²² In a single cycle system, this simply means that the non-criterial position is invisible at the interface.

²³ However, there is one apparent difference between Rizzi’s view of criterial freezing and ours. Rizzi (2006) explicitly argues that criterial freezing blocks further movement of the criterial goal, as in (ii) below, but not subextraction from it: this is shown by the grammaticality of (iii), where the criterial *wh*-phrase allows for subextraction (by clefting) of a PP.

(i) Non è chiaro [[quanti libri di Piero] *Q* siano stati censurati].

(it) not is clear how many books by Piero have been censored

(ii) * *E*’ [quanti libri di Piero] che non è chiaro [___ *Q* siano stati censurati]

it is how many books by Piero that it isn’t clear have been censored

(iii) *E*’ [_{PP} di Piero] che non è chiaro [[quanti libri ___] *Q* siano stati censurati]

it is by Piero that it is not clear how many books have been censored (Rizzi 2010b, (19))

On our analysis, the clefted PP in (iii) can be extracted only if the *wh*-subject undergoes reconstruction into the thematic position. How can this be allowed, given that the subject *wh*-phrase has to satisfy at least the *Wh*-Criterion? The answer is that the *wh*-phrase does not undergo total reconstruction, but we only the nominal restriction is reconstructed (cf. Rizzi 2001).

We regard this as a conceptually elegant implementation of the categorical/thetic opposition. Note, however, that the adoption of the Subject Criterion is not a strictly necessary ingredient of our analysis: all that is necessary is that in some way, subject reconstruction is blocked in the derivation of categorical structures, whereas it is mandatory in the derivation of thetic structures.

4.2. *Free subject inversion*

In the previous discussion, we assumed that in free inversion, the postverbal subject position qualifies as a non-criterial position, since it is internal to the predicative nucleus of the clause (and to the focus: Lambrecht 1994, Belletti 2004). In this respect, our reinterpretation of the Subject Criterion in (39) makes a clear prediction: since individual-level predicates require a categorical (i.e. criterial) subject, they are expected to be incompatible with free inversion (under broad focus), contrary to stage-level predicates. This is indeed the case, as shown in (41):²⁴

- (40) a. Sono disponibili alcune guide turistiche. (s-level)
 are available some tourist guides
 b. Sono imminenti piogge torrenziali.
 are imminent rainfalls heavy
- (41) a. * Sono poliglote alcune guide turistiche. (i-level)
 are polyglot some tourist guides
 b. * Sono dannose piogge torrenziali.
 are harmful heavy rainfalls²⁵

²⁴ The examples in (41) are grammatical if the subject is narrowly focussed. For relevant discussion see Pinto (1997), Belletti (2004), Cardinaletti (2004).

²⁵ An anonymous LI reviewer suggested that free subject inversion is also ungrammatical with the non-unaccusative stage-level predicate *utile* 'useful':

(i) * Sono utili piogge torrenziali.
 are.3PL useful.PL rainfalls heavy

This suggests that free inversion is sensitive to unaccusativity, rather than to the stage/individual level nature of the predicate. However, we believe that in (i) the adjective is naturally interpreted as

The unacceptability of (37) supports the idea that the interface maximizes faithfulness to the surface positions, and therefore, a freely inverted subject lying within the predicative nucleus cannot undergo covert raising to yield a categorical structure. In criterial terms, this means that the Subject Criterion must be satisfied overtly (cf. Cardinaletti 2004, 154 for a similar claim).

Note that the deviance of free inversion with individual-level predicates by itself explains the unacceptability of the examples in condition (b) of our experimental paradigms: cf. (21b), repeated here for convenience.

(21)b. [i-level, postverbal]

Di quale articolo ritieni che sarebbe incostituzionale [**una revisione**]?
of which section (do you) think that would be unconstitutional a revision

As a matter of fact, the acceptance rates for this condition were slightly lower than for the (a) condition involving a preverbal subject (in sharp contrast with the asymmetry observed with stage-level predicates), cf. Figure 4 above.

One problem that exceeds the limits of this discussion is under what conditions exactly free subject inversion is licensed. We have seen that the presence of a stage-level predicate is a necessary condition; however, this is clearly not a sufficient condition. As already mentioned, with transitive verbs inversion is restricted (Alexiadou & Anagnostopoulou 2001, 2007; Belletti 2004). Even with intransitive stage-level predicates, free inversion under broad focus is not always felicitous. In particular, Pinto (1997) argued that for it to be possible, there must be a covert deictic locative argument that satisfies the EPP in the place of the syntactic subject.²⁶ If this is a correct generalization, from our perspective we may assume that in free inversion clauses the covert locative argument qualifies as the categorical subject, i.e. satisfies the Subject Criterion. Alternatively, it is possible to maintain that free inversion under broad focus implements athetic structure (as advocated most prominently by

individual-level (i.e. heavy rainfalls are useful *in general*); if the context disambiguates in favour of a stage-level interpretation, we find free inversion fully acceptable; cp. (i) above to (ii):

(ii) In questo momento, sarebbero utili nuove iniziative.

In this moment, be.COND.3.PL. useful.PL new initiatives

²⁶ Cf. also Cardinaletti (2004, 153).

Lambrecht 1994). The choice between the two analyses depends on a wider range of hypotheses than we can possibly discuss here; for our current purposes, the only crucial point is that the free inversion position is non-criterial, and this is consistent with both views.

A final open question is how exactly the categorical/thetic structure relates to Information Structure. Lambrecht (1994) explicitly identifies a thetic structure with a broad focus sentence; on the other hand, Rizzi (2005) argues that even in a broad focus sentence a preverbal subject can be criterial (see also Kuroda 2005 for relevant discussion). As for topics, Ladusaw (1994) explicitly argues that a topic constitutes the subject of a categorical structure. These issues will have to be thoroughly addressed in future research.

4.3. Intermediate summary

To sum up, we have proposed that the islandhood of subjects is determined by their criterial status in a categorical structure: a criterial subject is frozen in place, hence it cannot undergo reconstruction into a thematic position so as to satisfy the ESC, repeated here for convenience:

(15) *Extraction from Subject Constraint*

Only a subject occupying a thematic position *at the interface* is transparent for extraction.

We have provided experimental evidence that supports our proposal, with the proviso that in Italian, preverbal subjects are interpreted as criterial much more commonly than in English – a fact that is plausibly related to the availability of free subject inversion in Italian, as opposed to English.

