FINAL DRAFT (NOVEMBER, 2010). A SLIGHTLY REVISED VERSION OF THIS PAPER IS GOING TO APPEAR IN: *LINGUISTIC INQUIRY*

RELABELING HEADS. A UNIFIED ACCOUNT FOR RELATIVIZATION STRUCTURES

Carlo Cecchetto (University of Milan-Bicocca) &
Caterina Donati (University of Rome-La Sapienza)

1. Introduction

In this paper we show how a specific approach to phrase structure theory can shed light on the syntax of different types of relativization structures (free relatives, externally headed relative clauses, and pseudorelatives).

Although relative constructions have been systematically investigated for 40 years in the generative tradition, the debate on their correct analysis is still very much open. In particular, one aspect that remains controversial is the best way to capture the fact that the relative clause ‘‘head’’ seems to play a double role in the overall structure. For example, the “head” *(the) boy* in (1) and (2) is a constituent of the matrix clause, but at the same time it seems to satisfy the selectional requirements of the predicate internal to the relative clause. At least three main devices have been proposed in the generative tradition (see Bianchi 2002 for an historical survey). According to the raising approach (cf. Vergnaud 1974, Kayne 1994, Bianchi 1999 and Bhatt 2002 among others) the ‘‘head’’ is inserted directly in the relativization site and moves to a position external to the relative clause. Under an alternative approach, sometimes called “head external approach”, the relative clause “head” is not transformationally related to the gap inside the relative clause. Instead, a relative pronoun (that is overt in 2 but remains phonological null in 1) moves to Spec,C by leaving a trace in the gap position and is identified with the relative clause “head” (cf Chomsky 1981 and Browning 1986 for two classical variants of this approach). A final (less pursued) approach, the Matching Analysis, like the raising analysis, postulates that there is an internal head which is phonologically deleted under (near) identity with the external head. However, according to the matching analysis, the internal head and the external head are *not* part of a movement chain, but are related by whatever mechanism links an elided constituent and its antecedent in ellipsis cases (Chomsky 1965; Kayne 1975, Cinque 1978 and Sauerland 2003 and Hulsey and Sauerland 2006 for a recent revival).

(1) The boy that I will never forget has arrived.
(2) The boy who I will never forget has arrived.

In section 2, we briefly summarize Cecchetto and Donati’s (2010) version of bare phrase structure theory, which is the framework against which the analysis of relative constructions is set. One crucial feature of this theory is that a lexical item can transmit its label when it is merged with another category, both when this is a first merge case (this derives the result that the head projects when it is merged with a complement/modifier) and when the lexical item is internally merged (moves). A lexical item has the power to relabel the structure with which it merges. This relabeling option directly explains the properties of free relatives, as we argued in Cecchetto and Donati’s (2010) and thoroughly discuss in section 3. In section 4, we review the main arguments supporting the raising analysis of (full) relative clauses and in section 5 we examine three main objections that have been raised against it. In section 6, we propose our approach to externally headed relative clauses. This is a modified version of the raising analysis that assumes that only the head noun raises and, being a lexical item,

relabels the structure. We show how our approach is immune to the criticisms that affect the traditional version of the raising analysis. In section 7 we discuss the cases in which the "head" of the relative clause appears to be phrasal and claim that any modifier of the relative clause head is late merged after the head has raised. One important consequence of our approach is that the distinction between complement and adjunct in the nominal domain is considerably weakened. We thoughtfully defend this claim and show that the pattern of reconstruction effects in relative clause constructions supports it.

In section 8 we discuss the issue of what triggers the movement of the relative clause head, and argue that selection (by an externally merged Determiner) can act directly as the trigger of some instances of head movement. Assuming that movement in relative clauses is directly triggered by the determiner head selecting the clause implies divorcing it from the COMP area. Section 9 examines a positive consequence of this "selection driven approach to relativization": Romance pseudo-relatives are analyzed as the non wh-counterpart of free relatives, involving the movement of a D-head (a proper name or a pronoun) to the root of the clause and a systematic relabeling option. The restriction of this class of relatives to subject relatives is explained in terms of an intervention effect. A general discussion of the different locality properties of the various types of relativization structures examined closes the paper.

2. The Framework. Cecchetto and Donati's (2010) Theory of Labeling

The typical case when two syntactic objects are merged is the asymmetric condition in which only one of them provides the label to the newly formed object.[1] The label can be selected by an external object (for example, when V and the internal argument are merged the resulting object with label V is selected by *v)* and can trigger further computation (for example, when T and *v*P are merged, the resulting object with label T probes the external argument DP, which can be attracted to the canonical subject position). Assuming the Inclusiveness Condition, according to which narrow syntax merely operates on lexical items and cannot "add" interpretative material (Chomsky 1995), a label cannot be a new object distinct from the items that are merged, such as a label in standard X-bar theory. Rather, a label is bound to be a subset of the features of the items that are merged. Cecchetto and Donati (2010), elaborating on Chomsky (2008), propose that, if the notion of Probe includes selection, a single labeling algorithm, reported in (3), can derive the core cases covered by the rich apparatus of X-bar theory:

(3) **Probing Algorithm:** The label of a syntactic object $\{\alpha, \beta\}$ is the feature(s) which act(s) as a Probe of the merging operation creating $\{\alpha, \beta\}$.

(3) is intended to apply both to cases of internal merge (=movement) and external (first) merge. It is worth illustrating how (3) works by looking at a simple case, say the derivation of a sentence like (4), illustrated in (4i) to (4v):

(4) The boy ate the cake.
i. The label of {ate, {the, cake} } is the categorial feature of V
(the transitive verb selects for a direct object)
ii. The label of {*v* , {ate, {the, cake} }}is the categorial feature of *v*
(*v* selects for the VP)
iii. The label of {{the, boy}, {*v* , {ate, {the, cake} }}} is the categorial feature of *v*

[1] Collins (2002) sketches a theory of syntax in which labels can be dispensed with. However his polemical objective is the notion of label as an extra object distinct from the two items that are merged, as was in Chomsky's (1995) version of bare phrase structure theory. Once a label is defined as a subset of the features of one of the two merging objects, the quest for simplification argued for by Collins can be satisfied. In fact, the minimal notion of label assumed in this paper is close, although not identical to, Collins' notion of Locus. See Cecchetto and Donati (2010) for further discussion.

(when the external argument is merged in Spec,*v* the feature which triggers the merging operation is the categorial feature *v*, which requires that the external argument be merged)
iv. The label of {T, {{the, boy}, {*v* , {ate, {the, cake} }}}} is the categorial feature of T
(T selects for *v*P)
v. The label of {{the, boy}, {T, {{the, boy}, {*v* , {ate, {the, cake} }}}}} is the categorial feature of T
(when the subject is internally merged in Spec,T the feature which triggers this operation is the categorial feature of T -- the phi-features of T can be checked in situ via Agree, so they do not, at least directly, trigger merge of the external argument).

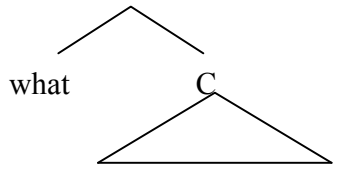
Cecchetto and Donati claim that the Probing Algorithm in (3) applies in a larger set of cases since, following Chomsky (2005: 6, 10), they assume that every lexical item (LI) is endowed with a feature, the edge feature (EF), which forces the LI to merge with other material. They identify the edge feature of a word with its categorial feature, since words come in different varieties because this allows them to combine according to rules of composition. Given this assumption, any time an LI is merged, it qualifies as a Probe by virtue of its EF. This means that an LI, being a Probe by definition, always activates the Probing Algorithm in (3) and its categorial feature can provide the label. For example, each time a head (=LI) is merged with its complement, the head is bound to project. This way the system based on (3) captures the two empirical generalizations that any version of phrase structure theory must account for, namely that the target of movement typically projects and that a lexical item (a head) projects when it is merged with a complement XP. In this paper, we do not discuss other special labeling cases discussed by Cecchetto and Donati (including labeling in adjunction configurations and the symmetric configurations where two lexical items or two complex syntactic objects are merged), since this cursory summary suffices as a background for our approach to relative clauses. However, before going to full (ordinary) relatives, it is useful to start from another case of relativization, namely free relatives.[2]

3. Labeling Conflicts: Free Relatives

An interesting consequence of the system based on the Probing Algorithm (3) is that, since the label is provided by the Probe, there can exist cases of labeling conflict if more than one Probe triggers the relevant merging operation. Cecchetto and Donati (2010) discuss two such cases in much detail. One is Condition C configurations, which are reduced to cases of mislabeling, so that Condition C as a primitive can be dispensed with. The second case, which concerns us more directly, is a labeling conflict that arises in so called free relatives.

Consider the structure in (5).

(5) *what you read*

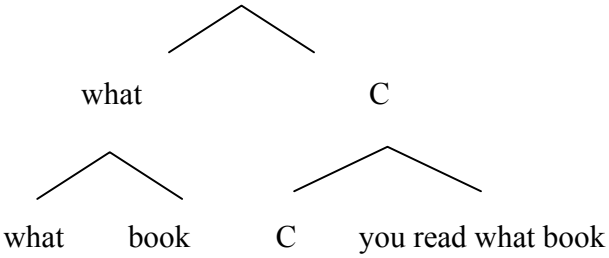


C you read ~~what~~

[2] Although this is not the place for detailing our stand on the status of the lexicon in the architecture of grammar, it should be clear that our proposal assigns a central role to words, i.e. categorized and inflected lexical items, in the syntactic computation and is therefore very remote in spirit from any late insertion approach to lexicalization, such as Distributed Morphology or the like.

(5) is derived by internally merging a single lexical item 'what' to the edge of a clause. The result is a conflict between two probes: 'what', being a lexical item, is by definition a probe (due to its EF) and should provide the label. On the other hand, 'C', being the Probe of the merging operation, should also provide the label[3]. This kind of conflict never arises when a phrase is internally merged, as in (6).

(6) C *what book you read*



Here Merge holds between two SOs, and no conflict arises: by the Probing Algorithm in (3), 'C', the Probe of the merging operation, labels the entire construction.

The prediction is that the minimal difference between (5) and (6) should be reflected in the distribution and interpretation of the two structures: more precisely, (5) is predicted to have two possible labels, while (6) has a single labeling possibility. This prediction is reflected by the systematic ambiguity of a phrase like 'what you read': it can be interpreted as a free relative and be embedded under a verb selecting a DP (cf. 7):

(7) I read what you read/a book.

However, it can also be interpreted as an indirect interrogative clause, and be embedded under verbs selecting for clausal complements (cf. 8):

(8) I wonder what you read/ if the sun will shine tomorrow.

Crucially no ambiguity at all, either in interpretation or in distribution, arises when phrasal movement is involved: as shown in (9), the structure resulting from phrasal movement can only occur in environments for clauses, and can only be interpreted as a simple interrogative[4]:

(9) a. I wonder what book you read.
d. *I read what book you read.

[3] A reviewer rightly observes that in our system a labeling conflict arises also when *what* is externally merged to *read* in the VP. We discuss these "first merge cases" in Cecchetto and Donati (2010), where we propose that *read* provides the label, because it is a double probe (it is a lexical item *and* select for the object).

Notice that although Cecchetto and Donati (2010) make free relatives a central case of their general theory of labeling, the idea that free relatives are derived through the "projecting movement" of the *wh*-word is not new. In fact, it goes back to Larson (1998) (see Bury 2003, Citko 2008, Donati 2006 and Iatridou, Anagnostopoulou and Izvorski 2001 for further development). On the projecting property of head movement see also Suranyi (2005, 2007, 2008).

[4] A natural question arises in relation to (9), namely what blocks the derivation illustrated in (i). In (i) the wh-D raises stranding its nominal complement and nominalize the structure:

(i) *I read what you read [$_{D}$ t_{what} book].

This question is addressed in great details in Cecchetto and Donati (2010). In a nutshell, the derivation in (i) implies a locality violation: the wh-D moves crossing the label D of the syntactic object formed by the wh-D and by its nominal complement, and the label D is closer to C than the wh-D. See also section 9 for a discussion of locality in relativization.

Cecchetto and Donati (2010) mention a possible objection that can be raised against their approach, namely a class of free relatives that appear to allow phrasal wh-movement. This is illustrated in (10):

(10) I shall visit whatever town you will visit.

We deal with this potential counterexample in the appendix. Suffice it to say here that there is strong evidence that 'ever'-relatives and their equivalents in other languages are not free relatives at all, but rather display a structure corresponding to that of full relatives. And to full relatives now we move.

