

## RESEARCH

# Degree quantifiers, bare quantifiers and intensifiers in the midfield: A new look at quantification at a distance

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Nearly all of the theories of Quantification at a Distance (QAD) that have been put forth in the past fifteen years have assumed that degree quantifiers are first merged in the derivation as a midfield (VP-) event-quantifying adverbs. This has one important consequence, pointed out in Bouchard and Burnett (2007: 8), which is that if the restriction of the quantifier in QAD is assumed to be a set of events and if the event variable is introduced in the left periphery of the VP, “the term Quantification at a Distance [...] is, in fact, a misnomer. There is nothing ‘long distance’ about the semantic composition of QAD; it simply proceeds via adjacency.” In this article, I aim to challenge this view. I first introduce novel empirical evidence, which I believe unambiguously supports a movement derivation of QAD. Specifically, I show that the degree quantifiers in QAD have the same distribution as bare quantifiers like *tout* ‘everything’ and *rien* ‘nothing’, which are arguments of the verb and are therefore first-merged VP-internally, yet are spelled out in the midfield. This leads me to re-examine the data that have led to the hypothesis that a movement analysis of QAD is undesirable and show that alternative explanations can be provided for them. Finally, I offer a new account of QAD, one that reconciles a movement derivation with the facts that have led to its demise.

**Keywords:** bare quantifiers; degree quantifiers; head movement; intensifiers; split quantification

## 1 Introduction

The syntactic construction known as French Quantification at a Distance (hereafter QAD) is exemplified by sentences in which a bare degree quantifier appears in pre-participial position while the phrase that arguably denotes its restriction occupies a canonical argument position. QAD sentences like (1a–b) thus contrast with cases of so-called canonical quantification (1c–d), which are cases in which the degree quantifier and its restriction appear together as a phrase.

- (1) a. Cécile a **énormément** bu **de vin**.  
Cecile has enormously drunk of wine  
‘Cecile drank an awful lot of wine.’
- b. J’ai **beaucoup** vu **de jeunes** utiliser ce genre de logiciel.  
I-have a-lot seen of young to-use this kind of software  
‘I’ve seen a lot of young people use this kind of software.’
- c. Cécile a bu [**énormément de vin**].
- d. J’ai vu [**beaucoup de jeunes**] utiliser ce genre de logiciel.

As illustrated in (2), QAD is a rather productive phenomenon, as it involves a wide range of degree quantifiers.

- (2) a. Paul a **si peu/tellement** attrapé **de truites** que...  
Paul has so few/so-many caught of trout that
- b. Annie a **peu/assez/pas mal/trop** bu **de Pepsi**.  
Annie has little/enough/quite-a-lot/too-much drunk of Pepsi
- c. J'ai **plus/moins** peint **de chaises** que toi.  
I-have more/fewer painted of chairs than you

Kayne (1975: 29), who, to the best of my knowledge, was the first to discuss QAD within the framework of generative grammar, was quick to dismiss a movement analysis of QAD whereby the syntactic derivation of (1a–b) would involve first merging the degree quantifier in the canonical position it occupies in (1c–d), then moving (re-merging) it in pre-participial position. Indeed, as he pointed out, such an analysis would fail to capture the fact that the degree quantifiers that participate in QAD are exactly those that independently occur as pre-verbal adverbs, as (3) illustrates.<sup>1</sup>

- (3) a. Paul a **si peu/tellement** parlé que...  
Paul has so little/so-much talked that
- b. Annie a **beaucoup/peu/assez/pas mal/trop** marché.  
Annie has a-lot/so-little/enough/quite-a-bit/too-much walked
- c. J'ai **plus/moins** couru que toi.  
I-have more/less run than you

Kayne's original argument against a movement derivation of QAD (along with others that will be discussed in section 3 below) has had a profound influence on the various analyses of QAD that have been proposed in the literature. Indeed, with the exception of Kayne (2002) and Labelle and Valois (2004), all of the theories of QAD that have been put forth in the past fifteen years (and the great majority of their predecessors) have assumed that the degree quantifier is first merged in the derivation as a midfield (VP-) event-quantifying adverb (see Doetjes 1997; Heyd 2003; Mathieu 2006; Burnett 2011, among many others).<sup>2</sup> This has one important consequence, pointed out in Bouchard and Burnett (2007: 8), which is that if the restriction of the quantifier in QAD is assumed to be a set of

<sup>1</sup> As was subsequently pointed out in Obenauer (1983: 79–80) and Doetjes (1994: 20–21), this assumption might need to be qualified in view of the fact that there are degree quantifiers that appear in canonical quantification constructions *and* occur independently as pre-verbal adverbs, yet do not participate in QAD.

- (i) a. Eric a **un peu** toussé hier.  
Eric has a-little coughed yesterday
- b. Eric a acheté [**un peu de café**].  
Eric has bought a little of coffee
- c. \*Eric a **un peu** acheté **de café**.  
Eric has a little bought of coffee

The grammatical status of (ic) is, however, subject to a great deal of variation. While some speakers (including a reviewer and his/her two informants) find (ic) well-formed, my informants judgments ranged from marginally acceptable to full ungrammaticality. The same informants, however, had no trouble accepting parallel sentences like (ii).

- (ii) Ces séances de kiné lui ont **un peu** redonné **d'autonomie**.

these sessions of physical-therapy him have a little given-back of autonomy

Furthermore, Kayne (2002: 111) points out that even for those speakers that reject sentences like (ic), such sentences greatly improve with the addition of a purpose clause. He attributes the judgment for (iii) to Isabelle de Crouzaz.