5. A top-down perspective

In our previous discussion, we left pending a serious concern: the ESC (15) strongly looks like a representational LF filter, and as such, it is hardly compatible with a derivational view of the grammar like the one endorsed in the minimalist framework.

Furthermore, in the case of (8), repeated here, the satisfaction of the ESC requires a *total reconstruction* step, which literally ‘undoes’ the previous movement of the subject DP to Spec-TP, as shown in (8'):²⁷

(8) Of which car was [the driver _] awarded a prize?

(8') [_{CP} [Of which car] was [_{TP} [_{VP} awarded [the driver <of which car>] ...]]]

In this section we argue that both problems can be overcome if we abandon the standard bottom-to-top orientation and we assume instead a top-down derivation along the lines of Chesi (2012). The latter implies that the derived position of a wh-phrase is computed before the thematic position; similarly, the derived subject position is computed before the ‘reconstruction’ position. This allows for a different implementation of long-distance dependencies (§ 5.1.2) and of reconstruction (§ 5.2). In § 5.3 we show how our ESC follows directly from such a system, given an independently motivated constraint on the top-down inheritance of long-distance dependencies.

It is important to stress that the top-down approach adopted here is meant as a model of the grammar itself, and not a model of sentence processing; as a matter of fact, we will argue that it allows for a principled account of the ESC at the theoretical level. At the same time, the top-down model is also explicitly meant to be processing-friendly w.r.t. both generation and parsing: we refer the reader to Chesi (2004:171-173,195-199) for discussion.

²⁷ We may try to avoid these problems by adopting Sauerland & Elbourne’s (2002) hypothesis of PF movement: within narrow syntax, non-criterial subjects remain in the base position – from which a constituent can be extracted – and they undergo movement to the non-criterial derived position only in the PF branch of the derivation. Although we cannot fully discuss this possibility here, it seems to us that a solution along these lines would not be sufficiently general. In particular, the islandhood of presuppositional objects (Diesing 1992, ch. 4), exemplified in (i), still requires reference to the covert interface position derived by Quantifier Raising.

(i) ?* Who did you see [every picture of ___]? (Diesing 1992, 97)

Thus, reference to the interface position of an argument seems to be unavoidable if we want to account for the correlation between presuppositionality and islandhood in a general way. We return to Quantifier Raising in § 5.3 below.

5.1. Sketch of a Top-Down Left-Right grammar

In this section we give an outline of the Top-Down Left-Right minimalist grammar proposed by Chesi (2012), which we will exploit to derive our ESC.

5.1.1. *Phrase structure.* In a Top-Down Left-Right derivation, we start building a structure from the root of the tree (e.g. CP) and we expand it, constituent after constituent, according to:

- i. the minimal set of functional features that are expected within each ph(r)ase, according to the grammatical constraints that are part of our competence;
- ii. the selection requirements of any lexical items introduced in the computation.

To take a concrete example, consider the computation of a DP like *the boy*. In a bottom-to-top derivation, this is the result of a Merge operation that takes two lexical items, a noun and a determiner, and forms a DP constituent. In a Top-Down Left-Right derivation, instead, the grammatical inventory consists of a lexicon and a set of non-terminal well-formed trees:²⁸ when a DP node must be expanded, the system inspects the grammatical inventory and obtains a set of features as the legal grammatical expansion of the DP.

We will prefix functional features with the + sign to distinguish them from lexical ones and we assume that lexical features license functional ones. In the case at hand, we assume that a DP is the extended projection (Grimshaw 1990) of a lexical item N, and that the minimal set of features expected will be the ordered set (+D, N); these features will be lexicalized/expanded sequentially, in the order indicated, yielding the structure $[_N +D N]$.²⁹ For convenience, in the following discussion we will maintain the traditional labels DP, CP, QP etc. whenever the internal feature composition of the phase is irrelevant.

The expansion proceeds by picking up aggregated information from the grammatical inventory (either a lexical item or a non-terminal tree), and by inserting lexical items

²⁸ These are similar to the elementary (initial) trees in Tree Adjoining Grammar (Joshi 1985).

²⁹ We follow Grimshaw (1990) in taking the lexical feature to determine the category of all projections dominating the related functional features. Each constituent is thus an extended projection in Grimshaw's sense.

The lexicalization/expansion of the +wh feature will then introduce more features in the derivation. Recall from (42) that *who* is specified as (+wh, +D, N): now, the (+D, N) features that qualify *who* as an argument are not expected in the functional position, cf. (44.ii).

The fact that these features are not expected forces phrasal movement, but in a completely reversed perspective: the unexpected features are moved into a memory buffer (M-buffer), which is a last-in first-out memory (44.iii). The features are retrieved from the M-buffer and re-merged in the structure as soon as³⁴ a compatible select feature is introduced in the derivation by a lexical head: in (44.iv), the verb *sing* introduces a =DP feature which triggers re-merge of *who* and discharges it from the M-buffer.

In order for a sentence to be grammatical, any dependency must be discharged by re-merging the stored element in an appropriate position. This corresponds to the requirement that the M-buffer be empty at the end of the derivation:

(45) *Success Condition:*

At the end of the derivation, the M-buffer must be empty.

In this system, the notion of successive cyclic movement can be incorporated if we assume that the top-down derivation is divided in phases:

(46) A *phase* is the computation domain in which the system processes the minimal set of features that consists of one lexical feature (either N or V),³⁵ and the related set of functional features (up to QP/DP or CP/IP).

Crucially, phases have a different status depending on their position with respect to the superordinate phase (except for the root phase):

- a. A phase that constitutes the expansion of the last select feature of a lexical head, is computed sequentially with respect to the superordinate/selecting phase, because after the computation of the lexical head and the projection of the last select

³⁴ This implies that the system retrieves featurally compatible elements from the M-buffer to satisfy a select requirement before accessing the grammatical inventory: in more familiar terms, ‘move’ (internal merge) preempts ‘external merge’.

³⁵ For reasons of space, we leave aside adjectives and adverbs.

feature (cf. step (43iii) above), the matrix phase is closed. We will call this a *sequential phase*.

- b. Phases that result from the expansion of a functional feature, or a select feature which is not the last one, are instead computed while the superordinate phase is still not concluded (its lexical head has not yet been lexicalized): hence, these qualify as computationally *nested phases*.