4. Full Relatives: Advantages of the Raising Analysis

As we mentioned, the gist of the raising analysis is that the position of the gap inside the relative clause and the external "head" are transformationally related. There are various variants that we will not analyze in detail here, but all of them have one obvious advantage, namely that, since the existence of transformations is well attested in constructions distinct from relative clauses, the relation between the gap and the "head" is explained with no need to introduce a special mechanism. In addition to this fundamental positive feature, the raising analysis has other merits, as pointed out by its proponents:

(i) It accounts for the pattern found with idiomatic expressions. The relativization of the idiomatic object is allowed if the idiomatic verb is internal to the relative clause, but not if it is external:

(11) a. Il décrit dans son livre [la part qu'il a prise *t* aux travaux du 9ème congrès] .
he describes in his book the part that he has taken at the workings of the 9th conference
'He describes in his book the part that he had in the 9th conference.'
b. *Il a prix aux travaux du 9ème congrès [la part qu'il décrit dans son livre].
he has taken in the workings of the 9th conference the part that he describes in his book
(Vergnaud 1974:58-9)

The contrast in (11) indicates that the external "head", namely '(la) part', sits at some level in the argument position inside the relative clause, under the assumption that idiomatic expressions like 'prendre part' must form a unit when they are inserted in the syntax from the lexicon.

(ii) It accounts for the pattern of relativization of predicative DPs, which is impossible if the features of the matrix and those of the embedded subject do not match. (12) is ungrammatical, because the predicative DP 'les comédiens' does not agree (in number) with the copula inside the relative clause, although it does agree with the main verb copula.

(12) *Ce ne sont pas les comédiens que leur père était. (Vergnaud 1974: 63-68)
it not are not the comedians that their father was

(iii) It accounts for the existence of internally headed relative clauses, which would simply realize overtly what the raising analysis takes to be the underlying structure of externally headed relative clauses. One example of an internally headed relative and of the corresponding externally headed structure is given in (13) with Japanese examples (the "head" noun is in bold). This feature of the raising analysis should not be underestimated. While the raising analysis can explain the existence of two related relativization strategies by simply assuming that the "head" can raise at different points (before or after Spell-Out), alternative approaches to relative clauses have a harder time to explain why relativization can be realized through two different structures.

(13) a. Yoko-wa [[Taro-ga sara-no ue-ni oita] **keeki**]-o tabeta.
Yoko-TOP Taro-NOM plate-GEN on-LOC put cake-Acc ate
'Yoko ate a piece of cake which Taro put on a plate.'
b. Yoko-wa [[Taro-ga sara-no ue-ni **keeki**-o oita] -no]-o tabeta.
Yoko-TOP Taro-NOM plate-GEN on-LOC cake-ACC put-NOMINALIZER-ACC ate
'Yoko ate a piece of cake which Taro put on a plate.' (Shimoyama 1999: 147)

While the three properties just discussed support any version of the raising analysis, the properties that we are going to discuss now call for the version (stemming from Kayne 1994, see especially Bianchi 1999) which assumes that the determiner preceding the relative NP is externally merged: only the noun (and its dependents, if any) raises, while the determiner is inserted after the relative construction has been created by the occurrence of the relevant transformation. This type of raising approach is consistent with the fact that the external determiner must have wider scope than a quantifier inside the relative clause. This is shown with Italian examples in (14), a *wh*-relative, and in (15), a *that*-relative. In the *a*. sentences, the existential quantifier that is the external determiner of the NP that contains the relative clause must have wide scope. The *b*. sentences show that a determiner that occupies the position of the gap can get wide scope in the corresponding simple clause (these examples are modeled after the ones in Bianchi 1999).

(14) *a*. Un'aula in cui ho mandato ogni studente (era molto rumorosa) . √∃∀ *∀∃
A room in which (I) sent every student was very noisy
'A room where I sent every student was very noisy.'
b. Ho mandato ogni studente in un'aula / Ho mandato in un'aula ogni studente. √∃∀ √∀∃
I sent every student in a room / I sent in a room every student
'I sent every student in a room.'

(15) *a*. Un compito che ho distribuito a ogni studente (era troppo difficile). √∃∀ *∀∃
An assignment that (I) have given to every student was too difficult
'An assignment that I gave to every student was considered too difficult.'
b. Ho distribuito un compito a ogni studente/Ho distribuito a ogni studente un compito. √∃∀ √∀∃
(I) have given an assignment to every student / (I) have given to every student an assignment
'I gave an assignment to every student.'

The impossibility of the ∀∃ reading in the *a*. sentences follows if the indefinite determiner is merged outside the relative clause, after the "head" of the relative clause has raised, under the standard assumption that a relative clause is a strong island (this explains why the universal quantifier is trapped inside the relative structure and cannot get wide scope in the *a.* sentences).

Converging evidence comes from the lack of definiteness effects in structures like (16b). The grammaticality of (16b) is expected if the definite determiner is (or can be) externally merged and never sits inside the relative clause, where it would trigger a definiteness effect, as shown in (16a).

(16) a. *There were the men in the garden.
b. The men that there were in the garden.

In fact, even with idiomatic expressions whose direct object is obligatorily indefinite (cf. the ungrammaticality of 17a), the relativized head can be introduced by a definite determiner (17b).

(17) a. *They made the fun of me. (Fabb 1990:71)
b. The fun that they made of me.

In the literature on relative clauses, another type of evidence that is commonly taken to support the raising analysis is the (alleged) existence of reconstruction effects with the relative clause head. However, this point

requires a full-blown discussion, which we entertain in section 7.2 below.

Summarizing, several considerations strongly support the raising analysis, and, more specifically, the version that assumes that the NP (the "head") is merged with D after the former has raised from inside the relative clause. Notwithstanding its merits, the raising analysis remains very controversial, since it is affected by some serious problems. These are illustrated in the next section.

5. A *HEAD* Raising Analysis for Relative Clauses

A severe critique of the raising analysis is due to Borsley (1997), who mentions several problems. One of them is particularly serious and relevant for our purpose and must be discussed immediately. This problem has to do with word order in *wh*-relatives. Assuming that *wh*-elements such as *which* are determiners, the direct prediction of the raising analysis is that in *wh*-relatives, after raising of the relative clause "head", the structure should be (19), not (18).

(18) The man which John saw.
(19) The [[which man] John saw ~~which man~~]].

Proponents of the raising analysis discussed this problem and proposed various solutions that include some non independently motivated stipulations. In order to derive the correct word order, many assume an unmotivated movement of *man* in (19) stranding the determiner *which*, a movement that has moreover the property of turning a specifier (the NP 'man') into something accessible to selection by an external head (the D head 'the'). Iatridou et al. (2001) capture this by postulating that the moved category can project (this is assumed by Bhatt 2002 as well). This solution however generates yet another problem for the raising analysis at a more general theoretical level: the problem is that the more familiar instances of movement (e.g. *wh*-movement, raising, passive movement) never involve a projecting movement. In all these cases, it is the target that projects. So, it is necessary to explain why the moved category can project only in relative clauses, and not in the more familiar cases. While this was never explained in the previous literature, it is straightforwardly explained adopting the perspective on labeling outlined in section 2 and the approach to free relatives defended in section 3.

The crucial feature that we are going to capitalize on is the fact that, under the Probing Algorithm in (3), any lexical item has the power to transmit its label both in case of External Merge and in case of Internal Merge (movement). A case in which a lexical item "projects" in movement configuration is free relatives when they have a nominal distribution ("[$_{DP}$ What you say] is horrible"). Ordinary relatives are just another case of this sort. Consider a wh-relative like (20). Under a version of the raising analysis *à la* Bianchi/Kayne, the first step of the derivation (cf. 21a) is obvious. However, (21a) is problematic in two respects. First, the word order is just wrong, as we just mentioned. Second, the label of the structure with which the external determiner combines is equally wrong, since a determiner combines with a NP, not with a CP. Clearly the desired configuration is something like (21b), but the problem is how to get from (21a) to (21b), namely how to derive the 'projecting nature' of the movement of 'man'.

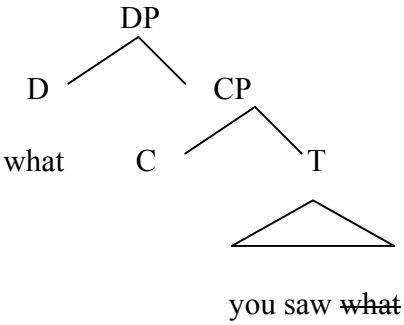
(20) The man which John saw.
(21) a. [$_{DP}$ The [$_{CP}$ [$_{DP}$ which man]$_j$ John saw ~~which man~~]]
b. [$_{DP}$ The [$_{NP}$ [[$_{NP}$ man$_i$] [$_{CP}$ [$_{DP}$ which ~~man~~] John saw ~~which man~~]]

However, assuming the Probing Algorithm in (3), the "projecting nature" of the movement of 'man' in (21) *is* predicted: 'man' is an LI, therefore it has an EF and acts as a Probe when it is externally merged with C. By (3), it "relabels" the structure and allows it to combine with the external determiner.

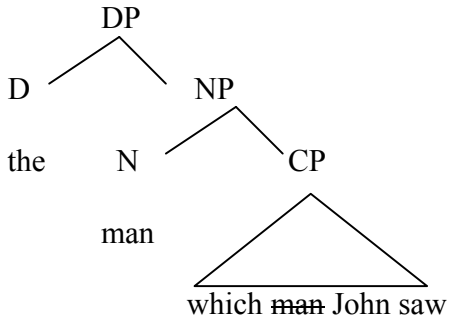
We call our proposal HEAD raising analysis because the crucial feature is that what raises must be a lexical item ("head").

It is worth confronting the derivation of a free relative with a nominal distribution with that of a 'wh'-relative. In both cases, the crucial point is that a lexical item "projects" when it is externally merged. The main difference is that the LI is a determiner in free relatives, while it is a noun in (*wh*) relatives.

(22) a. free relative



b. wh- relative



A question that arises at this point is the precise landing site of the movement of N in structures like (22b). Clearly, N moves to some position in the CP area. In order to identify it, it is instructive to consider again the Japanese sentences in (13), repeated here with a new numeration.

(23) a. Yoko-wa [[Taro-ga sara-no ue-ni oita] **keeki**]-o tabeta.
Yoko-TOP Taro-NOM plate-GEN on-LOC put cake-Acc ate
'Yoko ate a piece of cake which Taro put on a plate.'
b. Yoko-wa [[Taro-ga sara-no ue-ni **keeki**-o oita] -no]-o tabeta.
Yoko-TOP Taro-NOM plate-GEN on-LOC cake-ACC put-NOMINALIZER-ACC ate
'Yoko ate a piece of cake which Taro put on a plate.' (Shimoyama 1999: 147)

Interestingly, when the relative clause head 'keeki' does not move (namely in the internally headed relative in 23b), the nominalizer particle 'no' surfaces in the right periphery of the relative clause. This particle is not present when 'keeki' moves. In our approach, this can be interpreted as an indication that in (23a) 'keeki' moves to the structural position that is occupied by the nominalizer particle in (23b). The particle is not needed in (23a), since the movement of 'keeki' can relabel the structure by turning it into a nominal constituent.

We propose that the "projecting" noun in English and Italian moves to the same slot in the CP area that is overtly visible in Japanese. We leave to future research the identification of the precise location of this structural position in the fine structure of the CP area (cf. Rizzi 1997). In section 8 below we will deal with the question of the trigger of the nominalizing movement of N.

We conclude this section by stressing that, to the best of our knowledge, the HEAD raising account is the only attempt to give a principled answer both to the word order problem that affects other versions of the raising analysis and to the issue of why projecting movement is restricted the way it is.

6. Fixing two more Problems for the (HEAD) Raising Analysis

Borsley (1997) mentions at least two more problems for the raising analysis, but they are less severe, since possible ways to fix them have been discussed in the previous literature. In this section we show how the HEAD raising analysis can deal with them.

In many Indo-European languages come in two different varieties. In addition to the structures introduced by a relative pronoun we have just discussed, they also display relatives introduced by a complementizer corresponding to the English 'that'. A problem mentioned by Borsley (1997) is that, assuming the raising analysis, a determiner appears to be missing in 'that'-relatives: two determiners are predicted to be involved, the one internal to the relative clause (corresponding to the *wh*-determiner), and the external one,

selecting the entire relative NP. However, only the latter surfaces in 'that'-relatives (cf. the ungrammaticality of 24).

(24) a. *The the man that I saw.
b. [the [[the man] that I saw ~~the man~~]]

We will assume that a null determiner (underlined in 25) is stranded in the base position of the noun head, before the noun head raises and projects. This is similar to what is assumed by proponents of the traditional raising analysis, such as Bianchi (1999).

(25) [$_{DP}$ The [$_{NP}$ [[$_{NP}$ man] [$_{CP}$ that I saw [$_{DP}$ D ~~man~~]]

Assuming an invisible category is a brute stipulation if this category is never directly detectable. However, the stranded D *is* visible in many languages. The relevant evidence, as observed by Bianchi (1999), is provided by so-called resumptive pronouns in relatives in (substandard) Romance varieties like (26). Since so-called resumptive pronouns are homophonous with definite articles, we analyze them as the stranded head of the DP from which the N has moved out.

(26) L'uomo che l'ho visto. (*Sub-standard Italian*)
the man that (I) the-MASC have seen
'The man I saw.'