- (iii) Il avait un peu acheté de chocolat pour lui faire plaisir.  
he had a little bought of chocolate to her please

I have no explanation as to why this should be.

<sup>2</sup> I will have little to say about Kayne's (2002) movement analysis of QAD, illustrated in (i). I will simply note that it involves multiple functional projections and instances of Move, the evidence for which is not as clear

events and if the event variable is introduced in the left periphery of the VP (cf. Kratzer 1996), “the term *Quantification at a Distance* [...] is, in fact, a misnomer. There is nothing ‘long distance’ about the semantic composition of QAD; it simply proceeds via adjacency.”

In this article, I aim to challenge this view. In section 2, I introduce novel empirical evidence, which I believe unambiguously supports a movement derivation of QAD. Specifically, I show that the degree quantifiers in QAD have the same distribution as bare quantifiers like *tout* ‘everything’ and *rien* ‘nothing’, which are arguments of the verb and are therefore first-merged VP-internally, yet are spelled out in the midfield. This leads me, in section 3, to re-examine the data that have led to the hypothesis that a movement analysis of QAD is undesirable and show that alternative explanations can be provided for them. Finally, in section 4, I propose a Matushansky-style head movement analysis of QAD that reconciles the internal merge hypothesis with the facts that have led to its demise.

## 2 Evidence for a movement derivation of QAD

A few arguments in favor of a movement derivation of QAD already exist in the literature. First, Milner (1978: 691) introduces a paradigm that presents a challenge to Kayne’s (1975) contention that the degree quantifiers that participate in QAD are *exactly* those that independently occur as pre-verbal adverbs. He points out that of *énormément* and *abondamment*, which mean roughly the same thing (i.e., ‘a lot’) and can both function as VP adverbs (4a), only *énormément* can participate in both QAD and canonical quantification structures (4b–c).

- (4) a. Patrick a abondamment/énormément mangé.  
Patrick has abundantly/enormously eaten
- b. Patrick a énormément/\*abondamment mangé de soupe.  
Patrick has enormously/abundantly eaten of soup
- c. Patrick a mangé énormément/\*abondamment de soupe.  
Patrick has eaten enormously/abundantly of soup

Though (4) is the only paradigm of this type that I am aware of in the literature on QAD, it is by no means unique as (5–7) make abundantly clear.<sup>3</sup>

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as one might wish. K in (i) corresponds to Bayer et al.’s (2001) version of the functional head K(ase) (K is assumed to carry the feature [oblique] and may be realized by P).

- (i) TARGET: ...peu acheté de livres  
few bought of books
- DERIVATION:
- |   |  |
|---|--|
| ...acheté [livres peu]  | ⇒ merger of K- <i>de</i>                         |
| ...K- <i>de</i> acheté [livres peu]   | ⇒ movement of <i>livres</i> to Spec,K- <i>de</i> |
| ...livres <sub>i</sub> K- <i>de</i> acheté [[e] <sub>i</sub> peu]   | ⇒ merger of <i>de</i>                            |
| ... <i>de</i> livres <sub>i</sub> K- <i>de</i> acheté [[e] <sub>i</sub> peu]  | ⇒ movement of VP to Spec, <i>de</i>              |
| ...[acheté [[e] <sub>i</sub> peu]] <sub>j</sub> de livres <sub>i</sub> K- <i>de</i> [e] <sub>j</sub>                                | ⇒ movement of [[e] <sub>i</sub> peu] higher up   |
| ...[[e] <sub>i</sub> peu] <sub>k</sub> [acheté [e] <sub>k</sub> ] <sub>j</sub> de livres <sub>i</sub> K- <i>de</i> [e] <sub>j</sub> |  |

<sup>3</sup> A reviewer contends that there seem to be no examples of a quantifier that would appear in the nominal domain and never appear adjoined to VP except when it appears in QAD (cf. Doetjes 1997: 178). Kayne (2002: 110), however, gives the pair of examples in (i), which he attributes to Viviane Déprez. Although the judgments are not clear-cut, these also show that the parallel with VP adverbs is not perfect.

- (i) a. (?) Elle a tout plein acheté de bouquins.  
she has all full bought of books  
‘She bought plenty of books.’
- b. ?? Elle a tout plein rigolé.  
she has all full had-fun  
‘She had plenty of fun.’

To be fair, examples like (ia) are not accepted by all speakers (half of my informants rejected them). A Google search, however, did yield the following.

- (5) a. Patrice a trop/excessivement mangé.  
Patrice has too-much/excessively eaten  
b. Cette industrie a trop/\*excessivement pollué de fleuves.  
this industry has too-many/excessively polluted of rivers  
c. Cette industrie a pollué trop/\*excessivement de fleuves.  
this industry has polluted too-many/excessively of rivers
- (6) a. Stéphanie a peu/à peine parlé.  
Stéphanie has little/barely spoken  
b. Stéphanie a peu/\*à peine reconnu de monde.  
Stéphanie has few/barely recognized of people  
c. Stéphanie a reconnu peu/\*à peine de monde.  
Stéphanie has recognized few/barely of people
- (7) a. Francine a beaucoup/profusément écrit sur ce sujet.  
Francine has a-lot/extensively written on this subject  
b. Francine a beaucoup/\*profusément écrit d'articles.  
Francine has a-lot/extensively written of-articles  
c. Francine a écrit beaucoup/\*profusément d'articles.  
Francine has written a-lot/extensively of-articles

Such paradigms are problematic for the view that the degree quantifier in QAD is first introduced in the derivation as a VP adverb because there seems to be no obvious means to filter out those VP adverbs that are incompatible with a *de*-phrase in the VP in the (b) examples in (4–7).<sup>4</sup> In contrast, the movement hypothesis immediately captures these facts: if a degree quantifier cannot head a canonical quantification structure, it cannot be remerged later on in the derivation to yield QAD.