Note that a preverbal subject necessarily constitutes a nested phase. This is due to the fact that, in a top-down derivation, the preverbal subject is computed *before* the lexical head of the superordinate phase. The superordinate phase can only be closed when its lexical head has been computed and all its selectional (i.e. thematic) requirements have been expanded. Consequently, while the preverbal subject is computed the superordinate phase is still necessarily open: this results in computational nesting.

Crucially, each phase has its own M-buffer, and successive-cyclic movement proceeds by transmitting the content of the M-buffer of a phase to the M-buffer of another phase; assuming that an element that it is first inserted in a certain phase must be fully licensed in that phase or in a position selected by the lexical head of that phase, we propose that the inheritance between the M-buffers of two different phases be regulated by the following principle (Chesi 2007, 2012; Bianchi & Chesi 2006):

(47) Computational nesting preempts inheritance:

- i. nested phases cannot inherit the content of the M-buffer of the superordinate, containing phase;
- ii. the sequential phase, instead, can inherit the content of the M-buffer of the preceding phase.³⁶

The conceptual motivation for this inheritance asymmetry between sequential and nested phases comes from considerations of computational complexity (Chesi 2007, §3). Briefly, from an algorithmic perspective, a movement dependency significantly increases the complexity of the problem of which dominance relations have to be associated to a given set of precedence relations: at worse, any item could be

³⁶ The distinction between *nested* vs. *sequential* phases corresponds to *true* vs. *tail* recursion (in the algorithmic sense of Abelson & Sussman 1996).

remerged into any lower position. Hence, the complexity order of the problem is exponential on the number of nodes to be recursively expanded: this is not a satisfactory result, since the growing rate of the searching algorithm would make the problem quickly intractable (Chesi 2012:159-170).

If movement is limited within the phase boundaries, the complexity of the problem is dramatically reduced: for any moved element, we would have only one possible “landing site” position within each phase (i.e. a selected position). Assuming, for instance, that only one item is moved, that each phase head has at most 3 selected positions (Pesetsky 1982) and that (in the worst case) all of them must be evaluated before successfully discharging the moved item, each sequential phase opened would linearly increase the number of possible landing sites of 3, hence if s is the number of sequential phases, $3s$ is the worst number of possible landing sites to be inspected. On the other hand, assuming that k is the (maximum) number of nested phases that can be expanded while the superordinate phase is not closed yet, and that all of them can be expanded n times in other k nested phases, we obtain at least $3k^n$ possible landing sites to be evaluated.

Since the inheritance constraint (47) effectively prevents a long-distance dependency from being discharged into a selected position contained in a nested phase, we thus prevent the predicted exponential increase of the complexity of the computation.

The distinction between sequential and nested phases accounts for left-branch islands (48) vs. successive cyclic extraction from complement clauses (49), by virtue of the constraints posed on the inheritance mechanism. Consider first the extraction of *who* from a preverbal subject in (49) (figure 6). The *wh*-phrase gets stored in the M-buffer of the matrix verbal phase. The derived subject constitutes a nested phase, expanding a functional feature +S; consequently, by (47.i) it cannot inherit the *wh*-phrase from the M-buffer of the matrix phase: this accounts for the subject island effect.

(48) ?* Of which masterpiece is [one reproduction _] absolutely perfect?

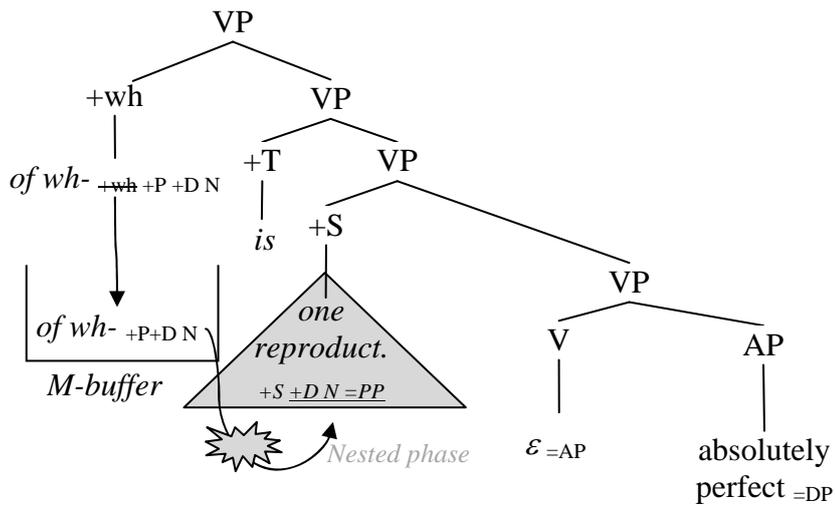


Figure 7 example (48)

In (47), instead, successive cyclic movement obtains via inheritance between sequential phases, as schematically illustrated in figure 7 (where the numbered arrows indicate the order of the derivational steps):

(49) Who did you think [that David said [that Lou claimed [that Andy hated _]]?