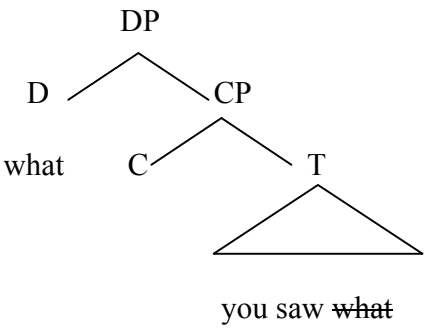
Crucially, the distribution of resumptive pronouns of this kind is restricted to 'that'-relatives, as predicted by the raising analysis. In Italian, resumptive pronouns are not attested in *wh*-relatives, even in those sub-standard varieties that allow them in 'that'-relatives: if resumptive pronouns are determiners just as wh-elements are, they are clearly predicted to be complementary in distribution.

(27) * L'uomo a cui gli ho parlato.
the man to whom (I) the-MASC have spoken
'The man I spoke to.'

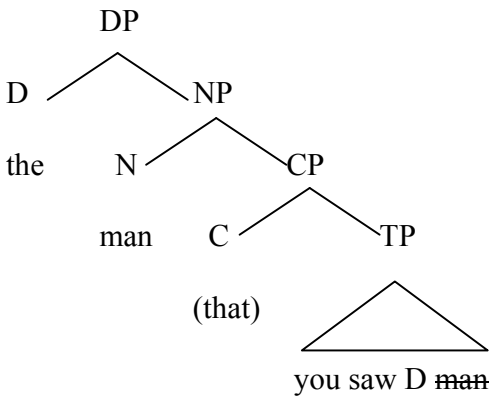
It can be shown that the strategy illustrated with (26) is quite general across Romance and Semitic varieties (cf. Borer 1984 a.o.), since in all these varieties there is clear evidence that so-called resumptive pronouns are determiners.

To clarify the analysis, a comparison with free relatives can be useful again:

(28) a. free relative



b. 'that'-relative



Our analysis raises a natural question. Non *wh*-determiners, which in certain varieties are overtly realized as resumptive pronouns, are stranded inside the T area of the relative clause in 'that'-relatives (cf. 28b). However, *wh*-determiners are stranded in the CP area of the relative clause in *wh*-relatives (cf. 22b). The question is what explains this different position for the stranded determiner. A natural explanation is in terms of locality. When D is endowed with a *wh*-feature (cf. 22b), it is visible to the root C, therefore the *wh* D-label is closer than the Noun to C. So, the entire DP is attracted to C. If the D is not endowed with a *wh* feature (cf. 28b), the N can move alone since the D-label no longer acts as an intervener. A related issue is that head movement in configurations like (28b) violates the Head Movement Constraint. However, see Roberts (2001), Suranyi (2005; 2007; 2008), Donati (2006), Cecchetto and Donati (2010) among others for various approaches assuming that head movement is not restricted by such a condition.

Finally note that our approach, like other versions of the raising analysis, can deal with still another problem raised by Borsley (1997). He observes that in sentences like (29) the very same DP should get two cases, nominative in the relative clause and accusative in the matrix clause. Similarly in (30) the very same DP should get nominative in the matrix clause and accusative in the relative clause. This raises a problem under the standard assumption that a DP can check/be assigned just one grammatical case.

(29) I saw the man that ~~man~~ left.
(30) The man that I saw ~~man~~ left.

In fact, as shown by the Polish example (31), in languages with morphological case, the DP is assigned the "matrix" case:

(31) Widziałem tego pana, który zbił ci szybę.
saw-1SG the-ACC man-ACC who-NOM broke your glass
'I saw the man who broke your glass.' (Borsley 1997: 635)

The case mismatch problem receives a natural explanation under our analysis: in fact, in both *wh*-relatives and 'that'-relatives, we assume there are two DPs that share the same N head. The lower DP (with a possibly null D) gets nominative, the higher DP gets accusative (but see Brattico 2010 for an in-depth analysis of case distribution inside the DP).

In the HEAD raising analysis what moves in externally headed relatives is always a noun, which, by virtue of being a lexical item, can relabel and nominalize the structure according to the Probing Algorithm in (3). The HEAD raising can be shown to be immune to problems that affect other versions. However, an outstanding obstacle and an open question are still in front of us. As for the open question: we have not yet said what is the trigger of the head noun raising. We shall postpone the discussion of this important issue to Section 8. Before that, we need to cope with what looks like an obvious counterexample: in many cases, the nominal constituent that is modified by the relative clause is not a simple noun, but is a phrase. Putting it in other terms, the "head" of the relative clause does not need to be a head (in the sense of phrase structure theory). (32) is just an example:

(32) The [[book about Obama] which you bought].

The next section is devoted to this issue. In fact, as we will show, far from being a problem, the pattern of relative clauses with a phrasal "head" turns out to support the HEAD raising analysis.

7. Relative Clauses with a Phrasal "Head"

The problem raised for the HEAD raising analysis by structures like (32) should be clear enough. Under the Probing Algorithm in (3), even if "book about Obama" moves, it cannot relabel the structure, which preserves the wrong CP label and therefore cannot be selected by the external determiner. So, the wrong step of the

derivation is (33b).

(33) a. [$_{DP}$ The [$_{CP}$ [$_{DP}$ which book about Obama] you bought [~~which book about Obama~~]]]
b. *[$_{DP}$ The [$_{CP}$ [[$_{NP}$ book about Obama] [$_{CP}$ [$_{DP}$ which [~~book about Obama~~] John saw [~~which book about Obama~~]]

In fact, we only have a way-out, if we want to maintain the gist of our proposal. Namely we must assume that whatever material modifies the head noun ('about Obama' in 33) can (and must) be late-merged, after the head noun has moved and has "relabeled" the structure. In this section we defend this assumption. In section 7.1 we show that so-called complements of nouns do not pose any special obstacle to the late merge analysis. In section 7.2 we consider reconstruction effects in some detail and show that they offer independent evidence in support of the late merge analysis of modifiers of the head noun.

7.1 Arguments of Nouns may be Late Merged

The idea that adjuncts can be merged late in the derivation has been extensively used and is not particularly controversial. The reason is that adjuncts are exempted from the theta-criterion, which is the condition that forces arguments to be inserted in the derivation as early as the predicates they receive a theta role from. The difficult case for the HEAD raising analysis is (alleged) complements of nouns in structures like (34). From now on, we will refer to a noun modifier that is commonly considered a complement of the noun as "complement", since we are going to argue against its status as genuine complement.
(34) The destruction of the city which you witnessed.
Here as well we are forced to say that 'of the city' is late merged, after the noun 'destruction' has raised and relabeled the structure. In this sense, we are forced to say that nouns do not assign theta roles and, *in this respect*, their 'arguments' behave like adjuncts. We think that several considerations indicate that this assumption is not only defendable but also motivated on independent grounds.

7.1.1 Omissibility.

In the verbal domain, one key criterion to distinguish elements that obey the theta-criterion (arguments) from elements that do not (adjuncts) is that the former are obligatorily expressed while the latter can be omitted (of course, this requires abstracting away from verbs that enter a transitive/intransitive alternation, where the absence of the internal argument may be attributed to the intransitive form of the verb):

(35) They destroyed the city last week.
(36) *They destroyed last week.
(37) They destroyed the city.

With "complements" of the noun the situation is sharply different. As observed by Adger (2010), "overwhelmingly, complements of nouns are always optional in a way that complements of verbs only sometimes are. Furthermore, this generalization is very robust crosslinguistically, so it seems to be a property of the categories N and V, rather than a property of words which are of those categories".

In fact, in order to maintain approaches stemming from Chomsky (1970) that take nouns to be able to assign theta roles just like verbs do, it is necessary to postulate that the Theta-Criterion behaves differently depending on whether it applies to nouns or verbs. However, this is a brute stipulation and should be avoided if possible. In the literature there are accounts that deny that a distinction between argument and adjunct can be drawn in the nominal domain and that argue that nouns cannot assign theta roles. Typically these accounts are framed in a Davidsonian framework (Dowty 2000 and Higginbotham 1985 are two classical references, but also Hale and Keyser 2002 and Kayne 2009 deny that nouns can take complements). Such accounts are in the same

spirit as our assumption that the modifier of the head noun of the relative clause is always an adjunct-like element.

However, these accounts confront an empirical problem, namely the fact, extensively discussed by Grimshaw (1990), that there is a class of nouns that *do* require a "complement". Grimshaw labels them complex-event-nominals. Take the noun 'assignment' as an example. It has two interpretations. In (38a) it can refer to a concrete entity; in (38b) it refers to an event.

(38) a. The assignment is on one page.
b. The assignment of the problem took a long time.

The addition of 'constant', as in (39b), forces the complex event reading of the noun. Crucially, on this reading 'assignment' requires a "complement", as shown by the awkwardness of (40), which has a status similar to (41):

(39) a. The assignment is to be avoided.
b. The constant assignment of unsolvable problems is to be avoided.
(40) *The constant assignment is to be avoided.
(41) *We constantly assign.

The use of modifiers like 'constant' is just one of several tests that Grimshaw proposes to unambiguously pick up the complex event reading of nouns. Crucially, when this disambiguation operation is done and the complex event reading is the only one available, it appears that nouns require an argument.

At this point, one possibility would be assuming that nouns on the complex event reading assign theta roles and whatever explains the deviance of (41) (say, a violation of the theta criterion) carries over to cases like (40). This assumption would be problematic for our analysis of relative clauses, which assume that nouns are not theta role assigners. However, Grimshaw takes a different tackle on this problem and maintains that nouns, even on their complex event reading, are *not* theta role assigners, despite the fact that they appear to require an argument. Let us first discuss the evidence for denying that nouns ever assign theta roles and then switch to Grimshaw's alternative account.

First, Grimshaw notes that if a complex event nominal could assign a theta role to its argument, the counterpart of passivization ought to be observed. In fact, passive nominals do exist (cf. 42a on the reading in which the politician gets appointed), but, crucially, passive nominals become unavailable on the complex event reading forced by the use of the modifier 'constant' (cf. the oddity of 42b on the relevant reading).

(42) a. The politician's nomination
b. *The politician's constant nomination

Another reason that leads Grimshaw to deny that nouns may assign theta-roles is that complex event reading nominals cannot take CP complements. This observation goes back to Stowell (1981), who notes that nouns with sentential complements do not have the meaning of process nouns. Thus, the noun 'observation' in (43) refers not to the event of observing but to the content of the observation.

(43) Their observation that the position had been filled surprised everyone.

Not surprisingly, the use of the modifier 'constant', which forces the complex event reading, is incompatible with the CP complement of the noun.

(44) *Their constant announcement that they were the greatest eventually became tiresome.

Of course verbs can take CP complements and can be passivized, thus Grimshaw concludes that nouns (even those that appear to require an argument) are unlike verbs and do not assign a theta role. Her alternative account maintains that nouns are always deficient theta role assigners. However, a noun, in order to have an

argument, can take advantage on the presence of the preposition, which is the actual theta role assigner. For example, in (39b) it is the preposition 'of' that assigns a theta role to 'unsolvable problems'. In turn, Grimshaw proposes, the argument structure of the noun and of the preposition are linked by "identification", the operation proposed by Higginbotham (1985) for modification. In Higginbotham's account, modification of the noun 'dissertation' in the expression 'long dissertation' is accomplished by "identification" of the argument of the modifier with the argument of the noun. Similarly, in (39b) the argument structure of the noun 'assignment' gets transmitted to the preposition 'of' by "identification" and the preposition theta marks 'unsolvable problems'.

This can explain why passive nominals are not allowed with complex event nominals (cf. 42b) and why these nominals cannot take CP complements (cf. 44). In both these problematic cases, a preposition is absent and the noun cannot have an argument, since it is a defective theta role assigner.

Let us summarize Grimshaw's account. Nouns do not obligatorily take "complements" but for a special class, namely complex event nominals. However, even these nouns are unlike verbs, in that they cannot be passivized or take CP complements. In fact, these nouns have an argument only with the help of a preposition, which is the real theta role assigner. The link between the complex event noun and the preposition is akin to the link between an adjective and the noun it modifies, namely "identification".

We conclude that if, as standardly assumed, late merge is possible whenever the late merged element does not receive a theta role from the category it is late merged to, it is possible to claim that any modifier is late merged to the head noun of the relative clause. Crucially, this conclusion can be maintained also for the most recalcitrant cases, namely the small subset of nouns that seem to require a "complement".

7.1.2 Constituency Tests.

In the clausal domain, standard constituency tests indicate that the verb and the internal object form a minimal constituent. For example, ellipsis in (45) elides and the proform in (46) replaces the complex constituent 'buy a house'. However, (47) and (48) are sharply ungrammatical since ellipsis and proform apply to the group of words 'will buy' (excluding the internal argument 'a house'), which is not a constituent.

(45) John will buy a house and Mary will ~~buy a house~~ too.
(46) John will buy a house and Mary will do that too.
(47) *John will buy a house and Mary ~~will buy~~ a house too.
(48) *John will buy a house and Mary do that a house too.

Similarly, it is a well known fact that the unit formed by subject and verb cannot be elided or replaced by a proform. This shows that subject and verb do not form a constituent that excludes the object.

Observations of this kind motivate a condition called *Verb-Object Constraint* by Baker (2009). This condition is one of the best candidates for a language universal, as discussed by Baker.