The second type of argument that has been brought up to argue for a movement derivation of QAD is based on the fact that the *de*-phrase in QAD can only occur in those positions that would have been characterized in the Government-Binding days as “V-governed” (see e.g., Boivin 1999; Labelle & Valois 2004; Burnett 2011). These are, of course, the very syntactic positions that are known to not place any restrictions on extraction. Thus, QAD is possible if the *de*-phrase appears as sister to V (8a), but is sharply ungrammatical if the *de*-phrase appears in subject position (8b), even if the *de*-phrase is a derived subject (8c).

- (ii) a. ...j'ai déjà plein acheté de trucs là-bas...  
I-have already full bought of stuff there  
'I already bought lots of stuff there...'  
b. ...car j'ai plein perdu de cheveux d'un coup...  
because I-have full lost of hair of-one swoop  
'because I lost a lot of hair all at once...'

<sup>4</sup> A reviewer points out that although s/he agrees with the judgments reported in (4–7), s/he (and consulted informants) find *excessivement* ‘excessively’ and *à peine* ‘barely’ with QAD relatively acceptable (“not so bad” is the term s/he uses) in sentences such as those in (i).

- (i) a. Jean a excessivement mangé de soupe.  
Jean has excessively eaten of soup  
b. Il a à peine dégusté de fromage.  
he has barely tasted of cheese

My informants (and myself) judge these to be ungrammatical though somewhat processable. Assuming that there is dialectal variability in the judgments, the point remains there is no exact parallel between QAD degree quantifiers and pre-verbal adverbs, based on the other mismatches provided. On the other hand, it could be that sentences like (i) are ill-formed as QAD constructions yet processable by analogy with the pre-verbal adverb + partitive *de*-phrase combination encountered in examples like (ii), found on the internet.

- (ii) a. Pas que j'ai excessivement bu de l'alcool quand j'étais enceinte.  
'Not that I excessively drank alcohol when I was pregnant.'  
b. Nous avons à peine mangé de ce poisson.  
'We barely ate any of that fish.'

This constraint is, however, relaxed in the case of subject positions that belong to a clause with an impoverished left periphery that is selected by a verb (8d).

- (8) a. On a beaucoup mangé **de frites**.  
we have a-lot eaten of fries  
'We ate a lot of fries.'
- b. \***De professeurs** ont beaucoup lu ces livres.  
of professors have a-lot read these books  
'A lot of professors have read these books.'
- c. \***De livres** seront beaucoup lus.  
of books will-be a-lot read  
'A lot of books will be read.'
- d. J'ai beaucoup vu [**de guitaristes** utiliser ce genre de médiateur].  
I-have a-lot seen of guitarists to-use this kind of plectrum  
'I've seen a lot of guitarists use this kind of pick.'

Additionally, *de*-phrases in QAD cannot be contained in an object PP (9a), a fact that can be made to follow from the general prohibition on extraction out of prepositional phrases in French (9b).

- (9) a. \*Ils sont **beaucoup** tombés [dans **de pièges**].  
they are a-lot fallen into of traps  
'They fell into a lot of traps.'
- b. \***[Combien]<sub>i</sub>** sont-ils tombés [dans [[e]<sub>i</sub> **de pièges**]]?  
how-many are-they fallen into of traps  
'How many traps did they fall into?'

Finally, there are two very basic facts that immediately follow from a movement derivation of QAD but require additional assumptions on a non-movement analysis of the same. First, as has been known since at least Kayne (1975), *de*-phrases cannot survive in the absence of a degree quantifier, even in a direct object position.

- (10) \*On a mangé **de frites**.  
we have eaten of fries  
'We ate some fries.'

While the reason for the ungrammaticality of (10) is obvious if QAD is taken to be the result of movement of the degree quantifier, it is a lot less so on the view that QAD involves adverbial modification of the VP, given that adverbs are generally optional elements. Specifically, unlike a movement analysis of QAD, a non-movement analysis of this construction must characterize the relation that obtains between the pre-verbal degree quantifier in QAD and the *de*-phrase contained in the VP.

Second, there is clear evidence that *de*-phrases can be stranded under movement in *combien*-split sentences like (11a), in which the *wh* quantifier in the left-periphery is (a) construed as taking the *de*-phrase as its restrictor and (b) subject to syntactic movement, given its sensitivity to islands (11b).

- (11) a. **Combien<sub>i</sub>** crois-tu que ces gens ont mangé [[e]<sub>i</sub> de pommes] ?  
how-many think-you that these people have eaten of apples  
'How many apples do you think these people ate?'
- b. \***Combien<sub>i</sub>** connais-tu des gens qui ont mangé [[e]<sub>i</sub> de pommes] ?  
how-many know-you some people who have eaten of apples  
'\*How many apples do you know people that have eaten?'

Thus, given the data in (11), which show that quantificational heads can be extracted out of the projection they form with a *de*-phrase, a non-movement analysis of QAD has



the additional burden of explaining why degree quantifiers like *beaucoup* cannot undergo such a movement. Presumably, this will be attributed to the fact that degree quantifiers in QAD are adverbs, rather than quantificational determiners. If, however, it turns out that degree quantifiers in QAD have the same syntactic distribution as French bare quantifiers that are arguments of a verb, this explanation will become dubious. In what follows, I will provide novel evidence that shows that this is indeed the case.