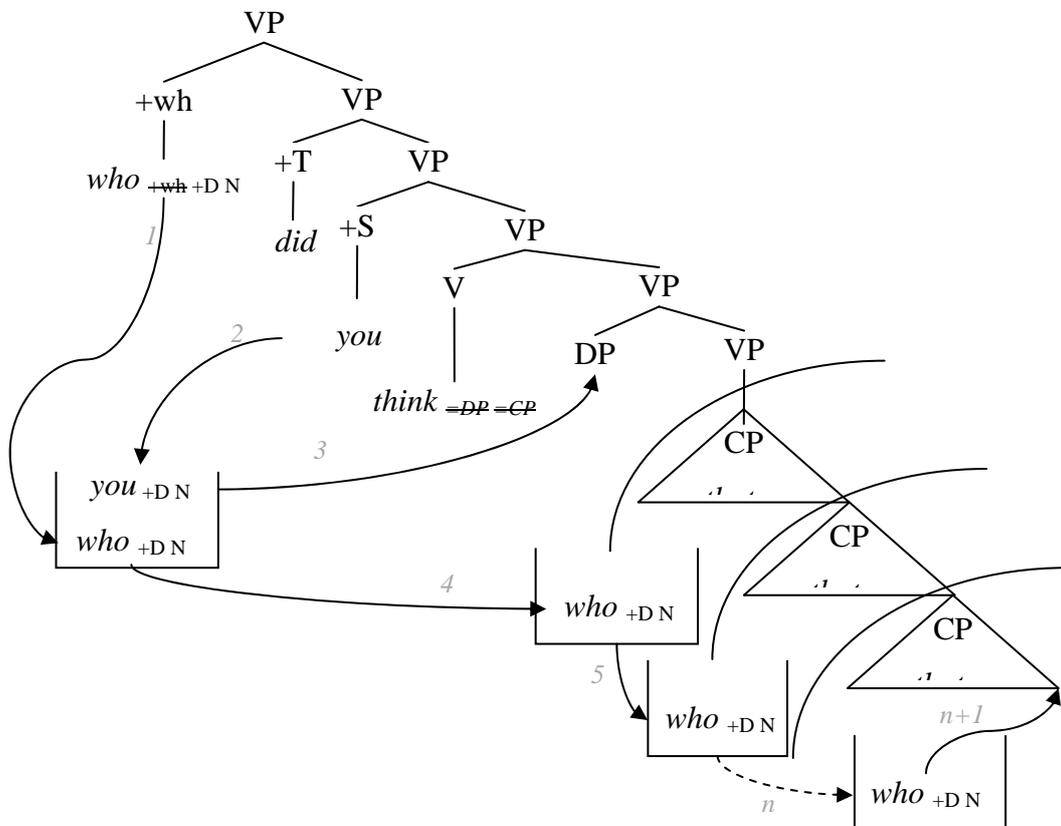


Figure 8 example (49)

The *wh*-phrase is stored in the M-buffer of the main phase and it is cyclically inherited by the M-buffers of the sequential phases, until the lexical head of the most deeply embedded CP (*hated*) introduces a selectional requirement that triggers the re-merge of the *wh*-phrase.³⁷

5.2. Reconstruction in a top-down grammar

In the system that we have sketched so far, a moved element is first computed in the derived position and is stored in the M-buffer, so as to be later re-merged in an appropriately selected position. This allows for a novel view of the phenomenon of reconstruction: it is not necessary to covertly ‘undo’ a previous step of the derivation, so as to place a moved element back in its base position, as in the bottom-to-top derivation; rather, it is sufficient to *delay* the interpretation of the moved constituent until after it has been re-merged in the selected position. The view of reconstruction as delayed interpretation is due to Barker (2009), in the framework of a general left-to-right interpretation process, which is clearly consonant to the Top-Down Left-Right syntactic approach. Here we adopt Barker’s core idea for the immediate

³⁷ Within the Top-Down perspective, Cinque’s (1980) generalization (note 14), i.e. only subjects of DPs can be extracted, follows from two considerations. First, the fact that only “*di* NPs” can be “extracted” (Cinque 1980, 48-49 examples (1)-(5)) is related to the fact that others PPs could qualify as adjuncts of the matrix verbal phase: if we assume that the derivation favors the integration of a moved constituent within the original phase before discharging it in the sequential phase we explain this restriction. Second, since in the Top-Down derivation an element that is present in the memory buffer must be remerged before any other new lexical item is inserted in a compatible selected position (in standard minimalist terms, “move preempts merge” Chesi 2012,177), we expect that once the moved PP constituent is discharged in the subject phase, this PP must be remerged with the phase head before any other argument, and this explains the contrasts (i) (object extraction) vs. (ii) (subject extraction) discussed in Cinque 1980 (examples (17.a) and (20.a) respectively), since the remerged PP qualifies as the NP subject (first argument) and this is coherent only with (ii):

- (i) *l’icona [_{PP} di cui] è stato scoperto [il furto del custode _] ...
the icon, of which has been discovered the custodian’s theft ...
- (ii) il custode [_{PP} di cui] è stato scoperto [il furto _ dell’icona] ...
the custodian, of whom has been discovered the theft of the icon ...

purposes of our analysis; a more comprehensive evaluation of Barker’s proposal, and a thorough discussion of the many intricacies of reconstruction, remains to be developed in future research.

To exemplify the core idea, delayed evaluation will allow an anaphor contained in a *wh*-phrase to be interpreted in the re-merge position of the *wh*-phrase: in this way, even if the antecedent is structurally lower than the derived position of the *wh*-phrase, the anaphor will be interpreted after its antecedent has been processed:

(50) [Which picture of himself_i] did every boy_i hate _ ?³⁸

Furthermore, there is evidence that it is necessary to delay not only the interpretation, but also the completion of certain moved constituents. Consider for instance remnant VP topicalization:

(51) [_{VP} t₁ Gelesen] hat [das buch]₁ keiner t_{VP}
 read has the book no-one (Müller 2000, (2))

(52) [_{VP} Criticized t₁ by his boss] John₁ has never been t_{VP} (Müller 2000, (14a))

The topicalized VP contains, in the internal argument position, a trace which is bound by a linearly following phrase. In terms of a top-down computation, these structures require that we store in the M-buffer an *incomplete* VP, whose internal argument will be introduced later in the derivation. In turn, the dependency of the internal argument (scrambled or A-moved) will be discharged into the VP after the VP itself has been discharged from the M-buffer and re-merged in the post-auxiliary position.³⁹

Although we cannot fully address the phenomenon of remnant movement in this paper, we take (51)-(52) to indicate that delayed completion must be allowed by the system: thus, we will let the system store in the M-buffer a yet incomplete constituent containing a ‘gap’ (i.e. an unsatisfied select feature), and delay both its completion

³⁸ For the treatment of binding in the top-down system, we refer the reader to Bianchi & Chesi (2010).

³⁹ We assume that the VP is selected by the auxiliary. Recall that the Success Condition (45) requires that by the end of the derivation, all the moved phrases – here, both the remnant VP and the extracted argument – be discharged from the M-buffer.

and its interpretation until after the constituent has been re-merged. We therefore assume the following hypothesis:

- (53) Discharge of a dependency into a moved constituent α can be delayed until α itself has been discharged from the M-buffer.

A derivation involving delayed completion is schematically represented in figure 11 below.

5.3. *The ESC as a derivational effect*

Hypothesis (53) allows us to reduce our ESC (15) to a derivational constraint. This can be shown in two steps.

1. The ESC prohibits extraction from a derived subject that fails to reconstruct.

In a top-down derivation, this follows when the completion and interpretation of the subject cannot be delayed. Recall that the derived position constitutes a nested phase, and by (47i), it cannot inherit the M-buffer of the superordinate phase, so as to allow for the discharge of the extracted phrase (cf. the discussion around (48)).