Strikingly, as pointed out to us by Chiara Branchini, if we apply the same type of constituency tests to the unit formed by the noun and by its alleged complement, the results are quite different. In Italian, the proform 'quello' ("that (one)") can replace the unit formed by determiner and noun, crucially excluding the "complement" of the noun (cf. 50). Similarly, the unit formed by determiner and noun can be fronted, while the alleged complement is stranded (cf. 51). Finally, in a cleft structure the post-copular unit can be formed by determiner and noun, while the "complement" of the noun sits in the postcopular clause (cf. 52).

(49) Ho visto **la foto** di Gianni.
I have seen the picture of Gianni
'I saw the picture of Gianni.'
a. [$_{DP}$ la [$_{NP}$ foto [$_{PP}$ di Gianni]]]
b. [$_{DP}$ la [$_{NP}$ foto]] [$_{PP}$ di Gianni]

(50) Ho visto **quella** di Gianni.
I have seen that of Gianni
(51) LA FOTO ho visto di Gianni (non il ritratto).
The picture I have seen of Gianni (not the portrait)
(52) E' la foto che ho visto di Gianni.
It is the picture that I have seen of Gianni

In English, facts are similar as shown for example by sentences like (53) in which 'that' replaces determiner plus noun by excluding the "complement" of the noun.

(53) I have already seen the picture of John, but I haven't yet seen that of Mary.

This pattern shows that at some level of representation determiner and noun form a unit that excludes the "complement" of the noun, but this is not expected if the standard representation in (49a), assuming that the head combines with its complement before any higher category is inserted, holds at any level of representation. However, if the "complement" ('di Gianni') can be late merged as in (49b), the pattern in (50) to (53) can be explained by assuming that replacement by a proform (cf. 50), fronting (cf. 51) and whatever operation is responsible for cleft structures (cf. 52) operate on the constituent 'la foto' before 'di Gianni' is late merged.

A reviewer objects that what we see in (50) (and similarly for the other cases, like 53 in English) might be the result of an operation applying to the entire nominal constituent out of which the "complement" of the noun has moved. So, in (50) 'di Gianni' might be right dislocated and 'quello' could replace the entire DP minus the right dislocated PP. However, this analysis is unlikely. First, right dislocation of 'di Gianni' in (50) would be string vacuous. Second, (50) lacks the typical prosodic contour of right dislocation structures in Italian (namely, there is no intonational break before the dislocated constituent, cf. Cecchetto (1999) on the properties of right dislocation)[5]. In any case, what is important here is that traditional constituency tests yield strongly divergent results with noun "complements" and verb complements.

Let us now try to be more precise on the attachment site of the "complement" of the noun when it is late merged. In the representation (49b) we suggest that it can be late merged to the constituent D+N. However, this conclusion is not forced in the HEAD raising analysis, since it is also compatible with late merge of the "complement" directly to N, as long as late merge takes place after N has relabeled the structure by virtue of being a lexical item.

In fact, we suspect that both options of late merge are available. On the one hand, structures like (54) indicate that the "complement" is late merged to N, since, were it late merged to the D+N category, the "complement" would surface after the relative clause[6]:

(54) a. The picture of John that I prefer is on the top.
b. La foto di Gianni che preferisco è lì sopra

However, there is some evidence that the "complement" can also be late merged to the constituent D+N. As observed by a reviewer, for reasons that are partly unclear, even with complex-event-nominals, the obligatoriness of the "complement" of the noun partially depends on the choice of the determiner. With an

[5] The same reviewer asks whether 'quello' can replace N alone. The answer is negative, because bare nominals are not allowed in Italian in sentences like (49), cf. the ungrammaticality of (i). If 'quello' replaced N alone in (50) the resulting structure could be ruled out by whatever condition excludes the bare nominal in (i).
(i) *Ho visto fotografia di Gianni.
(I) have seen picture of Gianni

[6] At least in Italian, the "complement" of the noun can appear after the relative clause, cf. (i). This is consistent with late merge of "di Gianni" to the D+N category:
(i) La foto che preferisco di Gianni
The picture that I prefer of John

agent "possessor", it is easier to find examples in which the 'of'-phrase cannot be omitted:

(55) a. John's destruction *(of the evidence) was done in secret.
b. The destruction (of the evidence) was done in secret.
(56) a. Our reinstatement *(of the graduate student) was a big mistake.
b. That reinstatement (of the graduate student) was a big mistake.

In a similar vein, Grimshaw (1990) observes that complex event nominals disallow indefinite determiners (*an exam /*an examination of the papers*) and cannot be preceded by a demonstrative determiner (*that exam / *that examination of the papers*).

That D (co) determines the distribution of the "complement" of the noun is easily captured if this modifies not N alone, but the bigger unit to which D belongs. This is somewhat reminiscent of (albeit specular to) what happens in the clausal domain. A standard argument for assuming that the external theta role is assigned by the unit formed by verb plus object is that the type of object influences the type of theta role assigned to the external argument (cf. the famous contrast between *he broke his arm/he broke the window*). Here we see the same pattern, although reversed: depending on the type of determiner, the "complement" of the noun may or may not be obligatory, suggesting that the alleged complement of the noun is in fact a modifier of the entire D+N unit (at least in cases like 55 and 56).

In this section, we have shown that standard constituency tests indicate that D+N can form a minimal constituent that excludes the "complement" of N. This is not compatible with a representation in which the "complement" of the noun is a real complement, which is merged to N before N is merged to D. If the "complement" is *late* merged to N (or to D+N), we can explain the pattern emerging from constituency tests.

7.1.3 Islandhood.

Another familiar way to distinguish arguments from adjuncts is based on their islandhood status. In the verbal domain, there is an argument-adjunct asymmetry in that only adjunct clauses are islands for extraction, while extraction from argument clauses is much easier. Again, we observe a fundamental difference in the nominal domain, in which the argument/adjunct asymmetry is much weaker, since both relative clauses and complement clauses of the noun are islands. This common pattern is captured by assuming the Complex NP Constraint. So, with respect to islandhood, adjuncts to the noun and so-called complements of the noun pattern alike, suggesting that a common analysis in terms of late merge may be on the right track.

Note that extractability *from* the PP modifier of the noun (its islandhood) is not to be confounded with extractability *of* the PP. While all modifiers of the noun (including alleged complements) are islands for extraction, suggesting that they have an adjunct-like status, different types of PP modifiers of the noun are extractable to a different degree. For example, there is a sharp contrast between sentences like (57) and (58):

(57) Of whom did you see [a painting ~~of whom~~]?
(58) *??From where did you see [a painting ~~from where~~]?[7]

Although it is sometimes said that the contrast in (57)-(58) illustrates an argument/adjunct asymmetry, this conclusion is definitely too quick. For example, 'by whom' in (59) would normally be categorized as an argument of the noun but its extraction produces a degraded result:

(59) *?? By whom did you see [a painting ~~by whom~~]?

[7] In fact, the degraded status of sentences like (58) might be due to a parsing problem, since they violate the principle of Late Closure ("If grammatically permissible, attach new items into the clause or phrase currently being processed, i.e. the clause or phrase postulated more recently"). Cf. Frazier (1987) for discussion on Late Closure.

In addition, the type of preposition plays an important role, with prepositions like 'of" favouring extractability. This can be shown in Italian, in which the counterpart of 'of' ('di') may introduce a PP that is not an argument in any obvious sense, cf. (60a). Still, even if the PP in (60) is not an argument, it can be easily extracted (cf. 60b).

(60) a. Ho comprato il maglione di colore rosso.
(I) have bought a sweater of color red
'I bought a read coloured sweater'
b. Di che colore hai comprato il maglione?
Of what color have (you) bought a sweater

The opposite case exists as well. In Italian there are cases in which the (alleged) complement of the noun can be introduced either by preposition 'di' (*of*) or by preposition 'a' (*at*). For example, (61) and (62) have the same meaning.

(61) Ho letto una recensione a Guerra e Pace.
(I) have read a review to War and Peace
(62) Ho letto una recensione di Guerra e Pace.
(I) have read a review of War and Peace

Strikingly, extraction of the PP is possible only with preposition 'di':

(63) Di quale libro hai letto una recensione?
Of what book have (you) read a review?
(64) *A quale libro hai letto una recensione?
to what book have (you) read a review?

If what governs PP extraction were the argument/adjunct status of the PP, (63) and (64) should be on a par, contrary to what is observed. These sentences confirm that what makes a difference is the type of preposition involved.

It is not crucial for our purposes in this paper to investigate why prepositions like 'of" favor extractability of the PP modifiers of the noun. It is sufficient to point out that the extraction pattern of PPs cannot be straightforwardly reduced to an argument/adjunct asymmetry.[8]

7.1.4 Ne-*Cliticization Pattern*

In this section we discuss an independent argument in favor of the hypothesis that the "complement" of the head noun of a relative is late merged. This argument is based on the pattern of 'ne'-cliticization in relative clauses. One of the uses of the clitic 'ne' in Italian is illustrated in (65). In (65) 'ne' is a proform for the PP 'of the meeting', namely the "complement" of the noun 'summary'.

[8] A reviewer points out that the contrast between (i) and (ii) may be captured only by the raising analysis, since under a non-raising (matching) analysis the DP 'two photos' sits in the same position in (i) and (ii).

(i) * Which landmark did you like two photos [$_{PP}$ of ~~which landmark~~] that you made?
(ii) Which landmark did you like two photos [$_{PP}$ of ~~which landmark~~] ?

Under any version of the raising analysis (including the HEAD raising analysis), (i) might be excluded by whatever condition blocks sub-extraction from a left branch, provided that such a condition can be defined in a way that selectively allows sub-extraction when this is possible (cf. Rizzi 2007 for discussion of such cases). Interestingly, the HEAD raising analysis opens up another perspective to explain the ungrammaticality of (i). The deviance of (i) can be related to the fact that only in (i) late merge of the PP is obligatory for relabeling reasons, while in (ii) nothing blocks early merge. A natural assumption is that (overt) extraction out of a late merged category is impossible, since this would introduce a countercyclic movement step in overt syntax.

(65) a. Ho scritto un riassunto della riunione.
(I) have written a summary of the meeting
b. Ne ho scritto un riassunto.
Of-it (I) have written a summary

However, if the PP to which 'ne' corresponds modifies the "complement" of the head noun of a relative clause, 'ne'-cliticization becomes sharply ungrammatical:

(66) a. Ho letto un riassunto della riunione che tu hai scritto.
(I) have read a summary of the meeting that you have written
b. *Ho letto un riassunto che tu ne hai scritto.
(I) have read a summary that you of-it have written

Our account directly predicts the ungrammaticality of (66b) and similar sentences. 'Ne'-cliticization is impossible because any modifier of the head noun 'summary' (including the clitic material) can be merged only after the head noun has moved to the left periphery and relabeled the structure. This means that the surface position of the clitic 'ne' is lower than the position in which it is inserted into the derivation. So, the derivation of (66b) involves a lowering movement and this explains the deviance of the sentence.

Notice that the ungrammaticality of (66b) is not due to a generic ban against moving the category out of which 'ne' moves. In fact, 'ne'-cliticization is possible if the DP where the clitic initially sits moves for reasons other than relativization. In (67) the movement of the DP is due to passivization and in (68) it is an ordinary case of wh-movement. In both cases, 'ne'-cliticization is felicitous:

(67) Un riassunto ne è stato scritto [~~un riassunto ne~~].
A summary of-it has been written
(68) Quanti riassunti ne sono stati scritti [~~quanti riassunti ne~~]?
How many summaries of-it have been written

The acceptability of (67) and (68) is expected in our system, since the "complement" of the noun does *not* need to be late merged in the general case. It *must* be late merged only if it attaches to the head of the relative clause, otherwise relabeling cannot take place. In (67) and (68) (early) merge of the clitic "complement" in the argumental position of the DP is possible, since no relabeling is involved in passivization and interrogatives. Accordingly, these sentences do not involve any lowering movement of the clitic.

7.2 Reconstruction Effects

The hypothesis that the material that modifies the head noun of the relative clause is late merged makes a precise prediction concerning reconstruction effects; since the head noun has moved from within the relative clause, assuming the copy theory of traces, it should behave as if it were in its base position as far as Condition C is concerned. However, if any material that modifies the head noun is late merged, no Condition C should be triggered by this material, since no trace/copy of the modifier is present in the gap position of the relative clause. This prediction is borne out by the sharp contrast between (69) and (70):

(69) The professor of $John_i$'s that he_i always praises.
(70) * The $professor_i$ that he_i always praises.

Here the very degraded status of (70) under the relevant interpretation can be clearly reduced to a Condition C effect (cf. *He_i always praises the $professor_i$) and the acceptable status of (69) can equally be explained if no Condition C effect holds due to lack of reconstruction. However the vast literature on reconstruction effects in relative clause (cf. Bianchi, 1999, Cecchetto 2006, Munn 1994, Safir 1999, Sauerland 2003, Vergnaud 1978 a.

o.) has neglected the contrast illustrated in (69)-(70). The reason is that this literature has focused on the presence/absence of reconstruction effects as an argument for or against the traditional version of the raising analysis, namely the version that assumes that what raises is the noun *plus the material that modifies it*. From this point of view, the contrast in (69)-(70) is puzzling, since (69) would be a counterevidence for the raising analysis while (70) would support it. However, the HEAD raising analysis does predict this contrast.

