Movement or Control? Some Hints from Floating Quantification

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1. Introduction: Hornstein’s multiple quantifier diagnostics

Hornstein (2001) develops a diagnostic based on the properties of Floating Quantifiers (henceforth, FQ) to show that Obligatory Control (henceforth, OC) structures involve an extended chain, a corollary of his analysis of OC predicates as a result of A-movement from the base-generated position of the apparent controller within the infinitival clause to the surface position as an argument of the matrix predicate. In what follows, I will dub this theory ‘Movement Theory of Control’ (MTC for short). Hornstein’s diagnostic is based on Sportiche’s (1988) idea that FQs are residues of an A-movement, adjacent to a trace of a moved NP,¹ as in the following structure:²

(1) \[ \text{IP NP ... [VP NP Q tNP] ... ] } \]

¹. Hornstein points out that it is not necessary to assume Sportiche’s theory of floating quantification is not necessary (see Hornstein 2001: 71, note 80). The assumption that the associate NP and the FQ be clause mates is however necessary. I take it then that Hornstein’s diagnostics is not incompatible in itself with the adverbial theories of floating quantification (see Doetjes 1992).

². Sportiche takes the quantifier to be an adjunct of the NP. Shlonsky (1991) and succeeding analyses propose a functional projection (or even more than one), labelled ‘QP’, dedicated to the quantifiers. According to these proposal the NP movement starts form within the QP as follows:

(i) \[ \text{IP NP ... [QP Q tNP] ... ] } \]

This does not affect Hornstein’s discussion, neither the present one.

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Hornstein observes that examples in which an NP is associated to more than one FQ are odd (Hornstein’s ex. (89b)):

(2) ??The men all have all eaten supper.

Raising structures containing two FQs are odd as well, since they contain an A-chain only (Hornstein’s ex. (91a)):

(3) ??The men all seem to have all eaten supper.

Since each NP chain can include at most one quantifier (be it DP internal or floated), FQs can be used to detect NP-chains. Hence, Hornstein argues, if OC can be analyzed in terms of movement, OC structures containing more than one FQ are expected to have the same status as root sentences and raising structures containing more than one FQ. He then shows that this expectation is borne out (Hornstein’s ex. (95c)):

(4) ??The men all hope to have all eaten supper (by 6).

Of course, structures involving two A-chains each containing a FQ are fully legitimate, since they do not violate the constraint prohibiting there to be more than one quantifier per chain. Non-obligatory Control structures, which Hornstein claims are not formed by A-movement, constitute an example of structures involving two A-chains containing one FQ each (Hornstein’ example (96b)):

(5) The men all thought that all dancing with Mary was fun.

Hornstein also proposes a second type of diagnostic involving multiple different quantifiers.\(^3\)

(6) a. ??The men both have all eaten supper.

b. ??The men both seem to have all eaten supper.

c. ?? The men both hope to have all eaten supper (by 6).

d. The men both thought that all dancing with Mary was fun.

\(^3\) The following examples are adapted from Hornstein’s (2001) examples (91)b, (93)b, (95)d and (96)a.
The results of this second diagnostic test parallel those of the first test, in which the same quantifier is repeated twice.
Hornstein’s diagnostics can be straightforwardly extended to Italian:

(7)  a. ?? Tutti gli studenti hanno tutti superato l’esame.
    All the students have all passed the exam
b. ?? Tutti gli studenti sembrano aver tutti superato l’esame.
    All the students seem to have all passed the exam
c. ?? Tutti gli studenti sperano di aver tutti superato l’esame.
    All the students hoped to have all passed the exam
d. Tutti gli studenti hanno detto che superare tutti l’esame era la loro speranza.
    All the students have said that to-pass all the exam was their hope
    ‘All the students said all to pass the exam was their hope’.