2. The ESC allows for extraction from a reconstructed subject.

In a top-down derivation, this follows when we can delay the completion and interpretation of the subject, according to (53). The incomplete subject is re-merged in the thematic position, which constitutes a sequential phase and can inherit the M-buffer of the superordinate phase. Then, the yet unsatisfied selectional requirement of the subject's lexical head triggers the discharge of the extracted phrase from the M-buffer.

The ESC now follows from a basic asymmetry between categorical andthetic subjects:

1. In the case ofthetic (non-criterial) subjects, interpretation is delayed until after the subject has been re-merged in the thematic position, where it is interpreted as part of a description of an eventuality, in the scope of existential closure (cf. § 2 and Figure 1). Hence, the subject need not be completed in the derived position.
2. On the contrary, categorical subjects are immediately completed and interpreted as soon as they are computed in the derived (criterial) position. This is because

their interpretation is independent from that of the property denoted by the rest of the clause (cf. again § 2 and Figure 2).

In other terms, the crucial effect of the Subject Criterion is to force the criterial subject to be immediately completed and interpreted.

Let us examine in more detail the two options.

We propose that in the case of a non-criterial subject, delayed completion is allowed by the fact that the (+D, N) features of the subject are not expected in the preverbal (non-criterial) position, which expands a ‘bare’ +S feature.⁴⁰

Consequently, the subject – even if incomplete – is stored in the M-buffer, so as to be later discharged in the selected position, where the (+D, N) features are expected (as the legal expansion of a selected DP phase): Completion and semantic evaluation are thus deferred until after the subject has been discharged.

To illustrate, consider the derivation schematically illustrated in figure 8:

(54) Of which masterpiece is [one reproduction t] already available ?

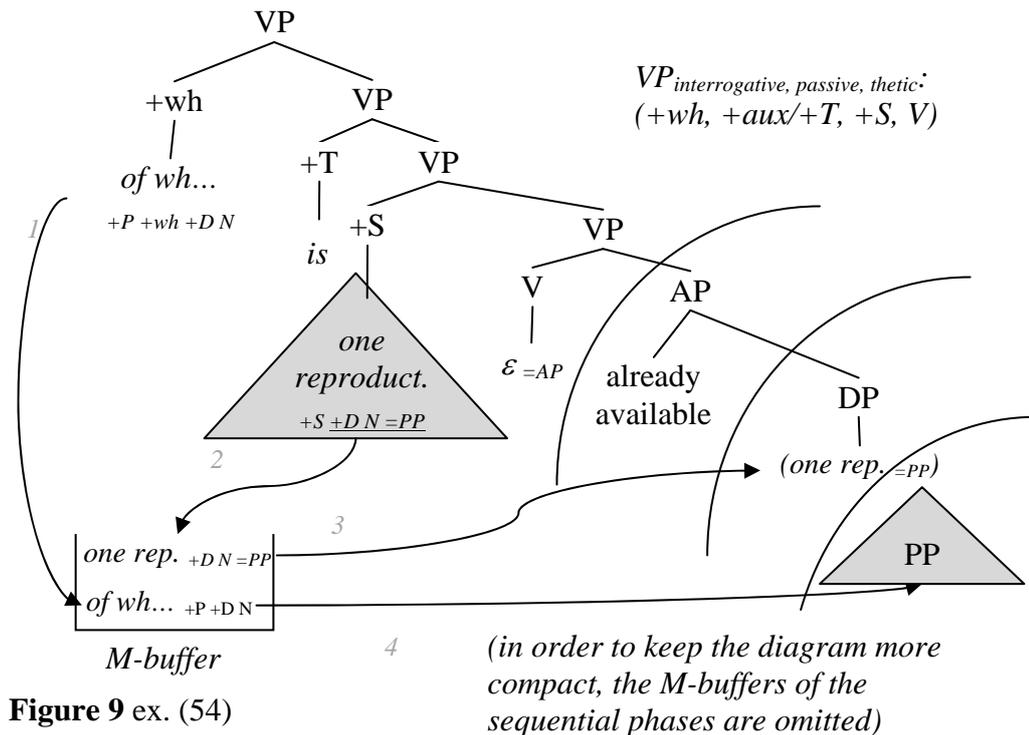


Figure 9 ex. (54)

⁴⁰ We assume that +S is the functional feature associated with Nominative case. In languages like English or Italian, where such a feature is morphologically unexpressed, it can be lexicalized with an empty item. More precisely, an expected +S feature is first expanded by a non-terminal tree like DP_{Subj}: (+S, +D, N); then, +S is lexicalized with the empty nominative marker ε (+S).

The *wh*-PP is computed in the derived position and is stored in the M-buffer (*step 1*). After the computation of the auxiliary, the non-criterial subject is computed: this expands a bare +S feature, and therefore, its computation introduces unexpected (+D N) features, whereby the phrase is stored in the M-buffer, even though an internal select feature of the N head is yet unsatisfied (*step 2*). When the adjectival head is computed, it introduces a select requirement =DP, which triggers the re-merge of the subject phase (*step 3*). At that point, the M-buffer of the re-merged subject may inherit from the M-buffer of the superordinate phase the *wh*-dependency of the *wh*-PP (*step 4*); the yet unsatisfied =PP select feature of the noun head (*reproduction*) triggers the discharge of the *wh*-dependency, and the *wh*-PP is re-merged (*step 5*). Thus, at the end of the derivation all the selectional requirements are satisfied and the M-buffer is empty, complying with the Success Condition (45).⁴¹

As for the criterial subject of a categorical structure, we propose that the (+D, N) features of the subject are instead expected in the criterial position, which expands a cluster of features (+S, +D, N). Consequently, the criterial subject is immediately completed and interpreted.

Recall that on Ladusaw's proposal, the rest of the clause is interpreted as a property which is predicated of the categorical subject. To this effect, it is necessary to apply abstraction over a variable hosted in the thematic position of the subject. This can be obtained if the categorical subject undergoes Quantifier Raising in the way developed in Bianchi & Chesi (2010), which we briefly summarize here by means of an illustrative example (figure 9):

⁴¹ Recall that (54) is unacceptable if the preposition *of* is stranded within the subject island:

(i) * Which masterpiece is [one reproduction of _] already available ?

The asymmetry between (i) and (54) follows from the fact that in (i) the stranded preposition indicates that the selectional requirement of the noun head (*reproduction*) has already been processed in the preverbal subject position; this prevents delayed completion and evaluation in the thematic position.

(55) Every man is mortal.