The syntactic distribution of the bare quantifiers *tout* ‘everything’ and *rien* ‘nothing’ is explored in great detail in Kayne (1975). These quantifiers, just like degree quantifiers in QAD, appear in pre-participial position even though they are interpreted as the argument of a verb that selects them.<sup>5</sup>

- (12) a. J’ai tout/rien mangé.  
I-have everything/nothing eaten  
‘I ate everything/nothing.’  
b. J’ai tout vu s’écrouler.  
I-have all seen to-collapse  
‘I saw everything collapse.’

Assuming some version of the Uniformity of Theta Assignment Hypothesis (i.e., identical thematic relationships between items are represented by identical structural relationships (created by external merge) between those items), we are led to the conclusion that (12) displays a derived word order, one that results from remerging a quantificational thematic argument first merged in a VP-internal position in some position in the midfield. We then correctly predict that, extraction out of PP being unavailable in French, bare quantifiers first merged as the object of a preposition must remain in situ (13a–b). Interestingly, this situation is parallel to that found with degree quantifiers in QAD (13c–d).<sup>6,7</sup>

<sup>5</sup> Note additionally that both bare quantifiers and QAD degree quantifiers are compatible with degree modifiers like *presque* ‘almost’ in that position:

- (i) a. Tu as presque tout/rien mangé.  
you have almost all/nothing eaten  
‘You ate almost everything/nothing.’  
(i) b. J’ai presque trop gagné d’argent cette année.  
I-have almost too-much earned of-money this year  
‘I almost earned too much money this year.’

<sup>6</sup> This parallelism between bare quantifiers and degree quantifiers in QAD might be thought to be incomplete in view of the fact that bare quantifiers, unlike *beaucoup* in canonical quantification constructions, are rarely spelled out in their argument position (i).

- (i) \*Tu as mangé rien/tout.  
you have eaten nothing/everything

However, as pointed out by a reviewer, there are contexts in which bare quantifiers can (though need not) appear in post-participial position, for example, when they are preceded by so-called scale adjusters like *presque* ‘almost’ and *absolument* ‘absolutely’, as in (ii).

- (ii) A: Tu as tout mangé!  
you have everything eaten  
‘You ate everything!’  
B: Mais n’importe quoi; j’ai mangé presque/absolument rien!  
but anything I-have eaten almost/absolutely nothing  
‘What are you talking about? I ate almost/absolutely nothing!’

The same reviewer further notes that in some Swiss French varieties, a bare N-word like *personne* ‘nobody’ can, without special intonation, appear both post- and pre-participially, just like *beaucoup* in QAD and canonical quantification constructions.

- (iii) J’ai (#personne) vu (personne).  
I-have (#nobody) seen (nobody)  
‘I haven’t seen anyone.’

<sup>7</sup> But note that the licensing of *de*-phrases in negative contexts displays different properties. For example, object *de*-phrases in QAD and object bare quantifiers first merged in the infinitival complement to a

- (13) a. J'ai pensé à tout/rien.  
I-have thought of everything/nothing
- b. \*J'ai tout/rien pensé à.  
I-have everything/nothing thought of
- c. Il a (\*trop) tiré sur (trop) de lapins. (Kayne 1975: 31)  
he has (\*too-many) shot on (too-many) of rabbits  
'He's shot too many rabbits.'
- d. Elle est (\*très peu) sortie avec (très peu) de garçons. (Kayne 1975: 31)  
she is (\*very few) gone-out with (very few) of boys  
'She went out with very few boys.'

In fact, there is a large body of evidence that suggests that the syntactic positions in which bare quantifiers and degree quantifiers in QAD are licit are the same.<sup>8</sup> First, their position relative to *tous* 'all' linked to an object clitic is identical: both must be structurally lower than *tous* (compare (14a–b) with (14c–d)).

- (14) a. Elle leur a tous tout donné.  
she them has all everything given
- b. \*Elle leur a tout tous donné.  
she them has everything all given  
'She gave them all everything.'
- c. Elle leur a tous beaucoup envoyé de lettres.  
she them has all a-lot sent of letters
- d. \*Elle leur a beaucoup tous envoyé de lettres.  
she them has a-lot all sent of letters  
'She sent them all a lot of letters.'

The same is true of their position relative to the fixed positions occupied by low adverbs such as *mal* 'poorly' and *déjà* 'already'. Both must appear higher than *mal* but lower than *déjà*. This is illustrated in (15) and (16).

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perception verb cannot involve the matrix clause, as (i) illustrates. This constraint does not, however, apply to *de*-phrase licensing in negative contexts, as shown in (ii). (See Doetjes 1997 and Godard 2004 for further details.)

- (i) a. J'ai (\***beaucoup**) vu [Paul (**beaucoup**) manger **de frites**].  
I-have (\*a-lot) seen Paul (a-lot) to-eat of fries  
'I saw Paul eating a lot of fries.'
- b. J'ai (\***tout**) vu [Paul (**tout**) manger].  
I-have (\*all) seen Paul (all) to-eat  
'I saw Paul eat everything.'
- (ii) J'ai **pas/jamais** vu [Paul manger **de frites**].  
I-have not/never seen Paul to-eat of fries  
'I haven't/have never seen Paul eat fries.'

Given this divergence in behavior, I will not consider the negative licensing of *de*-phrases to be part of the QAD paradigm, contra Rowlett (1996) and Burnett (2011).