(8)  a. ?? Entrambi gli studenti hanno tutti superato l’esame.
    Both the students have all passed the exam
b. ?? Entrambi gli studenti sembrano aver tutti superato l’esame.
    Both the students seem to have all passed the exam
c. ? Entrambi gli studenti sperano di aver tutti superato l’esame.
    Both the students hope to have all passed the exam
d. Entrambi gli studenti hanno detto che superare tutti l’esame era la loro speranza.
    Both the students have said that to-pass all the exam was their hope
    ‘Both the students said all to pass the exam was their hope’.

Note however that intuitively sentence (8)c does not seem to be as degraded as sentences (7)a-c and (8)a and b, and it could be uttered in a context in which two students hope that all the members of a contextually relevant set of individuals of which they both are part have passed the exam. Despite its oddity if uttered out of the blue, sentence (7)c becomes possible in an appropriate scenario – for instance, if each of the contextually relevant students hopes for each of them to have passed the exam.
2. Control or Restructuring?

It must be noted that the conclusion that the oddity of OC structures containing more than one FQ is a piece of evidence in favor of the MTC is not compelling. Rather, Hornstein’s diagnostics will turn out to be a valuable test for restructuring.

Wurmbrand (1998, 2001, 2003, 2004) and Cinque (2000, 2004, 2006) propose that NP movement is involved in restructuring. In restructuring structures the infinitival subject is an NP-trace. On the other hand, in non-restructuring infinitives the infinitival subject is PRO, the controller and PRO are not part of the same A-chain, and non-restructuring structures are the only OC structures. This theory predicts that restructuring structures should be strongly marginal when tested through Hornstein’s diagnostics, whereas non-restructuring structures should be acceptable.

The question then arises whether Hornstein’s diagnostics really show that OC involves movement, or whether they show that a given structure involves restructuring. In what follows, I will show, building on data from Italian, that the second option seems to be the correct one.

3. Exhaustive Control and Restructuring

The question above can be answered taking into account some syntactic and semantic properties of Control. Wurmbrand and Cinque claim that the distinction between restructuring and non-restructuring infinitives coincides with the distinction between ‘perfect’ and ‘imperfect’ (as Wurmbrand 1998, 2001 dubs them) or ‘exhaustive’ and ‘partial’ (as Landau 2000, 2003 calls them) Control predicates. The first class of Control predicates, Exhaustive Control (henceforth, EC) predicates, includes predicates requiring that the denotation of the infinitive subject be strictly identical to the (apparent) controller. The second class, Partial Control (henceforth, PC) predicates, includes predicates that do not require that the denotation of the infinitival subject and the denotation of the controller be identical. In PC the denotation of the infinitival predicates need only to include the denotation of the controller. Landau (2003) claims

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4. Wurmbrand’s and Cinque’s theories of restructuring differ in certain respects. These differences are however not relevant in the present context.
that PC is incompatible with MTC, since the head of an A-chain and its traces must be strictly identical referentially.\textsuperscript{5}

Let’s go back to the question with which the previous section ended. Assuming Wurmbbrand’s and Cinque’s theory of Control and Restructuring, Hornstein’s diagnostics detect restructuring. Hornstein’s tests applied to PC structures should then not yield unacceptability, since they do not involve A-movement. In this case, the two FQs should belong to two different A-chains, and, semantically, they should quantify over two different sets of contextually relevant individuals – one a subset of the other.

4. Partial Control and FQs

To check this hypothesis, Landau’s (2001) diagnostic methods seem to be ineffective in themselves.\textsuperscript{6} However, the presence of a set of individuals within the conversational background seems to be able to elicit a PC reading even when the controller is plural. To do this, a second set of individuals is mentioned in a clause under which sentence (7)c is embedded:

\begin{equation}
(9) \quad \text{Le ragazze}_1 \text{ hanno detto che tutti i ragazzi}_2 \text{ speravano di aver tutti}_1,2 \text{ superato l’esame.}
\end{equation}

The girls have said that all the boys hoped DI to-have all passed the exam

‘The girls said all the boys hoped to have all passed the exam’.