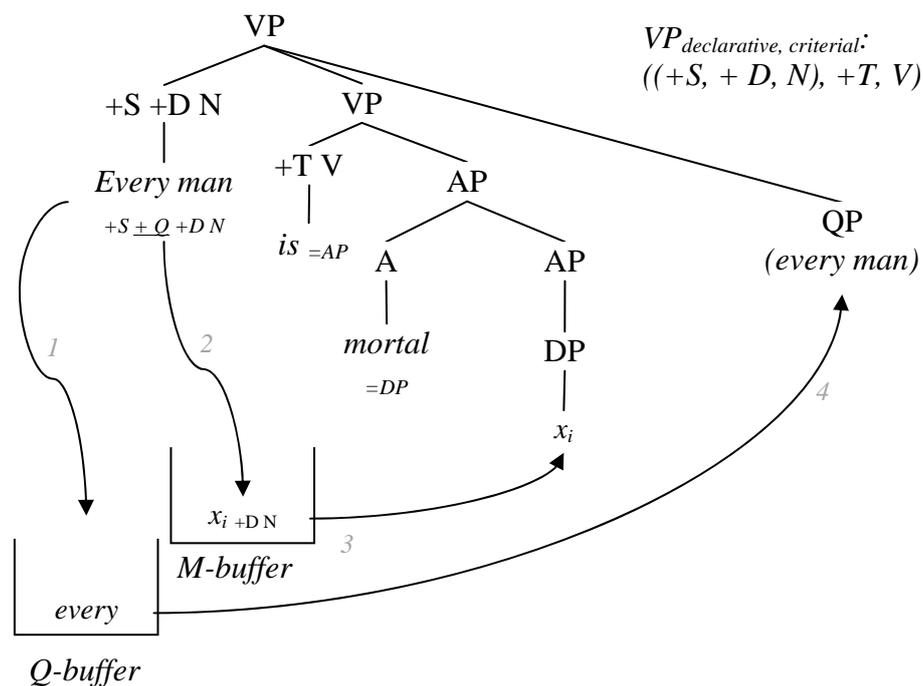


Figure 10 example (55)

The subject QP *every man*, after being computed in the criterial position, is stored in a dedicated memory buffer, the Q-buffer, together with a binding index i (*step 1*); furthermore, an indexed variable x_i is stored in the M-buffer (*step 2*).

When the adjectival head is processed, it introduces a selectional requirement =DP, which is satisfied by discharging the variable from the M-buffer into the thematic position (*step 3*). At this point, the matrix phase is complete; the subject QP is then retrieved from the Q-buffer and is attached to the structure (*step 4*). Lambda-abstraction over the variable carrying the stored index i will yield the QP's scope.⁴² Following Ladusaw's insights, this mechanism can be generalized to all criterial subjects: even when they are not inherently quantificational, they are lifted to quantifier type and undergo QR.

Consider now the derivation for a case of extraction from a criterial subject, as exemplified in (56) (figure 10). Here, the dependency of the *wh*-PP cannot be discharged into the subject phase that expands the criterial position, because the latter

⁴² As the readers will notice, this is just a syntactic (simplified) version of Cooper storage. We refer the reader to Bianchi & Chesì (2010) for discussion and empirical justification.

constitutes a nested phase (cf. again (48)). On the other hand, since the subject undergoes quantifier raising (*step 2*), what is remerged in the thematic position is just a variable (*step 4*), which does not introduce any selectional requirement; consequently, the dependency of the extracted *wh*- PP cannot be discharged in the thematic position either (illegal *step 5*). The derivation thus violates the Success Condition (45), since the *wh*-dependency cannot be discharged.

(56) * Of which masterpiece is [one reproduction *t*] absolutely perfect ?

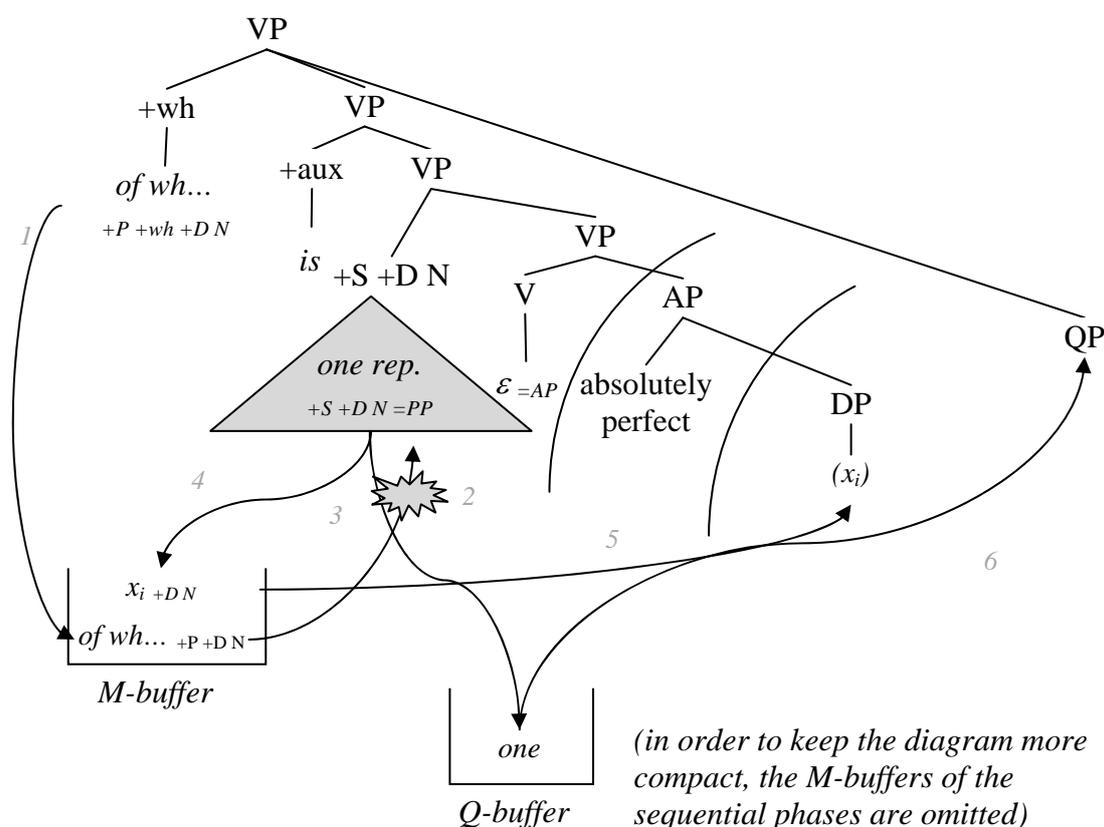


Figure 11 example (56)

Note that in this system, with a parallel top-down syntactic and semantic computation, the ‘frozenness’ of categorical (criterial) subjects need not be stipulated, but it follows from the fact that they must be interpreted independently from the rest of the clause.⁴³

⁴³ The QR-based account can also be extended to account for the islandhood of presuppositional QPs in general (Diesing 1992; cf. note 21 above): even if it fills a selected position, e.g. internal argument, the QP cannot constitute a sequential phase, because the computation of the superordinate phase must remain open until the QP is attached in the scope position (see Bianchi & Chesi 2010 for details.)