<sup>8</sup> This has virtually gone unnoticed in the literature. One notable exception is Kayne (2002: 108) who, on the basis of the fact that both bare quantifiers and degree quantifiers in QAD can be accompanied by degree modifiers but not by nouns, states that "the movement of *peu* (similarly *beaucoup*, *trop*, *énormément* and others) is akin to the movement of *rien*." However, he goes on to add (Kayne 2002: 110), based on the fact that the movement of *rien* is essentially obligatory, that "the movement of *rien* and that of *peu* might not be triggered in exactly the same way, and might not, thinking of Cinque (1999), have exactly the same landing site." Also Doetjes (1997: chapter 8) compares bare *tout/rien* to so-called floating *beaucoup* (see example in (i)), but the latter exhibits properties that are different from those displayed by QAD *beaucoup* (see (ii)).

- (i) Elle a beaucoup fait pour eux.  
she has a-lot done for them
- (ii) J'ai beaucoup vu \*(de films) se terminer comme ça.  
I-have a-lot seen \*(of movies) end like this

- (15) a. Ils ont **tout mal**/??mal tout assimilé.  
they have everything poorly/??poorly everything assimilated  
'They assimilated everything poorly.'
- b. Ils ont ?**énormément mal**/\*mal énormément assimilé de  
they have ?enormously poorly/\*poorly enormously assimilated of  
théorèmes.  
theorems  
'They assimilated a lot of theorems poorly.'
- (16) a. Ils ont **déjà tout**/??tout déjà repeint.  
they have already everything/??everything already repainted  
'They've already repainted everything.'
- b. Ils ont ?**déjà beaucoup**/??beaucoup déjà repeint de volets.  
they have ?already a-lot/??a-lot already repainted of shutters  
'They've already repainted a lot of shutters.'

Second, both degree quantifiers in QAD and bare quantifiers can climb out of an infinitive over the modal verbs *pouvoir* 'be able' and *devoir* 'must' (17) but neither of them can climb out of an infinitive over verbs like *avouer* 'confess', *admettre* 'admit', *déclarer* 'declare' etc. (18).<sup>9</sup>

- (17) a. J'ai **rien** pu lui dire.  
I-have nothing could him to-say  
'I couldn't say anything to him.'
- b. J'ai **moins** pu prendre de photos qu'Annie.  
I-have fewer could to-take of photos than-Annie  
'I wasn't able to take as many photos as Annie.'
- c. Elle va **tout** devoir apprendre par cœur.  
she goes everything to-have-to to-learn by heart  
'She's going to have to learn everything by heart.'
- d. Elle va **tellement** devoir mémoriser de théorèmes  
she goes so-many to-have-to to-memorize of theorems  
qu'elle en aura mal à la tête.  
that-she of-it will-have ache to the head  
'She's going to have to memorize so many theorems that it'll give her a headache.'
- (18) a. Elle va (\*tout) avouer (tout) mépriser.  
she goes (\*everything) to-admit (everything) to-despise  
'She will admit despising everything.'
- b. Elle va (\*beaucoup) avouer (beaucoup) gagner d'argent.  
she goes (\*a-lot) to-admit (a-lot) to-earn of-money  
'She will admit making a lot of money.'

Third, Kayne (1975: 81) notes that the placement of bare quantifiers, unlike that of pronominal clitics (19d), is sensitive to the presence of adverbs like *obstinément* 'stubbornly' (19a–c).<sup>10</sup>

<sup>9</sup> The judgments for (18a) are Kayne's (1975: 25) and are confirmed by my informants. A reviewer disagrees and allows both positions for *tout* but states that s/he suspects that prosody plays a special role in the acceptability of some of the data. Presumably, for bare quantifiers to be able to climb out of such infinitives requires prosodic prominence. I leave this issue/complication for further research.

<sup>10</sup> The judgments for (19) are Kayne's (1975: 81) and are confirmed by my informants. A reviewer finds (19a–b) marginally acceptable, (19c) grammatical, and (19d) ungrammatical, but agrees with the pattern in (19) if *obstinément* 'stubbornly' is replaced with *intentionnellement* 'intentionally'. The same reviewer does not accept



- (19) a. Il a voulu obstinément tout manger.  
he has wanted stubbornly everything to-eat  
b. Il a obstinément tout voulu manger.  
he has stubbornly everything wanted to-eat  
c. \*?Il a tout voulu obstinément manger.  
he has everything wanted stubbornly to-eat  
'He stubbornly wanted to eat everything.'  
d. Il les a obstinément mangé trop vite.  
he them has stubbornly eaten too fast  
'He stubbornly ate them too fast.'

QAD again behaves like bare quantifiers in this respect (20).

- (20) a. Il a voulu obstinément énormément manger de frites.  
he has wanted stubbornly enormously to-eat of fries  
b. Il a obstinément énormément voulu manger de frites.  
he has stubbornly enormously wanted to-eat of fries  
c. \*Il a énormément voulu obstinément manger de frites.  
he has enormously wanted stubbornly to-eat of fries  
'He stubbornly wanted to eat a whole lot of fries.'

Fourth, Kayne (1975: 260) notices that bare quantifiers cannot appear to the left of raising verbs like *s'avérer* 'turn out' but are marginally acceptable to the left of *sembler* 'seem'.

- (21) a. Il s'est (\*tout) avéré (tout) connaître.  
he is (\*everything) turned-out (everything) to-know  
'He turned out to be knowledgeable about everything.'  
b. Elle a (?tout) semblé (tout) comprendre.  
she has (?everything) seemed (everything) to-understand  
'She seemed to understand everything.'