The following interpretation is intuitively available for the above control structure sentence: ‘There is a set X of boys, and there is a set Y of boys and girls, X a subset of Y, such that every member of X hoped that every member of Y has passed the exam’. The two universal quantifiers then apply to two different sets of individuals. An

\textsuperscript{5} However, for a movement analysis of PC, see Hornstein (2003), Hornstein and Boeckx (2006), Barrie (2004), Barrie and Pittmann (2004). For a discussion of Hornstein’s (2003) proposal, see below.

\textsuperscript{6} They indeed involve collective predicates, like meet, gather, in the infinitive or adverbials like together, which all require a semantically plural subject, vis-à-vis a singular controller. Unfortunately, Hornstein’s diagnostics involve a plural controller/associate DP.
appositional can be inserted within the embedded clause to render explicit the set of individuals the embedded FQ applies to:7

(10) Le ragazze hanno detto che tutti i ragazzi speravano di aver tutti – ragazze e ragazzi – superato l’esame.
The girls have said that all the boys hoped to have all – girls and boys – passed the exam
‘The girls said all the boys hoped for them boys and girls all to have passed the exam’.

The multiple different quantifier diagnostic test, in which the floated universal quantifier clearly applies over a set of individuals larger than the set of the controllers, provides similar results:

(11) Le ragazze1 hanno detto che entrambi i ragazzi2 speravano di aver tutti1+2 superato l’esame.
The girls have said that both the boys hope to have all passed the exam
‘The girls said both the boys hoped for them boys and girls all to have passed the exam’.

To contrast, embedding a root or a raising clause under a declarative predicate does not sort grammaticality, nor does adjoining an appositional possible in root and in raising contexts:

(12) a. * Le ragazze1 hanno detto che tutti i ragazzi2 hanno tutti1+2 superato l’esame.
The girls have said that all the boys have all passed the exam
b. * Le ragazze1 hanno detto che tutti i ragazzi2 sembrano aver tutti1+2 superato l’esame.
The girls have said that all the boys have said to have all passed the exam
c. * Le ragazze1 hanno detto che entrambi i ragazzi2 hanno detto di aver tutti1+2 superato l’esame.
The girls have said that both the boys have said to have all passed the exam
d. * Le ragazze1 hanno detto che entrambi ragazzi2 sembrano aver tutti1+2

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7. The FQ has here a contrastive focus. I assume that this property has no relevance for the problem here discussed. I refer to Valmala (2008) for the discourse-related properties of the floating quantification.
superato l’esame.
The girls have said that both the boys seem to have all passed the exam
   All the boys have all – girls and boys – passed the exam
   All the boys seem to have all – girls and boys – passed the exam

Let’s go back to the sentences where a PC reading is apparently available. The
acceptability of sentence (9) (and of (7)c and (8)c, provided the appropriate scenario)
shows that the subject of sperare ‘hope’ and the infinitival subject do not belong to one
and the same A-chain\(^8\). Hence, sperare is not a restructuring verb, which independent
diagnostics on restructuring like, for instance, clitic climbing, long NP‐movement,
auxiliary selection confirm\(^9\). The following examples show that sperare is not a
restructuring verb, in contrast with potere ‘can’, which is:

\[(13)\]  
| (13) a. Spero di averlo superato.   | a’. Posso leggerlo.                  |
| I hope to have-it(CL) passed      | I can read-it(CL)                    |
| ‘I hope to have passed it’.       | ‘I can read it’.                      |
| It-CL I hope to have passed       | It-CL I can read                      |
| c. Si spera sempre di superare certi esami. | c’. Si può leggere questi libri. |
| SI\(_{arb}\) hopes always to pass such exams | SI\(_{arb}\) can\(_{3sg}\) read these books |
| ‘One always hopes to pass such exams’. | ‘One can read these books’. |
| d. ?? Certi esami si sperano sempre di superare. | d’. Questi libri si possono leggere. |
| Such exams SI\(_{arb}\) hope\(_{3pl}\) always to pass | These books SI\(_{arb}\) can\(_{3pl}\) read |
| ‘One always hopes to pass such exams’. | ‘One can read these books’. |
| e. Ho sperato di arrivare in orario. | e’. Ho potuto arrivare in orario. |
| I have\(_{Aux}\) hoped to arrive in time | I have\(_{Aux}\) can.PP to arrive in time |
|                                         | ‘I was able to arrive in time’.     |