Having said this, let us briefly review other data that have been discussed in the existing literature. One argument often used in support of the traditional version of the raising analysis is the presence of reconstruction effects (=absence of Condition A effects) in sentences like (71):

(71) The picture of himself [that John likes *e* most] (was never on display).

Note that the grammaticality of (71) is *not* expected under the HEAD raising analysis, which assumes that 'of himself' is late merged. How can this be explained?

In fact, a problem with (71) arises no matter what analysis of relative clauses one wants to adopt, since data like (71) stand in direct contrast with data like (69). As initially observed by Munn (1994), the diagnostic based on Condition C and the one based on Condition A give opposite results when they are applied to the modifier of the head noun. In the case at hand, we observe a dissociation between Condition C reconstruction effects, which are missing (cf. 69), and Condition A reconstruction effects, which are attested (cf. 71).

In the literature two strategies have been employed to overcome the puzzle introduced by the pair made by sentence (69) and sentence (71). One is due to Sauerland (2003) and Hulsey and Sauerland (2006), who use this dissociation between Condition A and Condition C as evidence that relative clauses are structurally ambiguous between a raising and a non-raising matching analysis (see Carlson 1977 and Heim 1987 for earlier claims that relative clauses are structurally ambiguous and Bhatt 2002 for independent evidence for this claim). If relative clauses are given a (traditional form of) the raising analysis, Condition A reconstruction effects are expected (cf. the fact that the anaphor is bound in 71). If relative clauses are given a non-raising (matching) analysis, the head NP is merged outside of the relative clause with an elided NP inside the relative clause that must be similar enough to the head NP for the purposes of ellipsis licensing. Therefore no Condition C reconstruction effect is expected, for the R-expression in the relative clause head is not c-commanded by the material inside the relative clause (cf. the fact that 'John' is not illicitly bound in 70). Sauerland's approach explains the dissociation between (69) and (71), but is theoretically very costly. As observed by Cecchetto (2006), Sauerland introduces an undesirable redundancy in the theory, because relative clauses are treated on a par with sentences like "Flying planes can be dangerous". In doing so, he multiplies the cases of structural ambiguity. Furthermore, his approach faces the empirical problem of explaining the presence of Condition C reconstruction effects in sentences like (70), which Sauerland does not discuss.

The second way to deal with the unexpected dissociation between (69) and (71) is to deny the reliability of either (69) or (71). Both Bianchi (1997) and Cecchetto (2006) question the diagnostic based on Condition A reconstruction effects and claim that data like (71) are not reliable due to a serious complicating factor, namely the fact that DPs can have an implicit subject PRO (cf. Giorgi and Longobardi 1991, especially chapter 4, for this observation and for extensive evidence). So, one cannot exclude that the anaphor in cases like (71) is actually bound by PRO, which sits in the subject position of the NP, as shown in (72):

(72) $[_{DP}$ The $[_{NP}$ PRO_i picture of $himself_i]$ [that $John_i$ likes ~~picture~~ most]] (was never on display).

If the representation in (72) is correct, the absence of the Condition A effect does not need to be interpreted as a case of reconstruction, because the position in which *himself* overtly sits is c-commanded by a suitable antecedent, namely PRO. In turn, PRO is controlled by *John*, but this control configuration is a case of backward pronominalization that does not require c-command. So, in order to explain the grammaticality of (71), it is *not* necessary to assume that a copy of the entire picture NP is found in the complement position of the verb *like*. Cecchetto discusses (73) to support his view, a case in which the absence of a Condition A effect in a relative clause not only can but *must* be treated as a case of binding by an implicit PRO.

(73) La descrizione di se stesso [che ~~descrizione~~ aiuterebbe Gianni a passare l'esame] (non è stata presa in considerazione dalla commissione).
The description of himself that would help Gianni to pass the exam (was not considered by the committee)

The acceptability of (73) cannot be due to the fact that the anaphor 'se stesso' ("himself") is interpreted in the position of the gap, that is, (73) cannot be a case of reconstruction. This is so because the position of the gap (the subject position of the relative clause) is not c-commanded by the alleged antecedent of the anaphor ('Gianni'). So, the only way to explain the acceptability of (73) is assuming that PRO in the subject position of the complex NP acts as a binder of the anaphor, as shown in (74). PRO in turn is backward controlled by 'Gianni'.

(74) $[_{DP}$ La $[_{NP}$ PRO_i descrizione di se $stesso_i]$ [che ~~descrizione~~ aiuterebbe $Gianni_i$ a passare l'esame]].

In the same vein, Safir (1999) provides an example like (75), in which the anaphor 'himself' cannot be directly bound by its intended antecedent ('the rock star') neither in its surface position, nor in the reconstructed position. In neither position, 'the rock star' and 'himself' are in a local configuration because another potential binder intervenes ('his wife', 'she'). Even in cases like (75), the presence of PRO in the relevant NP is called for.

(75) The rock star said that his wife would not identify which pictures of himself she had defiantly sent to the tabloids. (Safir, 1999:595)

If Bianchi and Cecchetto are right in pointing out the complicating factor introduced by the presence of PRO, the alleged cases of reconstruction in relative clauses based on Condition A are not reliable, because they involve nouns like *picture*, which in principle can take an NP internal subject PRO. So, a large part of the literature on this topic rests on a shaky foundation.

Before leaving our discussion of reconstruction effects, we need to discuss a final case. Bhatt (2002) points out that sentences like (76) and (77) are ambiguous. The DP in (76) "has a reading where what John said can be paraphrased as 'X is the only book that Tolstoy wrote'. This is the 'low' reading. It also has a 'high' reading, which can be paraphrased as 'X is the only book about which John said that Tolstoy had written X.' " (Bhatt 2002: 57). A similar ambiguity arises in (77):

(76) The only book that John said that Tolstoy had written.
(77) The first book that John said that Tolstoy had written. (Bhatt 2002: 57)

The presence of the low reading in (76) and (77) is interpreted by Bhatt (2002) as evidence that the modifier ('only'/'first') can reconstruct, and this would indirectly show that it is not late merged but has been raised to its position together with the head noun 'book'. If Bhatt's interpretation is right, the HEAD raising analysis is seriously challenged, since the *phrase* 'only book'/'first book' cannot relabel the structure under the Probing Algorithm in (3).

However, there is some reason to question Bhatt's account of the ambiguity of (76) and (77), since we observe that the equivalent of the low reading described by Bhatt (2002) holds also in (78a), where no modifier is present. To see this, consider (78a) in a scenario in which Mary has given birth to two twins yesterday night, but John incorrectly said that Mary had a single baby. Given this scenario, a possible continuation of (78a) is the one in (78b):

(78) a. The baby that John said that Mary has given birth to….
b. …. must have been cloned.

In the reading that makes the continuation in (78a) possible, it is John (and not the speaker) who takes responsibility for the appropriateness of the singular form "baby". Presumably the speaker is first using John's words to report the facts and is then distancing from those words somewhat ironically in the continuation in (78b). In the same vein, when (76) and (77) receive what Bhatt calls the low reading, it is John (and not the speaker) who takes responsibility for the appropriateness of the modifier "only/first". We conjecture that in all three cases the relevant reading may be explained as a case of scare quotes, although we must leave to future research the task of developing a precise semantic account for this phenomenon. Adopting a scare quote analysis would allow us to avoid assuming reconstruction of the modifier in (76) and (77).

In this section we have discussed reconstruction effects in relative clauses. After having pointed out a pair of sentences that strongly support the HEAD raising analysis (69-70), we discussed murkier cases and showed the factors that complicate them. All in all, although the pattern is quite complex, the distribution of reconstruction effects supports our approach.[9]

7.3 Syntax/Semantics Mapping

All the evidence discussed until now indicates that so-called arguments of the noun behave like adjuncts in various respects and can be late merged when this is necessary, i.e. in case of relativization. Still, the evidence we considered was mainly based on syntactic considerations, so we need to ask if this proposal is semantically feasible, as well. In fact, no major problem arises if complements are treated as adjuncts in the semantic component.

To be concrete, take a semantic framework like the one described in Heim and Kratzer (1998). In that framework, nouns, like verbs, can be either transitive (of type *e, e,t*) or intransitive (of type *e,t*).
However, since transitive nouns do not always require arguments, it must be assumed that they are lexically ambiguous; they are of type *e, e,t* when they take an argument ("The picture *of John* (is nice)") while they are of type *e,t* when they don't ("The picture *in the drawer* (is nice)"). Furthermore, in this approach the preposition 'of' in the PP 'of John' and the preposition 'in' in the PP 'in the drawer' are taken to be semantically very different, although they belong to the same syntactic category. The former preposition would be semantically vacuous; it would not change the semantic type of the DP 'John' (namely, *e*), with which it combines. So, 'of John' would denote an entity of type *e*, which would become the argument of the noun 'picture', which in this structure would be of type *e, e,t*. The resulting expression 'picture of John' has the desired type *e,t.*

On the other hand, 'in' would contribute to the semantics of a PP like 'in the drawer', since it is a transitive preposition, namely it has the type *e, e,t* . When it combines with 'the drawer', the resulting PP has the semantic type *e,t* (assuming that the definite description is of type *e*). This PP is further combined with the intransitive noun 'picture' by predicate modification and the resulting expression 'picture in the drawer' has the desired type *e,t.*

In this story, not only transitive nouns like 'picture' must be treated as lexically ambiguous, but the

[9] A reviewer asks about scope reconstruction in sentences like (i).

(i) Two students that each professor has recommended will receive a stipend.

According to this reviewer, (i) "is fairly acceptable with *each* scoping over *two*". We believe that the judgments about scope reconstruction are pretty complex and they depend on various factors, including the equative/predicative character of the main sentence (we refer to Cecchetto 2006 for more complete discussion). Be that as it may, even assuming that scope reconstruction holds in (i), this would be no challenge to the HEAD raising analysis, In fact, it is possible that 'two' under the relevant reading of (i) is interpreted as a modifier of (and late merged to) the noun 'students', rather than being the external determiner. If so, 'each' can QR and take scope over 'two' without escaping the boundary of the complex NP. That this analysis is on the right track is confirmed by the fact that the inverse scope reading is impossible in (ii). This is expected under any version of the raising analysis that takes the determiner to be externally merged. In cases like (ii), in order for 'each' to get wide scope, it should QR out of the of the complex NP island. So, the inverse scope reading does not arise.

(ii) The two students that each professor has recommended will receive a stipend

syntactic category of prepositions does not have a uniform semantic mapping, since some PPs denote individuals and others denote sets.

One possible alternative is assuming that all PPs denote sets, which intersect with the set denoted by the noun. In this alternative story, the NP 'picture of John' would be given the same treatment as the NP 'picture in the drawer'. Technically, this is feasible and even desirable, since it would allow us to avoid a systematic ambiguity for the category of nouns, which would all be of type *e,t.* Furthermore, all prepositions would play a semantic role and this would further diminish the gap between syntax and semantics, since there would be a uniform mapping between the syntactic category of preposition and semantic type *e, e,t*.

So, treating so called complements of nouns as adjuncts, far from introducing a problem for their semantic interpretation, would simplify the syntax/semantics interface. The only price to pay is that the semantics/pragmatics interface might become more complex. While the semantic content of a preposition' like 'in' is easily defined in spatial terms, the semantic contribution of the preposition 'of' is admittedly vaguer. What 'of John' means should be determined contextually, utterance after utterance. In some cases, 'of John' would refer to the set of things that portrait John but in other cases the link to John might be much more indirect. For example, 'picture of John' might be used to refer to the set of pictures that John considered buying yesterday or thought about while taking a shower or is holding in his hands now. However, this complication of the semantics/pragmatics interface is unavoidable for all those cases in which a PP does not correspond to the internal argument of the noun. Therefore, our proposal does not complicate the picture in any significant way.

8. The trigger of Movement in Relative Constructions

Our account is not complete without a brief reflection on what exactly triggers the instances of relabeling movement we are discussing here, since we will have to make some assumptions that imply a severe departure from standard hypotheses on how movement is derived. These considerations on the trigger of movement in relative clauses will then allow us to move further and extend the HEAD raising analysis to other types of relative constructions.

As for free relatives, no real issue arises given out account: since free relatives involve the movement of wh-elements, which are independently known to be moveable, nothing special needs to be said. Whatever mechanism forces *wh*-movement in questions is also responsible for wh-movement in free relatives: in Agreement terms, there will be a Probe C with a wh-feature to be valued, searching and attracting a wh-goal in its c-commanding space. Let us stress this: our proposal is that free relatives and indirect questions have the very same derivation and that differences between them should all be reduced to the projecting property of lexical items. In fact, free relatives and questions show the same pattern in many respects. For example, there are multiple free relatives parallel to multiple interrogatives. In (79) the two bracketed free relatives occur in the same clause (actually one even contains the other):

(79) I finally read [what you wrote about [what I claimed in that article]].