As shown in (22), the very same property is exhibited by QAD.

- (22) a. Le détective s'est (\*assez) avéré avoir (assez) accumulé  
the detective is (\*enough) turned-out to-have (enough) gathered  
de preuves pour établir sa culpabilité.  
of proofs to to-establish his guilt  
'The detective turned out to have gathered enough evidence to  
establish his guilt.'  
b. C'est un leader qui ne m'a pas (?beaucoup) semblé  
this-is a leader who NEG me-has not (?a-lot) seemed  
(beaucoup) dominer de gens par son autorité.  
(a-lot) dominate of people by his authority  
'This is a leader who didn't seem to me to rule a lot of people by  
virtue of his authority.'

Fifth, Kayne (1975) points out that in causatives, bare quantifiers cannot appear to the left of the causative verb if the embedded subject is preverbal but may do so if it is post-verbal (23). As shown in (24), QAD behaves in a similar fashion in this context as well.

- (23) a. \*J'ai tout laissé mes enfants manger.  
I-have everything let my children to-eat

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any of the sentences in (20) with *obstinément* either but does get the pattern in (20) with *intentionnellement* except for (20b) which s/he judges to not be fully grammatical. I have no explanation for this variation.

- b. J'ai tout laissé manger à mes enfants.  
I-have everything let to-eat to my children  
'I let my children eat everything.'
- (24) a. \*J'ai beaucoup laissé mes enfants manger de frites.  
I-have a-lot let my children to-eat of fries  
b. J'ai beaucoup laissé manger de frites à mes enfants.  
I-have a-lot let to-eat of fries to my children  
'I let my children eat a lot of fries.'

Sixth, Kayne (1975) notes that bare quantifiers cannot be extracted from the subject position of an embedded subjunctive clause to land in the midfield of the matrix (25a–b). They can, however, be extracted from the subject position of an infinitive with an impoverished left periphery (25c). That QAD behaves in a similar way is shown in (25d–f).

- (25) a. \*Il aurait rien fallu que \_\_\_\_ (ne) t'arrive.  
it would-have nothing been-necessary that (NEG) to-you-happen  
'Nothing should have happen to you.'
- b. \*Il aurait tout fallu que \_\_\_\_ leur convienne.  
it would-have everything been-necessary that them please  
'Everything should have pleased them.'
- c. J'ai tout senti [ \_\_\_\_ trembler].  
I-have everything felt to-shake  
'I felt everything shake.'
- d. \*Il a beaucoup fallu que \_\_\_\_ de docteurs les examinent.  
it has a-lot been-necessary that of doctors them examine  
'They had to be examined by a lot of doctors.'
- e. \*Il aurait peu fallu que \_\_\_\_ d'étudiants se plaignent de lui.  
it would-have few been-necessary that of-students complain of him  
'Few students would have had to complain about him.'
- f. J'ai beaucoup entendu \_\_\_\_ de lecteurs dire qu'ils étaient  
I-have a-lot heard of readers to-say that-they were  
déçus par ce second tome.  
disappointed by this second volume  
'I've heard a lot of readers say that they were disappointed with this second volume.'

Additionally, as pointed out in Kayne (1975) and Cinque (2002: 623), many (though not all) speakers of French allow object bare quantifiers to climb out of a subjunctive clause complement to the modal verbs *falloir* 'be necessary' and *vouloir* 'want' (26). Interestingly, the relevant speakers also allow QAD degree quantifiers to do the same (27).<sup>11</sup>

- (26) a. %Il faut rien qu'ils touchent.  
it is-necessary nothing that-they touch  
'They are not allowed to touch anything.'
- b. %Je veux rien qu'on leur dise.  
I want nothing that-one them tell  
'I don't want them to be told anything.'
- c. %Il a tout fallu qu'on vende.  
it has everything been-necessary that-we sell  
'We had to sell everything.'

<sup>11</sup> It is not entirely clear to me that this is a matter of dialectal variation given that (26) and (27) are characterized by those who accept them as belonging to their "low register".

- (27) a. %Il a beaucoup fallu qu'elle lise d'articles.  
 it has a-lot been-necessary that-she read of-articles  
 'She had to read a lot of articles.'
- b. %Il faut pas trop que tu poses de questions.  
 it is-necessary not too-many that you ask of questions  
 'You shouldn't ask too many questions.'
- c. %Il a tellement fallu que je réécrive de chapîtres !  
 it has so-many been-necessary that I rewrite of chapters  
 'I had to rewrite so many chapters!'
- d. %Il aurait moins fallu qu'on boive de cognac.  
 it would-have less been-necessary that-we drink of cognac  
 'We should have drunk less cognac.'
- e. %J'ai pas trop voulu qu'il se fasse d'illusions.  
 I-have not too-many wanted that-he get of-illusions  
 'I didn't want him to delude himself too much.'

In conclusion, there is a large body of evidence that suggests that the French bare quantifiers *tout* and *rien* occupy the same syntactic position as the degree quantifiers found in French QAD. As concerns bare quantifiers, the uncontroversial assumption is that these are not merged directly in the position in which they are spelled out. Rather, *tout/rien* are assumed to undergo first merge in the  $\theta$ -position with which they are associated (e.g., as sister to V) then moved/remerged in an A-bar position in the midfield (see e.g., Kayne 1975; 2000: 232; Cinque 1992; and Abels 2009). Since the position occupied by bare quantifiers and that occupied by degree quantifiers in QAD appears to be one and the same, we can minimally conclude that the position in which degree quantifiers in QAD are spelled out is a potential target for syntactic movement. Further, if the syntactic distribution of the bare quantifiers *tout/rien* should be made to follow from general constraints of movement, as is generally assumed, we can also conclude, based on the fact that degree quantifiers in QAD have the same distribution as bare quantifiers, that the former also are subject to syntactic movement.