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\(^8\) I include sentences (7)c and (8)c among PC structures because the controller and the controllee are not referentially identical. But this is a simplification. See section 6 for details.

f. * Sono sperato di arrivare in orario.  
   I am hoped to arrive in time 
   ‘I was able to arrive in time’.

The analysis can be extended straightforwardly to other non-restructuring predicates, like factive, propositional, and interrogative predicates:

(14) Le ragazze hanno detto che tutti/entrambi i ragazzi si rammaricano/ricordano di aver tutti letto quel libro.  
The girls have said that all/both the boys regret/remember to have all read that book  
‘The girls have said that all/both the noys regret/remember having all that book’.

This sentence siappropriate in a scenario in which all the boys regret/remember that a certain book had been read by all of them and by someone else – here it may be the girls. *Mutatis mutandis*, a similar interpretation is achieved if the relevant predicate is interrogative:

(15) Le ragazze hanno detto che tutti/entrambi i ragazzi si chiedevano quale libro leggere tutti.  
The girls have said that all/both the boys wondered which book to read all  
‘The girls have said that all/both the boys wondered which book they have all to read’.

Example (9) and similar can be also contrasted with restructuring predicates. Assuming Wurmbrand’s and Cinque’s theories of restructuring, since restructuring predicates involve movement, they should be sensitive to Hornstein’s diagnostics. This claim seems to be correct with any kind of restructuring verb in Italian:

(16) a. ?? Tutti/entrambi gli studenti lo possono leggere tutti.  
b. ?? Tutti/entrambi gli studenti lo devono leggere tutti.  
c. ?? Tutti/entrambi gli studenti lo volevano leggere tutti.  
d. ?? Tutti/entrambi gli studenti lo hanno cominciato a leggere tutti.  
e. ?? Tutti/entrambi gli studenti lo hanno finito di leggere tutti.  
f. ?? Tutti/entrambi gli studenti lo hanno provato a leggere tutti.  
g. ?? Tutti/entrambi gli studenti lo vanno a leggere tutti.  
   All/both the students it-CL V (P/C) to-read all
5. The combination of negative quantifier and universal quantifier.

Hornstein’s diagnostics build on the generalization that there cannot be more than one quantifier per A-chain. Two quantifiers cannot belong to one and the same A-chain, no matter if only one or both of the two is floated (Hornstein’s (2001) example (89c)):

(17) ?? Both the men both have eaten supper.

I assume, then, that the multiple different quantifier diagnostic can be repeated even with quantifiers that do not float, such as the existential quantifier some or the negative quantifier no. I will now focus on the negative quantifier in standard Italian and discuss the case of the existential quantifier in section 6.

The negative quantifier nessun(o/a) ‘no’ is syntactically singular (Nessun libro/ *Nessuni libri ‘no-SG book/no-PL books’). This property in itself excludes the possibility for a universal FQ to occur in an NP-chain hosting the negative quantifier. The universal FQ requires a plural associate, thus a feature clash obtain between the two operators.\(^\text{10}\)

Moreover, the logical form of a proposition containing the negative adjective may be represented by the following formula:

(18) \(\neg \exists x P(x)\)

Proposition (18) entails proposition (19), and vice versa:

(19) \(\forall x \neg P(x)\)