Interestingly, our account can also explain why free relatives and interrogatives differ, when they do. For example, to the best of our knowledge, while there are *in situ* interrogatives, there are not *in situ* free relatives (see Caponigro 2003 for a review of free relatives crosslinguistically). Our approach can straightforwardly explain why sentences like (80) are sharply ungrammatical.

(80) *I will buy [you like what].

The verb 'buy' in (80) needs to select a DP but, if 'what' remains in situ, the category with which 'buy' merges is not of the right kind (it is a TP, not a DP). Not that LF movement of 'what' cannot help, under the standard

assumption that selectional requirement must be checked cyclically. So, the non existence of *in situ* free relatives is just a consequence of the projecting nature of the wh-word.[10]

Let us now consider the trigger of the relabeling movement in the case of full relatives. In the HEAD raising analysis (but, *mutatis mutandis*, the same holds for other types of raising analysis) an important question arises. What is the trigger of the movement, given that the 'head' N has no specific morphological marker (it is not wh-)? This problem arises for 'that' relatives in the first place, where the head moves directly from its base position to the edge of the clause (81a), but it affects wh-relatives as well. In wh-relatives there is a step of the derivation, when the head moves out of the wh-phrase and merges to the root, for which no wh-trigger can be called for: (81b).

(81) a. the [man [that [I met ~~man~~]]].
b. the [man [[who ~~man~~] [I met [~~who man~~]]]] .

We have seen that the result of the operation is that of providing an external Determiner with an object satisfying its selectional requirements (through relabeling). It is very tempting to argue that this is indeed the trigger of the operation itself. How can we reach this conclusion without introducing an unwanted look ahead in the computation or an anticyclic operation?

Consider the notion of selection and its role in the computation: in most standard views, selection is responsible for any structure building operation.[11] In contrast with standard Agree relations, selection involves an element still sitting in the numeration and a syntactic object already formed in the computational space. If we want to adhere to a strict minimalist thesis and assume that selection is a type of probe-goal relation, this amounts to saying that an element in the numeration can probe an element in the computation and trigger *external merge* (see Rizzi 2008 for a similar view). In (82), to illustrate, the verb 'think' in the numeration probes for the SO 'that Mary will leave'. As a result, the two merge together: (83).

(82) $\{think_C, \ldots\}$
[$_C$ that Mary will leave]
(83) [think$_C$ [$_C$ that Mary will leave]

Under the minimalist assumption that Move is just an instance of Merge, the null hypothesis is that the same mechanism can also trigger *internal merge*: in (84), for example, a D in the numeration can act as a probe searching for an appropriate N-goal to merge with. Suppose it finds an appropriate goal in the N feature present within the SO '[that man will come]'.

(84) $\{the_N, \ldots\}$
[that [$_N$man] will come]

[10] Another difference between indirect questions and free relatives was pointed out by Rizzi (1982): in languages like Italian a relative pronoun can be extracted from the former but not from the latter:
(i) Maria, a cui so chi ha telefonato…
Maria, to who (I) know who has phoned
(ii) *Maria, a cui ho punito chi ha telefonato…
Maria to whom (I) have punished who has phoned
(i) sharply differs from (ii), which has the status of a Complex NP Constraint violation. Whatever the Complex-NP Constraint ultimately derives from, it is only natural to think that the source of the contrast between (i) and (ii) is a difference in label, with a clause turned into a nominal label triggering a Complex NP Constraint violation. Therefore, in principle this difference can be reduced to the projecting property of lexical items involved in the derivation.

[11] With the exception of those involving adjuncts, which are by definition not selected: see Cecchetto and Donati (2010) and Hornstein (2009) for two distinct proposals on adjunction and a (tentative) derivation of adjunct islandhood.

Direct merging of 'the' with 'man' in the base position of the noun would violate the No Tampering Condition. As an alternative, the Probe D (still in the numeration) triggers *internal merge* of the N, which can turn the root into an appropriate SO with which D can merge: (85).

(85) the~~$_N$~~ [$_N$man that ~~man~~ will come]

More generally, it seems reasonable to assume that an LI still in the numeration can directly trigger a movement operation insofar as this movement creates the proper SO that satisfies the selection requirements of the LI. Let's call this movement 'selection driven movement' (see Vergnaud 1985 for a similar idea in a different framework).

Issues concerning triggers are important but intricate, and a proposal of this kind, directly linking head movement to selection needs to be closely scrutinized in its predictions. However, we want to stress that, since in our system only head movement has the property of relabeling its target, we predict that only head movement can be selection driven. This means that allowing this option does not run into the risk of overgenerating.
A natural extension would be to verify whether 'selection driven movement' is at play in other types of head movement (like, say V movement, or T movement). Although this paper is not the place to elaborate a fully-fledged theory of 'selection driven movement', we can observe that our approach nicely fits with a proposal concerning canonical cases of head movement, namely Suranyi's (2005) 'head movement *qua* root merger' theory.[12] We leave this important reflection for a different context, and rather focus here on some consequences of this approach on our understanding of relative clause constructions of different kinds.

Notice first of all that claiming that N movement in relative clauses is directly triggered by external selection means divorcing this operation from the realm of the complementizer: contrary to what happens in wh-movements, where C is both the locus and the probe of the operation, here the left edge of the clause is involved only because it is the root and not because of its feature specification. A well-known fact might be interpreted as a direct evidence of this divorce. Wh-elements in Spec, CP are incompatible in many languages with an overt complementizer (due to the so-called Doubly Filled Comp Filter: DFCF, by Chomsky and Lasnik 1977).

(86) a. *I wonder who if will come.
b. *The man who that you know.

Although the exact nature of this phenomenon is still unknown, it testifies the strict relation between the feature specification of the complementizer and that of the element it merges with in wh-movement constructions. As is well known, however, no such effect holds between the head of a relative clause and the complementizer, in any language:

(87) The man (that) you know.

Traditionally, this is explained by proponents of the raising analysis (e.g. Bianchi 1999) by claiming that relative 'heads' and the Wh-elements move into two different landing sites in the COMP area. Given the approach we are assuming here, we can provide a simpler explanation. The landing site of the two instances of movement may be the same (the edge of the clause), but the trigger differs: in wh-movement C is involved as the trigger, and this affects its realization (DFCF); when the relative head moves, C is not involved (because the trigger is external selection), and the movement has no consequence on the realization of C: no DCFC.

If the movement of the relative head is directly triggered by the selection features of an external element, we expect 'selection driven movement' to hold in contexts other than full relatives, namely the external selector might not be D but some other category. For example, we expect there to exist structures similar to free

[12] Biberauer et al. (2009) observe that, given minimalist assumptions on Agree and Merge, the *absence* of selection driven movement should be stipulated. However, they do not restrict selection driven movement to head movement the way we do, with interesting consequences.

relatives, where the raising head of the clause is a D selected by, say, an external V, but no wh-feature is involved. Romance pseudorelatives, we argue, are the case in point. Let us have a closer look at this construction and see how the HEAD raising anaysis can be extended to it.

9. Pseudorelatives and Locality

Pseudorelatives in Romance are adnominal clauses typically embedded under (certain) verbs of perception, which only superficially resemble relative clauses. One clear example of pseudorelative is in (88). The relative structure in (88) is distinguished from a restrictive relative since it "modifies" a pronoun. It is not an appositive relative clause either, since it lacks the specific prosodic contour of appositives and has a different meaning (88 roughly means "I saw him while he was kissing Maria").

(88) Ho incontrato lui che baciava Maria.
(I) have met him that kissed Maria
' I met him while he was kissing Maria.'

Another property sets pseudorelatives apart from genuine relatives: they can only be subject relatives: (89).

(89) *Ho incontrato lui che Maria baciava.
(I) have met him that Mary kissed
'I met him while Mary was kissing him'

In our analysis, pseudorelatives are just another case of selection driven movement, much like ordinary relatives, but with a crucial difference. While in ordinary relatives, the relabeling movement is movement of N, in pseudorelatives like (88) the relabeling movement is movement of D. In (88) the matrix verb 'incontrato' (''met') needs to be merged with a DP. It finds an appropriate goal in the D feature of 'lui' within the SO '[che lui baciava Maria]' (cf. 90). However, direct merging of 'incontrato' with 'lui' would violate the No Tampering Condition. So, the verb 'incontrato' (still in the numeration) triggers *internal merge* of D, which can turn the root into an appropriate SO, with which V can merge: (91).

(90) { incontrato_D, … }
$[_C$ che lui baciava Maria]
(91) $\text{incontrato}_{\text{~~D~~}}$ $[_D$ lui che ~~lui~~ baciava Maria]

The representation in (92) illustrates the labeling output. Under the Probing Algorithm in (3), D, by virtue of being an LI, can transmit its label.[13]

(92) $[_D$ lui $[_C$ che $[_T$ $[_D$ ~~lui~~] baciava Maria]]]
him that kissed Maria

This analysis amounts to making pseudorelatives also very similar to free relatives: in both cases what moves is a determiner-like head, as opposed to full relatives, where what moves is a N-head. There is however an important difference between them: recall that in free relatives the probe of the operation is a C attracting a wh-goal. As a result, we discussed this in details in section 3, a labeling conflict arises (C is the Probe of the

[13] Our approach is not compatible with a literal interpretation of Cardinaletti and Starke's (1999) proposal that strong pronouns like 'lui' project a full DP while clitics and weak pronouns have a more impoverished syntactic structure. Note that Cardinaletti and Starke's approach was fully natural assuming X-bar theory apparatus but is at odds with bare phrase structure, where the concept of maximal projection (XP) is not even a primitive. Still, the differences described by Cardinaletti and Starke are real, so they should be captured in the new framework. This is not the place to do that, though.

operation, but the wh-element is a Probe too by virtue of being a lexical item) and free relatives are systematically ambiguous. On the other hand, this ambiguity does not hold for pseudorelatives, and for a good reason: here C is not involved in the raising of the head, which is directly driven by selection. As a result, C is not a probe and no conflict arises, hence no ambiguity: pseudorelatives are never allowed to be embedded under a verb selecting for a CP.[14]

(93) *Ho saputo lui che baciava Maria.
(I) have known him that kissed Maria

The fact that pseudorelatives are restricted to subjects can also be derived under our account, in the following way. In pseudorelatives, any subject intervenes and blocks object raising because the feature attracted is D and a D in subject position c-commands the goal in object position: (94).

(94) *[$_{D/C}$ lui [$_{C}$ che [$_{T}$ [$_{D}$ la studentessa/Maria] baciava [$_{D}$ ~~lui~~]]]]
him that the student/Maria kissed

Note that our account can also explain why a similar intervention effect does not arise in free relatives and in ordinary relatives. Plain subjects do not intervene in free relatives because what moves is a wh-D head, attracted by a wh-C, and a plain D does not act as a proper intervener: only a wh D-subject does, as shown in (95).[15]

(95) a. I will read what I know that you read.
b. *I will read what I wonder who reads.

As for full relatives, recall that we have assumed that movement of the 'head' is dissociated from C and *wh*-features and that, at least in its final step, it is directly triggered by external selection (§8), just as in pseudorelatives. However, the reason why full relative clauses are not restricted to subject positions becomes apparent if we consider that in full relatives what moves is a N head (selected by an externally merged determiner), not a D head (96). While a D in subject position c-commands a D in object position acting as an intervener for a D-chain, this does not hold for a N in subject position, which, being embedded under a D, does not c-command anything in the clausal spine and does not technically intervene.

---

[14] The conclusion that pseudorelatives are always of category D should not be undermined by the compatibility of pseudorelatives with event proforms, such as 'ciò che', or 'un fatto', as illustrated in (i).

(i) a. Ho visto lui che baciava Maria, un fatto molto curioso
(I) have seen him that kissed Maria, a fact very curious
'I saw him kissing Maria, a very curious fact'
b. Ciò che ho visto è lui che baciava Maria
What that (I) have seen is him that kissed Mary
'What I saw is him kissing Maria

These proforms tell us something concerning the *interpretation* of pseudorelatives, which can have both an individual and an event reading, but don't tell us anything about their syntactic category, which is always D. That these proforms are not syntactic but semantic tests is confirmed by (ii), where they are shown to be compatible with a DP insofar it has an event interpretation.

(ii) Ho sentito l'esplosione delle torri, un fatto sconvolgente
(I) have heard the explosion of the towers, un fact chocking
'I heard the explosion of the towers, a shocking fact'
Ciò che ho sentito è l'esplosione delle torri
What that (I) have heard is the explosion of the towers
'What I heard is the explosion of the towers'

[15] *Mutatis mutandis*, the same holds for topicalization. Typically, an object can be topicalized over a subject. The absence of an intervention effect can be explained if the object has a topic-like feature that the subject lacks.

(96) il [$_N$ ragazzo [$_C$ che [$_D$ la [$_N$ studentessa]] baciava [$_D$ e [$_N$ ~~ragazzo~~]]]].

Pseudorelatives are possible with proper names, as well:

(97) Ho incontrato Gianni che baciava Maria.
(I) have met Gianni that kissed Maria
'I met Gianni while he was kissing Maria.'