To sum up, in this approach the ESC (15) is reduced to the interplay of three factors:

- i. the impenetrability of nested phases (by (47i));
- ii. the permeability of sequential phases (by (47ii));
- iii. the choice at which point of the derivation the subject is completed and evaluated: the derived (criterial) position in categorial structures; the thematic (re-merge) position in thetic structures.

For completeness, we include a schematic representation of the derivation type allowed by principle (53) (figure 11): α , β , γ are lexical entries endowed with the indicated features; XP, YP, and ZP are phases headed by X, Y and Z categorial features respectively, and selected by =XP, =YP, and =ZP features; +w, +u are functional features. The computation of the root phase XP starts with the computation of a wh-phrase α of category ZP, which is in an unselected position, and is therefore stored in the M-buffer of XP (step 1). In step 2, a second phrase (β , of category YP) is computed and stored in the same M-buffer; crucially, β 's head still carries an unsatisfied selectional requirement (=ZP), an instance of delayed completion. When the matrix phase head X is computed, it introduces a selectional requirement =YP, which triggers the expectation of a sequential phase of category YP. The sequential phase inherits the M-buffer of the matrix phase (step 3): from this, β (of the required category YP) is retrieved and re-merged, satisfying the matrix head's selectional requirement (step 4). The re-merged YP still includes an unsatisfied selectional requirement =ZP: this triggers the expectation of a sequential ZP phase, which inherits the M-buffer from YP (step 5); =ZP is satisfied by retrieving and re-merging α . Thus, at the end of the derivation all the M-buffers are empty, in compliance with the Success Condition.

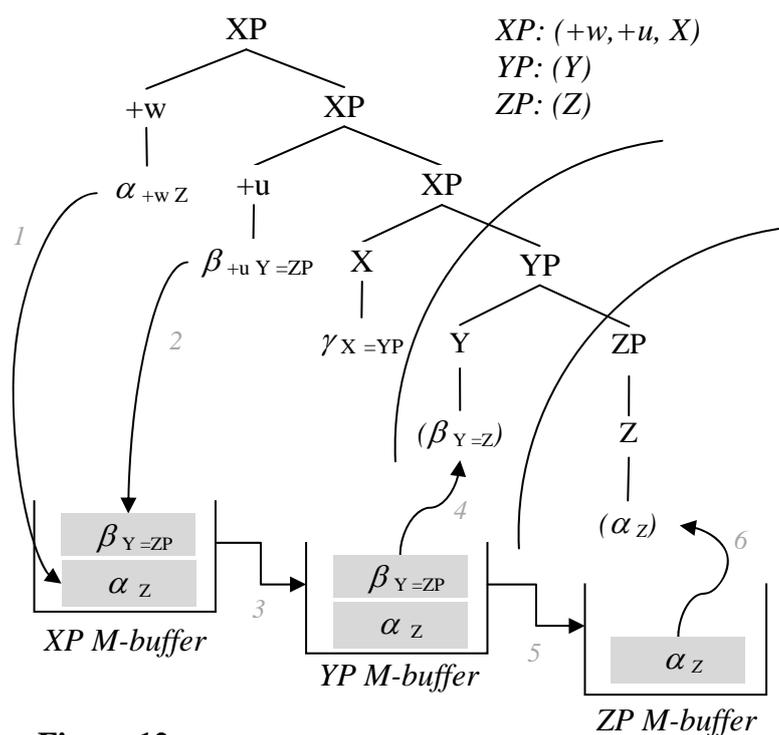


Figure 12

6. Take-home points

1. In this paper, we have provided experimental evidence from Italian that extraction from the subject of intransitive predicates is sensitive to the *individual* vs. *stage-level* nature of the predicate (first experiment, § 3.1), rather than to the unaccusative vs. unergative opposition (second experiment, § 3.2). Specifically, in Italian preverbal subjects are islands for extraction with both individual and stage-level predicates, whereas postverbal subjects allow for extraction only if the predicate is stage-level.
2. This empirical observation has been analyzed on the basis of Ladusaw's (1994) characterization of *categorical* vs. *thetic* semantic structures. In a categorical structure, the subject is interpreted outside the predicative nucleus of the clause, and it is presuppositional; in a thetic structure, instead, the subject is interpreted within the predicative nucleus of the clause, it is bound by Existential Closure, and it is non-presuppositional. Individual-level predicates require a categorical structure, whereas stage-level ones are also compatible with a thetic structure. Thus, in English, preverbal subjects of stage-level predicates can be reconstructed so as to give rise to a thetic structure. In Italian intransitive clauses, on the

contrary, preverbal subjects are interpreted as categorical even when the predicate is stage-level: they are “criterial” in the sense of Rizzi (2005), and fail to reconstruct into the predicative nucleus. On the other hand, free subject inversion under broad focus gives rise to a non-categorical interpretation of the subject: this is only compatible with stage-level predicates. (There may be exceptions to the categorical interpretation of preverbal subjects in cases where free inversion is excluded for syntactic reasons.)

3. With this background, the pattern of extraction can be derived from the Extraction from Subject Constraint:

(15) *Extraction from Subject Constraint (ESC)*:

Only a subject occupying a thematic position *at the interface* is transparent for extraction.

The ESC implies that only the subject of a thetic LF, which is totally reconstructed into a thematic position, is transparent for extraction: this condition is satisfied with (certain) stage-level predicates which do not impose a presuppositional interpretation to their subject. In Italian, such thetic subjects are realized by means of free inversion (whenever this is syntactically possible.) In a way, the ESC is a generalization of Diesing’s (1992) original insight.