However, as Dowty and Brodie (1984) point out, FQs are obliged to take scope in their surface position. Hence, in a sentence like The students have not all passed the exam (and in its Italian counterpart Gli studenti non hanno tutti superato l’esame) the only available interpretation can be paraphrased as “It is not the case that for every student x, x has passed the exam”, which implicates “There is some student x such that x has passed the exam”. It cannot be paraphrased by no way as “For every student x, it is not the case that x has passed the exam”, which entails “There is no student x such that x

\(^{10}\) Kayne (1981) notes that FQ have the same structural and locality constraint anaphors have. Of course they have the same morpho-syntactic constraints as anaphors.
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has passed the exam”. A sentence like *No students have all passed the exam* seems then to be contradictory, since it asserts the proposition “∀x¬P(x)” (by virtue of the negative adjective and by entailment), and that “¬∀xP(x)” (by virtue of the negative adjective taking scope over the universal quantifier).

Thus, Hornstein’s diagnostics cannot be applied straightforwardly to Italian. However, Landau’s PC tests do involve a singular subject. It should then be possible to construct PC structures using the negative quantifier as the controller. The presence of a universal quantifier floated should show whether a PC reading is available or not\(^\text{11}\). If the predicate of a so constructed sentence is a restructuring predicate, the sentence is ungrammatical:

(20)  
  a. * Nessuno studente lo può leggere tutti.  \textit{can}
  b. * Nessuno studente lo deve leggere tutti.  \textit{must}
  c. * Nessuno studente lo vuole leggere tutti.  \textit{want}
  d. * Nessuno studente lo ha cominciato a leggere tutti.  \textit{begin}
  e. * Nessuno studente lo ha finito di leggere tutti.  \textit{finish}
  f. * Nessuno studente lo ha provato a leggere tutti.  \textit{try}
  g. * Nessuno studente lo va a leggere tutti.  \textit{go}

Non-restructuring predicates can be acceptable, given the appropriate context:

(21)  (I viceministri\(_1\) hanno detto che…)
(The vice-ministers have said that…)
(‘The vice-ministers said that…’)

a. nessun ministro\(_2\) si rammarica di essersi tutti\(_{1,2}\) riuniti a Bruxelles.
   no minister regrets DI to-be all gathered in Brussel
   ‘no minister regrets they have all gathered in Brussel’.

b. nessun ministro\(_2\) ricorda di essersi tutti\(_{1,2}\) riuniti a Bruxelles.
   no minister remembers DI to-be all gathered in Brussel
   ‘no mnister remembers they have all gathered in Brussel’.

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\(^{11}\) Note that according to Landau’s (2000: 48) PC-generalization (version I), “In a PC construction with a controller in the singular […] cannot be inflected for plural, or contain a non-singular anaphor/floating quantifier”. It seems however that this generalization does not hold for PC in Italian, as examples in (15) show. See section 6 for a sketchy treatment of this question.
c. nessun ministro\textsubscript{2} si chiede se riunirsi tutti\textsubscript{1+2} a Bruxelles.
no minister wonders whether to-gather all in Brussel
‘no minister wonders whether they should all meet in Brussel’.

Intuitively, in any of the examples (21) the FQ applies to the set of the ministers plus
the set of the vice-ministers, eliciting a PC reading (together with the collective pedicate
\textit{riunirsi} ‘gather’).

Note that sentences in (21) are relevant within the debate whether PC can be reduced to
the MTC, as a number of articles have claimed (see note 3). I discuss here Hornstein's
proposal to accommodate PC under MTC. Hornstein (2003: 42ff.) stipulates that a
meaning postulate instantiates the PC reading. The conjunction provides the
semantically plural reading of the infinitival subject:

(22) If “DP Vs [\textsubscript{TP} to VP]” then “DP Vs [\textsubscript{TP} DP and some contextually specified others
to VP]”

However, a negatively quantified DP cannot be a conjunct of a positively quantified
DP, when a quantifier is floated:

(23) * Nessun ministro e i viceministri si sono tutti riuniti ieri sera.
No minister and the vice-ministers have all gathered yesterday evening

If a PC reading for sentences (21) was achieved via the meaning postulate in 0, the
phrase \textit{nessun ministro e i viceministri} ‘no minister and the vice-ministers’ should
obtain at some level of the derivation, which should determine ungrammaticality and
give rise to contradiction due to the presence of a negative quantifier and a floated
universal quantifier within the same A-chain.