Keeping these conclusions in mind, I now turn to the arguments against a movement derivation of QAD that have been put forth in the literature.

### 3 A critical look at the evidence against a movement derivation of QAD

The purpose of this section is to offer a critical assessment of the various phenomena that have been used in the literature to argue against a movement derivation of QAD. My goal is to show that some of these phenomena can receive an alternative explanation while others are not directly accounted for by a movement analysis and therefore necessitate additional assumptions to be laid out in section 4.

#### 3.1 The narrow scope argument

As discussed in Heyd (2003), Mathieu (2004), and Burnett (2011), the degree quantifier linked to the *de*-phrase in QAD must have narrower scope than intensional verbs like *chercher* 'look for'. This is illustrated in (28), where the impossible continuation of the sentence given in (28b) makes it clear that the wide scope (*de re*) reading of the degree quantifier, according to which there was a *specific* large set of books I was looking for, is unavailable.

- (28) J'ai beaucoup cherché de livres pour mon travail en syntaxe  
 I-have a-lot looked-for of books for my work in syntax

- a. ...parce qu'une longue bibliographie donne l'air intelligent.  
because-a long bibliography gives the-air intelligent  
'...because having a long bibliography makes one look smart.'
- b. \*...notamment, Kayne (1975), Milner (1978), etc.  
in-particular Kayne (1975), Milner (1978), etc.

This fact is usually taken to be an argument against the movement analysis of QAD (see e.g., Bouchard & Burnett 2007: 14). The reasoning leading to this conclusion is that if the degree quantifier moved to a position c-commanding the intensional verb, we would expect the former to be able to scope over the latter, which is not the case.

This reasoning is flawed, however, because similar scope restrictions have been shown to obtain in constructions that have uncontroversially been analyzed as involving movement of a quantificational head out of an argument phrase containing the quantifier's restriction. These are the Dutch *wat-voor* construction (de Swart 1992: 398), the German *was-für* constructions (Blümel 2012: 110), and the French *combien-split* construction (de Swart 1992: 403–404). As these authors have established, in all of these constructions, discontinuous object wh-quantifiers must always take narrow scope with respect to subject universally quantified phrases even though the moved wh-quantificational head c-commands the position occupied by the subject phrase at Spellout. As an illustrative example, consider the paradigm in (29).

- (29) a. J'aimerais savoir [combien de fautes]<sub>i</sub> chacun a fait(es) [e]<sub>i</sub>.  
I'd-like to-know how-many of errors each has made
- b. J'aimerais savoir combien<sub>i</sub> chacun a fait [[e]<sub>i</sub> de fautes].  
I'd-like to-know how-many each has made of errors

An indirect question like (29a), in which the wh-quantifier and its restriction have moved to the C-field as a phrase, is ambiguous. It can either be interpreted with a *de re* reading for the wh-quantifier to mean: 'I'd like to know how many errors are such that everyone made them.' (Possible answer: 'Six errors.'). or it can involve a *de dicto* reading for the wh-quantifier, in which case it means: 'I'd like to know of everyone how many errors they made' (Possible answer: 'Mélanie made two errors, Brigitte made three, etc.'). An indirect question like (29b), on the other hand, in which the wh-quantifier alone has moved to the C-field stranding its restriction in object position, turns out to be unambiguous: it can only receive the second interpretation, which corresponds to the *de dicto* (narrow scope) reading of the wh-quantifier. Note that this is so, even though the wh-quantifier in the C-field in (29b) c-commands the universally quantified subject at Spellout.<sup>12</sup> The generalization therefore seems to be that in a configuration where overt movement of a quantifier strands its restriction, the scope of the quantifier is determined by the syntactic position of its restriction. This can be incorporated into a theory of quantifier scope in natural language by stating, along the lines of Dayal (2013: 848–849), that (a) the scope of a quantificational element cannot be fixed by the quantifier alone but is determined by *both* the quantifier *and* its restriction, and (b) QR cannot raise restrictor phrases to the site of their quantificational associate (see also Authier 2014: 265–266 for discussion of this issue).

We can now go back to (28), which shows that the degree quantifier in QAD must have narrower scope than intensional verbs. Can this fact be taken as evidence against a movement derivation of QAD? Given what we just discussed, the answer is clearly no, in fact, quite the opposite: on a movement analysis of QAD whereby the degree quantifier moves

<sup>12</sup> But see Déprez (1994) for the view that in wh-question/floated universal quantifier interactions, the availability of list answers is not the result of constraints on the scope taking abilities of floated quantifiers over question terms.

out of an argument phrase, stranding its restriction (the *de*-phrase), we expect the latter, rather than the former, to fix the scope of the quantificational phrase they form and this is exactly what happens.<sup>13</sup>

### 3.2 The multiplicity of events argument

Obenauer (1983) was the first to point out that the interpretation of QAD sentences is more restricted than that of their canonical quantification counterparts. Specifically, a QAD sentence with *beaucoup* is only true if *beaucoup* holds of the set of events denoted by the verb. Consider in this respect the paradigm in (30).