This is not surprising, since proper names and pronouns have a similar distribution and freely occur in argument positions. We assume that the derivation of a pseudorelative like (97) is identical in the relevant respect to the derivation of (92), namely 'Gianni' moves alone and relabels the structure by virtue of being an LI.[16]

In this section we have seen that selection driven movement, as expected, occurs also with a selector different from D (the selector in full relatives). When a verb triggers a relabeling movement *of D*, a pseudorelative structure emerges. We could explain the puzzling fact that only subject pseudorelatives are allowed as a locality effect, under the standard assumption that Relativized Minimality effects arise only if the intervener c-commands the Goal.

---

[16] One might think that the head of pseudorelatives is not restricted to proper nouns and pronouns, contrary to what claimed in the text. As shown by its two English translations, (i), in addition to receiving a restrictive relative reading, receives a temporal reading, akin to the one found in pseudorelatives:

(i) Ho visto il ragazzo che se se stava andando
(I) have seen the boy that was leaving
'I saw the boy who was leaving'
'I saw the boy while he was leaving'

However, as Cinque (1992) correctly points out, the impression that (i) is a pseudorelative is due to the interference of an independent adverbial construction. Consider (ii).

(ii) Ho visto Gianni che se ne stava andando
(I) have seen Gianni that was leaving

(ii) is ambiguous between a pseudorelative structure (and interpretation) and a structure where the NP is the object of the perception verb, and the CP is a temporal adverbial clause with a null subject, with a meaning basically corresponding to a 'while' clause. This ambiguity can be resolved by inserting a lexical subject in the adverbial clause, as in (iii). In order to make the use of a lexical subject fully natural, in (iii) the pronoun is modified by *anche* ('also').

(iii) Ho visto Gianni che anche lui se ne stava andando
(I) have seen Gianni that also him was leaving

Clearly, (iii) is not a pseudorelative, since it contains no gap. Another test disentangling a pseudorelative from the adverbial construction is fronting: in a pseudorelative, but not in the adverbial construction, the noun and the clause form a constituent that can be fronted, as in (iv). That (iv) is not compatible with the adverbial construction is shown by the impossiblity of inserting a lexical subject .

(iv) GIANNI CHE (* ANCHE LUI) SE NE STAVA ANDANDO ho visto
Gianni that also him was leaving (I) have seen

With this in mind, we can go back to (i) and show that it is not a pseudorelative. This is clearly shown if we try to front it, as in (v).

(v) IL RAGAZZO CHE SE NE STAVA ANDANDO ho visto
the boy that was leaving (I) have seen

Here the structure gets disambiguated: the only reading available is the restrictive one, while the reading that looked like a pseudorelative in (i) disappears. This shows that that reading was indeed due to the adverbial structure, here excluded due to its incompatibility with fronting.

Interestingly, epithets seem to behave like definite description and unlike proper names. While (vi) is ambiguous between a restrictive reading and a temporal reading, in (vii) only the restrictive reading survives.

(vi) Ho visto il cretino che faceva casino
(I) have seen the idiot that made noise
'I saw an idiot who was making trouble'
'I saw the idiot while he was making trouble'

(vii) IL CRETINO CHE FACEVA CASINO ho visto

Notice before concluding that the approach to locality and relativization here presented has a number of consequences it would be worth exploring. On a crosslinguistic perspective, our analysis makes very strong predictions about relativization in genuinely determinerless languages: if head raising is selection driven by a D searching for a N to merge with, object relatives are predicted to be problematic in those languages in which a subject Noun is not embedded under a DP layer and thus acts as an intervener.

On an acquisition perspective, the account here discussed might provide the key to explaining a well known puzzle concerning the development of relative structures in first language acquisition: the systematic and dramatic time divorce between the development of subject relatives (around age 3), and that of object relatives (around age 8) in first language acquisition. We hope to progress in these directions in our future research.[17]

10. Conclusion

Although relative constructions have been systematically investigated for over 40 years in the generative tradition, the debate on their correct analysis is still very much open. The raising analysis (Kayne 1994, Bianchi 1999 a.o.), in particular, has many merits, the first being that it gives a simple explanation for the pivotal nature of the relative 'head', acting as a constituent both of the relative clause and of the matrix clause: the two positions are simply related by movement. We believe however that the raising analysis suffers from some drawbacks which all trace back to an incomplete understanding of the nature, the properties and the trigger of this movement operation. In this paper we proposed a slight modification of the raising analysis which led us to bypass the limits of the standard analysis and allowed us to extend its approach to a number of constructions related to relative clauses but poorly understood: free relatives, and pseudo relatives.

We started from a specific approach to phrase structure theory (Cecchetto and Donati 2010) where a lexical item can transmit its label when it is merged with another category, both when it is externally merged and when it is internally merged (i.e. moved). This means that there is a type of movement, head movement, which has the property of relabeling the structure it merges with. Analyzing the raising of the relative 'head' in different types of relativization structures as an instance of this relabeling head movement, we clarified the trigger of the movement, its relation to wh-movement, its case related properties, and its locality restrictions.
This new approach led to a radical revision of some standard assumptions of the current theory, such as the difference between adjuncts and complements in the nominal domain, or the relation between selection and movement. We hope the conclusions we reached here might be a stepping stone towards further research in these different directions.

[17] Subject (full) relatives are also more frequent crosslinguistically (cf. Keenan and Comrie (1977)'s Accessibility Hierarchy of relativization: Subject > Direct Object > Indirect Object > Oblique > Genitive > Object of comparative).

Appendix: 'ever' relatives and other Relatives that look free but are not

There are a number of constructions in English and in many other languages which superficially look like free relatives but diverge from them in some crucial aspects. We deal here with some of them, focusing in particular on those constructions that look like counterexamples for the approach to relativization presented in the paper. 'Ever'-relatives are the first case in point, illustrated in (98).

(98) I shall visit whatever town you will visit

What is interesting about (98) is that it looks like a free relative (the embedded clause is opened by a wh-element, and no separate nominal head is present) but it seems to involve a phrase movement of 'whatever town', instead of the head movement predicted to be the only possibility in relativization given our account.

'Ever'-relatives are found in a variety of languages, but Italian might be especially revealing in this respect. Battye (1989), in an insightful but neglected paper, explicitly addresses the issue of whether the counterpart of 'ever'-relatives can be on a par with free relatives and denies this by coining the term "pseudo free relatives". He identifies several areas of differences between genuine free relatives and pseudo free relatives. We discuss here five of them. The Italian counterpart of the '-ever' suffix is '-unque'. Since in Italian *unque* relatives with the wh-word *quanto* are not attested (and neither are free relatives with *quale*), in the following examples (adapted from Battye 1989) free relatives with *quanto* (lit. 'how much') are contrasted with pseudo free relatives with *qualunque* (lit. 'whichever').

Property (i) '-unque'-items can have an absolute use, namely they do not need to appear in a relativization structure. Ordinary free relatives (by definition) cannot have an absolute use:

(99) E' un argomento di tesi che avrei proposto a qualunque studente/*quanti (studenti).
It is a dissertation topic that I might have proposed to whichever student / *what student

Property (ii) '-unque'-items can occur with the complementizer that occurs in full relatives**.** Ordinary free relatives cannot.

(100) Qualunque costituente che venga spostato in COMP
Whichever constituent that is moved to COMP

(101) *Quanto che venga spostato in COMP/ *Quanti che vengano spostati in COMP
what that is moved to COMP

Property (iii) '-unque'-items can co-occur with a relative pronoun**.** Ordinary free relatives cannot.

(102) Qualunque ragazzo a cui parlo mi dice la stessa cosa.
Whichever boy to whom I speak tells me the same thing

(103) *Quanti a cui parlo mi dicono la stessa cosa.
what to whom I speak tell me the same thing

Property (iv) '-unque'-items have an adverbial use. Ordinary free relatives do not.

(104) Hai fatto un errore, qualunque motivo ti abbia spinto.
You made a mistake, whichever reason pushed you

(105) *Hai fatto un errore, quanti (motivi) ti abbiano spinto.
you made a mistake, what reasons pusched you

Property (v) '-unque'-items do not appear in infinitival complements. Ordinary free relatives do.

(106) *Cerco qualunque studente mandare al mio posto.
I search whichever student send in my place

(107) ?Cerco quanti mandare al mio posto.
I search what send in my place

These fives properties clearly tell apart normal free relatives and pseudo free relatives of 'ever' types. A very natural hypothesis is that the lexical operation that adds the '-unque'/'-ever' suffix to the wh-word inactivates its wh-feature, turning the wh-determiner into an ordinary quantificational one. This explains why 'whatever'-phrases cannot sit in indirect questions:

(108) Mi domando quale/*qualunque è arrivato.
I wonder which/whichever is arrived
(109) I wonder what/*whatever happened.

Furthermore, if the '-unque' phrase is an ordinary quantificational DP, it is expected that, although modification by a relative clause is possible (as with other quantificational DPs), it is not required. This explains the absolute use (property *(i)*) of '-unque' phrases in Italian. In fact, even in English, although most informants find a sentence like "I might suggest whatever topic for his dissertation" less than felicitous, examples of absolute uses are attested. The following is just an example from a random Google search: "I don't know what price range you are building in, but an architect can help you maximize your square footage or features of whatever house for your budget".

Properties *(ii)* and *(iii)* are easily explained in the same vein. If '-unque'-items are ordinary quantificational DPs, we expect them to occur in ordinary relative clauses, namely co-occurring with a complementizer and with a relative pronoun.

Recall that full relative clauses are crucially characterized by the fact that they are selected by an external determiner and what moves is only the bare determinerless 'head' of the relative clause. In *ever* relatives, we assume, the –'ever'/'unque' determiner is such an external determiner, and the 'head' of the relative is the nominal part of what ends up not being a constituent at all:

(110) I will visit whatever [$_{CP}$ [$_{NP}$ town] (that) [$_{IP}$ you will visit town]]].

In English grammar, there is an explicit prohibition against using 'whatever'-phrases with an overt complementizer, but this prohibition testifies that this use is possible, although it is strongly disfavoured by prescriptive grammars. Not surprisingly, examples are attested, as the following sentence resulting from another random Google search shows: "Consider that the value of whatever house that stands on any lot is derived in large part from the perceived value of other, comparable houses in the neighborhood".

Going back to Italian, notice that 'unque'–relatives are fully felicitous only in the subjunctive. Interestingly, the subjunctive mood typically licenses the dropping of the complementizer in Italian, as illustrated in (111).

(111) a. Credo *(che) parte domani.
(I) believe *(that) (he) leave-3SG-INDICATIVE tomorrow
b. Credo (che) parta domain.
(I) believe (that) (he) leave-3SG-SUBJUNCTIVE tomorrow

It is thus legitimate to interpret the obligatoriness of the subjunctive as evidence that the complementizer *che* is indeed always there in –'unque' relatives, and superficially dropped in most cases.
As for property *(iv)*, it is shared by English and Italian, as shown by an example like (112):

(112) Whatever/*What happens, I am not here.

As noted by Dayal (1997), the possibility of an adverbial use for -ever free relatives (unlike free relatives, which are totally infelicitous in the same context), relates to the quantificational nature of –'ever' determiners.
Also property *(v)* is shared by English and Italian, as confirmed by the pair (113a) and (113b):

(113) a. I found out what to read.
b. *I found out whatever (book) to read.

If -‘ever’/-‘unque’ structures are quantificational DPs, as we proposed, the ungrammaticality of (113b) is only expected, since quantificational DPs (and overt DPs in general) cannot sit in this type of structure (cf. 114):

(114) *I found out every book to read.

The grammaticality of a structure like (113a), and its Italian counterpart, is equally expected under our approach. In fact, ‘what’ occupies a position in the CP area in (113a), and as always in free relatives, a labeling conflict arises. One possible labeling output is one in which C transmit its label and ‘what to read’ becomes a CP, which is selected by ‘find out’ (cf. “I found out that reading is dangerous”).

Summarizing, five properties clearly set apart ordinary free relatives and pseudo free relatives in Italian and some of them clearly hold for English, suggesting that the analysis for Italian can be extended to English. They strongly suggest that pseudo free relatives are ordinary quantificational DPs, and therefore must receive a different analysis from ordinary free relatives. Crucially, the idea that a labeling conflict arises when a lexical item is merged with a complex syntactic object is *not* falsified by the existence of pseudo free relatives. On the contrary, this idea can explain the systematic differences between pseudo free relatives and ordinary free relatives quite directly, as we just showed.

We also assume that the same approach to pseudo free relatives can extend to other ‘maximalizing relatives’ (Grosu 2002) like (115), whose interpretation strongly suggests the presence of a silent *ever*-type determiner.

(115) I will read what books you will tell me.

There is finally another class of relative constructions that is worth discussing briefly here. This is illustrated in Italian, again, in (116).

(116) Leggerò quello che mi dirai di leggere.
I-will-read that that you-will tell me to read
‘I will read what you will tell me to read.’