4. We have then shown that the ESC falls out naturally from a *Top-Down, Left-to-Right* oriented system. In a Top-Down computation, we first compute a moved element in its derived (i.e. ‘scopal’) position, we then store it in a memory buffer, and we discharge it in a thematic position after the selecting lexical head has been computed. By hypothesis, an extracted PP cannot be discharged into a preverbal subject because this constitutes a computationally nested phase (i.e., a phase that must be computed while the computation of the superordinate phase is still open). By Ladusaw’s hypothesis, categorical subjects must be completed and interpreted in the preverbal position, outside the predicative nucleus: their islandhood follows from computational nesting. On the other hand, a thetic subject must be ultimately interpreted within the predicative nucleus: even if it occupies a derived position, its completion and interpretation can be delayed until after it has been discharged into a thematic position. This ‘reconstructed’ position constitutes a sequential phase,

whose computation is *not* nested within that of the superordinate phase; it is therefore possible to discharge into it the wh-dependency of an extracted PP.

7. Concluding remarks

This proposal has several potential ramifications, both empirical and conceptual, which remain for future research.

At the theoretical level, the adoption of the categorical/thetic divide raises the question of its relation with Information Structure, in particular the topic-comment and focus-background partitions (cf. § 4).

From the experimental viewpoint, it will be useful to corroborate our hypothesis on the relevance of individual- vs. stage-level predicates by testing the on-line processing of minimal pairs of sentences differing only in the nature of the predicate (e.g. by self-paced reading and/or eye-tracking techniques): our hypothesis predicts that the difficulty should be detected at the point where the predicate is processed.

From the comparative viewpoint, we are planning to replicate our first experiment (in particular, conditions (22a) i-level, preverbal vs. (22c) s-level, preverbal) with English subjects. Since in English there is no free subject inversion, our proposal predicts that here the preverbal subject of stage-level predicates can be either categorical or thetic, and hence, the results for extraction in condition (22c) should be significantly better than in Italian.

Furthermore, we are planning to extend our approach to the subjects of transitive predicates. Note that a transitive subject, even when re-merged in its thematic position, is always followed by an internal argument: then, if we define a sequential phase (cp. (47b) above) as the *last* phase that is selected by a lexical head, transitive subjects would never be sequential, and we would predict them to be uniformly islands. At first sight, this seems too strong, in the light of the acceptability of (9a) above; however, acceptable instances of extraction from transitive subjects seem exceedingly rare. This issue remains for future research. Another related issue on the agenda is a precise characterization of the conditions under which free subject inversion is possible (cf. §4.2).

To conclude, this articulated analysis reconciles two apparently conflicting desiderata:

- (i) to reduce islandhood to a general constraint on the syntactic computation;

(ii) to account for the inherent variability of acceptability judgments in this area. As for (i), subject islands effects are due to computational nesting of the categorical (criterial) subject position (cf. Bianchi & Chesi 2006).

As for (ii), we have shown that the unstableness of acceptability judgments can be explained by the interplay of different factors in determining the categorical vs. thetic structure of the relevant clause. In particular, a thetic structure is possible only if the predicate is stage-level and the subject is compatible with a non-presuppositional interpretation. Given that the stage-level/individual-level divide is not always clearcut, and that stage-level predicates are compatible with both a categorical and a thetic structure, it follows that the semantic structure is not always univocally determined; in such cases, the acceptability of extraction from the subject is expected to display a certain unstableness across different contexts, depending on the factors described above.

In this way, subject island effects are not directly reduced to an ultimately interpretive distinction, but they follow from a computational constraint (45) that affects differently the syntactic structures correlating with the two types of interpretation.

The idea that overt extraction is sensitive to LF reconstruction is impossible to state in a system with separate overt and covert cycles; it can be stated, but it remains completely stipulative, in a bottom-to-top system with a single cycle, as in the recent Minimalist approach. From this perspective, extraction from the first Merge (i.e. thematic) position of a subject should be either possible or impossible independently of whether the subject subsequently moves to a derived position and possibly undergoes reconstruction; in other terms, the *following* derivational history of the subject should be simply irrelevant. As far as we can see, the only way to capture in a bottom-to-top system the islandhood of categorical subjects is to establish a direct correlation between the semantic property of presuppositionality and some narrow syntactic property like strong phasehood (as proposed by Jiménez Fernández 2009). The problem with this solution is that it is hard to find supporting evidence for this correlation independent of the very extraction facts that the correlation is meant to explain. Thus, from a bottom-to-top perspective the ESC can at best be expressed as a representational (LF) filter.

We have shown that this problem dissolves if we reverse the orientation from bottom-to-top to top-down: this allows us to retain a derivational account of extraction from subjects without having resort to a representational filter. The crucial difference is that, in a top-down derivation, the ‘derived’ (non-selected) position is computed before the selected (thematic) position. Since the syntactic and semantic derivation proceed in parallel, we can immediately determine whether the subject has to be completed and interpreted in the derived position (categorical interpretation), or its completion and interpretation can be delayed until it is re-merged in a selected position (thetic interpretation). In this way, the subtle interplay of interpretive and syntactic facts that is expressed by our ESC can be captured directly. Furthermore, the top-down perspective allows for an implementation of total reconstruction which is conceptually more natural than the standard bottom-to-top alternative, in that it does not involve ‘undoing’ a previous derivational step.⁴⁴

It may seem that the top-down implementation of long-distance dependencies by means of memory buffers is more complex than the standard Minimalist view of movement as ‘internal Merge’.

However, we wish to stress that the Minimalist Move operation is actually more complex than it may seem at first sight. As a matter of fact, in order to implement the probe-goal relation, it requires (at least) a searching algorithm which must inspect the features of all the potential goals in the probe’s searching domain until it finds a compatible one. The complexity of a computational operation should not be assessed exclusively on the basis of the definition of the operation itself, but also on the basis of the number of relations that must be evaluated in order for its computation to be successfully performed.

⁴⁴ A different view of reconstruction has been proposed by Bobaljik & Wurmbrandt (2011), in a system where different PFs compete to spell out a given LF: reconstruction then consists in a dependency where the lower link is interpretively relevant, but the higher link is spelled out. This improves upon the earlier view of reconstruction as ‘undoing movement’; however, it is not clear to us why the possibility of extraction from a subject should be affected by the subsequent LF-PF pairing. A more systematic evaluation of Bobaljik & Wurmbrandt’s proposal remains for future research.

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