6. Some remarks on Partial Control and quantified controllers

Landau’s (2000: 48) PC-generalization (version I) is as follows:

(24) “In a PC construction with a controller in the singular, the embedded predicate
can be lexically collective or contain \textit{together}, but cannot be inflected for plural,
or contain a non-singular anaphor/floating quantifier”.
Given examples like (21), PC generalization does not seem to hold for PC in Italian, since the embedded predicate contains a non-singular floating quantifier in spite of a controller in the singular.

However, examples in (21) may not be PC structures in the sense of Landau.\(^\text{12}\) Let us suppose that the controller is the presupposed set of the individuals the negative quantifier \(\neg \exists\) applies on – remember that the quantifier \(\neg \exists\) carries an existential presupposition when used as strong quantifiers: no minister remembers having met in Brussel presupposes that there is at least one minister. Thus, sentence (21) may be paraphrased as “there is no x, x a member of the set of the ministers P, such that x regrets/remembers every member of P’s having met in Brussel”.

Claiming that in these examples no PC holds seems to be a legitimate step and may explain the apparent violation of the PC-generalization without the undesired claim that in Italian the PC-generalization does not hold.

This proposal holds for examples (9) and (11) as well. Here again the claim that Control is partial may be debated. Let us consider a sentence in which the existential quantifier occurs within the controller DP:

(25)  a. Only some senators remember having all approved that law.
       b. Solo alcuni senatori si ricordano di aver tutti approvato quella legge.

Intuitively, the English sentence and its Italian counterpart are appropriate in a context in which a law has been approved by all of the members of the senate, while only some of them remember that it was approved unanimously.\(^\text{13}\) In such a scenario, sentences (25) seem to be felicitous with no need of, say, embedding them in order to provide other contextually relevant individuals in addition to the controller, differently from the examples by Landau. Hence, while in Landau’s examples the additional individuals to which PRO refers is given by the conversational background, in the examples here discussed it is presupposed by the controller itself.

\(^{12}\) I thank James Higginbotham for this suggestion.

\(^{13}\) In an another reading, all refers to the set of ‘some senators’. This reading is not relevant here.
7. Conclusion

Hornstein’s diagnostics prove a valuable test for detecting A-chains. Assuming Wurbrand’s and Cinque’s theory of restructuring, it has been shown that Hornstein’s diagnostics can be used as restructuring tests, rather than as OC tests. Modal, aspectual and motion predicates, appear to involve A-movement from a thematic position of the infinitival predicate to an A-position of the restructuring predicate. Factive, propositional, and interrogative infinitival clauses seem to resist Hornstein’s diagnostics and can be considered as PC predicates. This seems to support Cinque’s (2004) idea that the only authentic instances of OC are PC structures, whereas EC structures can be reinterpreted as Restructuring. It has been shown how PC does not seem to be compatible with a movement analysis, building on an argument inspired by Hornstein’s multiple different quantifier diagnostics, which involves the negative operator and a FQ. Finally, it has been shown that examples involving a quantified controller and an embedded FQ may not be cases of PC at all, although the reference of the controller and the reference of PRO do not need to coincide, as in the very cases of PC. While in the instances of PC discussed by Landau an individual is provided by the conversational background in addition to the controller, in the examples discussed here a set of individuals is presupposed by the very controller by virtue of its (strong) quantifier.

References


Wurmbbrand, Susanne (1998), Infinitives, PhD diss., MIT.