What is interesting about (116) is that it seems to be the equivalent of a ‘what’-free relative in English, as shown by the translation provided. The difference is that no wh-element opens the sentence here, but rather a demonstrative element (‘quello’) followed by the complementizer introducing full relatives. A reviewer wonders whether we might analyze this as a free relative or not. This is relevant because if these structures happened to share the relevant properties, a natural and maybe simpler alternative to our analysis would be assuming that free relatives are just like (116) but with a silent D.

An English variant of (116) is the marginal and archaic but attested (117). Similar data are found in Dutch, which displays a relative construction introduced by ‘dat wat’, in addition to ‘standard’ free relatives introduced by ‘wat’ only.

(117) That which we call a rose by any other name would smell as sweet (Rome and Juliet, II, ii, 1-2)

There are a number of properties that clearly set apart these structures from free relatives and discourage a unified account.

First of all, the demonstrative here is clearly externally merged and not raising from within the relative clause. This is transparent in the English construction, where two determiners co-occur: ‘that’ and ‘which’ in (117), but the same kind of evidence emerges in the Italian case, as illustrated in (118).

(118) Ti insegnerò quello in cui credo.

I will teach you what in which I believe
'I will teach you what I believe in.'

This means that these structures are very different from free relatives, and much more similar to full relatives: they are introduced by a Determiner, they might or might not involve a wh-movement (at least in Italian, as in (116), a simple *that*-sentence is possible), and arguably involve the raising of some generic null noun.

Second, they are not ambiguous as free relatives are: they are incompatible with a context selecting for indirect questions: (119).

(119) *Mi chiedo quello che mi dirai di leggere
I wonder that that you will tell me to read
'I wonder what you will tell me to read.'

This again suggests that the structure of these sentences is different from that of free relatives (and similar to that of full relatives, notoriously never ambiguous either).

Third, the wh-elements that show up in this kind of relative construction are not the wh-elements that sit in free relatives, but rather those that are found in full relatives: in English, 'which' is impossible as a free relative (120a), but it typically belongs to the construction illustrated in (117) and in full relatives (120c): 'what' is a typical free relative introducer (120a), but it is impossible in this kind of structure (and in full relatives): (120b-c).

(120) a. What/*which we call a rose
b. *That what we call a rose
c. the thing which/*what we call a rose

The same asymmetry holds in Italian: '(a) cui' is impossible in free relatives (121a), but it shows up in (118) and in full relatives (121c); 'chi' is a typical free relative introducer (121a), but it is disallowed in this construction (and in full relatives): (121b-c).

(121) a. Mi dedicherò a chi/*a cui voglio bene
I will dedicate to whom I care
b. *Mi dedicherò a quelli a chi voglio bene
I will dedicate to those to whom which I care
c. Mi dedicherò alle persone a cui/*a chi voglio bene
I will dedicate to the people to which/to whom I care

Summarizing, it seems very unlikely that these relative constructions and the free relatives analyzed in this paper can be reduced to the same underlying structure at the light of their strong syntactic divergences. We can safely maintain that free relatives are only those ambiguous structures where a determiner-like wh-element raises to the edge of a clause, optionally relabeling it by virtue of the projecting property of heads, as we hope to have convincingly argued for in this paper.

References

Adger, David. 2010. A syntax of substance. Ms., Queen Mary University of London.
Baker, Mark C. 2009. Language universals: Abstract but not mythological. *Behavioral and Brain Sciences*, 32: 448-449.
Battye, Adrian. 1989. Free relatives pseudo-free relatives and the syntax of CP in Italian. *Rivista di Linguistica* 1: 219-250.
Belletti, Adriana. 1992. Agreement and Case in Past Participle Clauses. In *Syntax and Semantics* 26, ed. by Tim Stowell & Eric Wehlri, 21-44. New York: Academic Press.
Bhatt, Rajesh. 2002. The Raising Analysis of Relative Clauses: Evidence from Adjectival Modification. *Natural Language Semantics* 10: 43–90.
Bianchi, Valentina. 1997. The raising analysis of relative clauses: A reply to Borsley (1996). *Quaderni del Laboratorio di Linguistica* 11, 49-65. Pisa: Scuola Normale Superiore.
Bianchi, Valentina. 1999. *Consequences of antisymmetry: Headed relative clauses*. Berlin: Mouton de Gruyter.
Bianchi, Valentina. 2002. Headed Relatives in Generative Syntax. *Glot International* 6.
Biberauer, Theresa, Andres Holmberg, Ian Roberts 2009. Linearization and the architecture of grammar: a view from the Final-Over-Final-constraint. CISCL Working Papers, Proceedings of IGG 35. University of Siena.
Borer, Hagit. 1984. *Parametric Syntax - Case Studies in Semitic and Romance Languages*. Dordrecht: Foris.
Borsley, Robert D. 1997. Relative clauses and the theory of phrase structure. *Linguistic Inquiry* 28: 629–647.
Brattico, Pauli. 2010. The one-part and two-part models of nominal Case: Evidence from case distribution. *Journal of Linguistics* 45: 1-35.
Browning, Marguerite. 1987. Null operator Constructions, PhD dissertation, MIT.
Bury, Dirk. 2003. *Phrase Structure and Derived Heads.* PhD dissertation, University College, London.
Caponigro, Ivano 2003. Free not to ask: On the semantics of free relatives and wh-words crosslinguistically. Ph.D. dissertation, UCLA.
Cardinaletti Anna & Michal Starke. 1999. A typology of structural deficiency: A case study of three classes of pronouns, in Henk van Riemsdijk (ed), *Clitics in the Language of Europe.* Berlin: Mouton de Gruyter.
Carlson, Greg. 1977. Amount Relatives. *Language* 53:520-542.
Cecchetto, Carlo 1999. A Comparative Analysis of Left and Right Dislocation in Romance. *Studia Linguistica* 53:1, 40-67.
Cecchetto, Carlo 2006. Reconstruction in relative clauses and the copy theory of traces. In *Linguistic Variation Yearbook 5*, ed. by Pierre Pica and Joan Rooryck, 73-103. Amsterdam: John Benjamin.
Cecchetto, Carlo and Caterina Donati 2010. On labeling: Principle C and head movement. *Syntax* 13: 241–278.
Chomsky, Noam. 1965. *Aspects of the Theory of Syntax.* Cambridge, MA. MIT Press.
Chomsky, Noam 1970. Remarks on Nominalization, in *Readings in English Transformational Grammar*, ed. by Ann Jacobs Jacobs & P.S. Rosenbaum, 184-221. Waltham MA: Ginn..
Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht, Foris.
Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA. MIT Press.
Chomsky, Noam 2008. On Phases. In *Foundational Issues in Linguistic theory. Essays in honor of Jean-Roger Vergnaud*, ed. by Robert Freidin et al., 133-166. Cambridge: MA. MIT Press.
Chomsky, Noam. and Howard Lasnik 1977. Filters and Control. *Linguistic Inquiry* 8: 425–504.
Cinque, Guglielmo. 1978. La sintassi dei pronomi relativi 'cui' e 'quale' nell'italiano moderno. *Rivista di Grammatica Generativa* 3*:* 31-126.
Cinque, Guglielmo. 1992. The Pseudo-Relative and *Acc-ing* Constructions after Verbs of Perception. *Venice Working Papers*.
Citko, Barbara. 2008. Missing labels: head movement as project both. In *Proceedings of the 26th West Coast Conference on Formal Linguistics*, ed. by Charles B. Chang and Hannah J. Haynie, 121-128. Somerville, MA: Cascadilla Proceedings Project.
Donati, Caterina. 2006. On Wh head movement. In *Wh-movement moving on*, ed. by Lisa Cheng and Norbert Corver, 21-46. Cambridge, MA: MIT Press.

Dowty, David. 2003. The Dual Analysis of Adjuncts and Complements in Categorial Grammar'. In *Modifying Adjuncts*, ed. by Lang, Maienborn, and Fabricius-Hansen, Berlin: Mouton de Gruyter.
Fabb, Nigel. 1990. The difference between English restrictive and appositive clauses. *Journal of Linguistics* 26: 57–77.
Frazier, Lyn 1987. Sentence processing: A tutorial review. In *Attention and Performance XII: The Psychology of Reading*, ed. by Coltheart, 559–586, London: Erlbaum.
Friedmann, Naama, Adriana Belletti and Luigi Rizzi. 2009. Relativized relatives. Types of intervention in the acquisition of a-bar dependencies. *Lingua*.
Giorgi, Alessandra and Giuseppe Longobardi. 1991. *The Syntax of Noun Phrases*. Cambridge: Cambridge University Press.
Grimshaw, Jane. 1990. *Argument Structure*. Cambridge, MA: MIT Press.
Grosu, Alex. 2002. Strange relatives at the interface of two millennia. State-of-the-Article, *GLOT International* 6: 145-167.
Guasti, M. Teresa. 1988. La pseudorelative et les phénomènes d'accord. *Rivista di grammatica generativa* 13.: 5-57.
Hale, Ken and Samuel J. Keyser 1993. On argument structure and the lexical expression of grammatical relations. In *The view from Building 20. Essays in honor of Sylvain Bromberger*, ed. by Ken Hale and Samuel J. Keyser, 53-110. Cambridge, MA: MIT Press.
Hale, Ken and Samuel J. Keyser 2002. *Prolegomenon to a theory of argument structure*. Cambridge, MA: MIT Press.
Heim, Irene. 1987. The Semantics of Definite and Indefinite Noun Phrases. Ph.D. Dissertation. MIT.
Heim, Irene and Angelika Kratzer 1998. *Semantics in generative grammar*. Malden, MA: Blackwell.
Higginbotham, James 1985. On Semantics. *Linguistic Inquiry* 16:547- 931.
Hulsey, Susan and Uli Sauerland 2009. Sorting out relative clauses. *Natural Language Semantics* 14:111–137.
Iatridou, Anagnostopoulou and Izvorski 2001. Observations about the form and meaning of the perfect. In *Ken Hale: a Life in Language, ed. by* Michael Kenstowicz, 189-238. Cambridge, MA: MIT Press.
Koeneman, Olaf 2000. *The Flexible Nature of Verb Movement*. Utrecht, LOT Publications.
Kayne, Richard. 1975. *French Syntax*. Cambridge, MA: MIT Press.
Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.
Kayne, Richard 2009. Antisymmetry and the lexicon. In *Linguistic Variation Yearbook 2008*, ed. by Van Craenenbroeck, Jeroen, 1–32. Amsterdam: John Benjamins.
Keenan, Edward and Bernard Comrie 1977. Noun Phrase Accessibility and Universal Grammar. *Linguistic Inquiry* 8: 63-99.
Larson, Richard. 1987. Missing prepositions and the analysis of English free relative clauses. *Linguistic Inquiry* 18: 239-266.
Manzini Rita. 1994. Syntactic Dependencies and Their Properties: A Note on Strong Islands, *University College of London Working Papers in Linguistics* 6: 205-218.
Matushansky, Ora. 2006. Head movement in linguistic theory. *Linguistic Inquiry* 37:69–109.
Munn, Alan. 1994. A minimalist account of *reconstruction* asymmetries. In *Proceedings of NELS 24.* GLSA.
Rizzi, Luigi 1982. Violations of the *wh*-island constraint and the subjacency condition. In: Luigi Rizzi, *Issues in Italian Syntax*. Dordrecht: Foris.
Rizzi, Luigi. 2007. On Some Properties of Criterial Freezing. *STiL - Studies in Linguistics*, Vol.1. University of Siena.
Rizzi, Luigi. 2008. On delimiting movement. Paper presented at GLOW, University of Newcastle.
Roberts, Ian. 2001. Head Movement. In *Handbook of Syntactic Theory*. ed. by Mark Baltin and Chris Collins, 113-147. Oxford: Blackwell.
Safir, Ken. 1999. Vehicle change and *reconstruction* in A-chains. *Linguistic Inquiry* 30:5 87-621.
Sauerland, Uli. 2003. Unpronounced heads in relative clauses. In *The Interfaces: Deriving and Interpreting Omitted Structures*, ed. by Ken Schwabe and Susan Winkler , 205–226. Amsterdam: John Benjamins.
Shimoyama, Junko. 1999. Internally headed relative clauses in Japanese and E-type anaphora. *Journal of East Asian Linguistics* 8:147-182.

Stowell, Tim. 1981. Origins of Phrase Structure. Ph.D. thesis. MIT.
Surányi, Balazs. 2005. Head movement and reprojection. *Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös Nominatae. Sectio Linguistica.* XXVI. Budapest: ELTE. 313-342.
Surányi, Balazs. 2007. On Phase Extension and head movement. *Theoretical Linguistics* 33: 121-132.
Surányi, Balazs. 2008. Cyclic Spell Out and reprojection in head movement. In *Sounds of Silence: Empty Elements in Syntax and Phonology*, ed. by J. Hartmann, V. Hegedűs and H. van Riemsdijk, 293-337. Amsterdam: Elsevier.
Vergnaud, Jean Roger. 1974. French relative clauses. Ph.D. thesis. MIT.
Vergnaud, Jean Roger. 1985. *Dépendances et Niveaux de Représentation en Syntaxe*. Amsterdam: John Benjamins.