- (30) a. Au cours de sa vie... (favors multiple-event reading)  
 in-the course of his life...  
 il a trouvé beaucoup de pièces d'or. (canonical quantification)  
 he has found a-lot of coins of-gold  
 il a beaucoup trouvé de pièces d'or. (QAD)  
 he has a-lot found of coins of gold  
 '...he found a lot of gold coins.'
- b. En soulevant le couvercle ... (forces single-event reading)  
 upon lifting the lid  
 il a trouvé beaucoup de pièces d'or. (canonical quantification)  
 \*il a beaucoup trouvé de pièces d'or. (QAD)

Unlike canonical quantification sentences, which are compatible with both a multiple-event and a single-event reading, QAD sentences are only compatible with a multiple-event reading, as evidenced by the infelicitousness of QAD in the context of (30b). This is known in the literature as the Multiplicity of Events Requirement (MER). As it turns out, however, the MER effect observed in (30b) does not entirely follow from the syntax of QAD since for the MER to obtain, the QAD sentence must include a VP with an object count noun (a.k.a. a count predicate).<sup>14</sup> This point is made by Doetjes (1994; 1995),

<sup>13</sup> A reviewer asks if the following data, discussed in Sportiche (1996), might be taken to indicate that, at least in some cases, the scope of a quantified expression is determined by the moved c-commanding quantifier head, rather than its restriction.

- (i) a. Il aurait tous fallu que tu ne les aies pas vu.  
 it would-have all been-necessary that you NEG them have not seen  
 'It would have been necessary that you see none of them.'
- b. Il aurait fallu que tu ne les aies pas tous vu.  
 it would-have been-necessary that you NEG them have not all seen  
 'It would have been necessary that you do not see all of them.'

At issue is the scope of the split quantifier *tous* 'all' + *les* 'them' with respect to the embedded negation *pas*. As the glosses make clear, in (ia), the quantifier must have wider scope than negation, while in (ib), it is just the opposite. In both cases, the restriction *les* occupies the same spell-out position. What varies is the position of the quantifier head *tous*: in (ia) it c-commands the embedded negation, while in (ib) it does not. The reviewer's question is therefore whether the scope facts in (i) can be accounted for by assuming that in such cases, the quantificational head alone determines scope relations. Providing a full answer to this question is clearly beyond the scope of this article as it would involve tackling two controversial issues: the syntactic analysis of pronominal clitics (movement, base generation or a combination of the two) and what determines the scope of negation (*ne* and/or *pas*; their position at spell-out or later in the derivation). If, however, one considers the spell-out position of clitics that denote the restriction of a quantifier to mark their c-command domain with respect to scope (as the reviewer's question appears to entail) then the facts in (i) can just as easily be accommodated by assuming the theory of scope I adopt in the text; namely that the scope of a quantificational phrase is determined by *both* the quantifier *and* its restriction. Indeed, in (ia), both the quantifier and its restriction c-command negation at spell-out while in (ib), only the restriction does. This correctly predicts that the quantificational phrase should scope over negation in (ia) but not in (ib). Such an explanation, however, ignores the possible role of silent copies, the existence and/or position of which depends on one's analysis of pronominal clitics in French.

<sup>14</sup> The criterion for evaluating *beaucoup* with an object count noun is the number of separate objects (cardinality) but it is a global quantity of "stuff" (volume) when we have an object mass noun. Thus, if Paul ate twenty very small pieces of chocolate, (ia) is true but (ib) is false.



who investigates the claim made by Honcoop (1992) that QAD and Krifka's (1990) event versus object related readings are two sides of the same coin in that the latter is the covert/LF version of the former. As Krifka shows, sentences like (31) have two possible readings, which he calls object related (OR) and event related (ER).

(31) Our middle school library lent out 4,380 books last year.

The OR reading of (31) presupposes the existence of (at least) 4,380 books in our library and says of those books that they were lent out last year. The ER reading says that there were 4,380 events of book-lending by our middle school library last year. On this reading, there need not be 4,380 books in the library in question. In the limiting case, there could have been a single book owned by the library that was lent out 12 times a day. The claim is therefore that the ER/OR reading distinction is parallel to the QAD/canonical quantification readings: The canonical quantification construction allows both OR and ER readings, but the QAD construction is restricted to the ER reading. In other words, Obenauer's MER effect reduces to an ER reading. Appealing as it may seem, this claim is flawed in at least two ways. First, as argued in Doetjes (1994; 1995), the MER can be shown to not be a necessary condition for QAD or ER sentences. This is so because the MER is the result of quantification over a count predicate. Quantification over a mass predicate does not fall under the MER since QAD sentences with objects that are mass nouns like (32), due to Doetjes (1995: 117), can be interpreted as a single continuous event.

(32) Pendant ces dix minutes, la fontaine a beaucoup craché d'eau.  
 during these ten minutes the fountain has a-lot spat-out of-water  
 'During these ten minutes, the fountain spat out a lot of water.'

Second, recall that on the ER reading of (31), there could have been a single book owned by the library that was lent out 12 times a day. In other words, ER readings are the result of quantifying over events, not objects. However, in the case of QAD, we have what Burnett (2011) calls a Multiplicity of Objects Requirement (MOR), which does not follow from the alleged ER reading of QAD. That is, a QAD sentence with *beaucoup* is only true if *beaucoup* holds of the set of objects denoted by the *de*-phrase. To see this, consider the sentence in (33).

(33) J'ai beaucoup lu de livres.  
 I-have a-lot read of books  
 'I read a lot of books.'

As Burnett points out, this sentence is judged to be infelicitous if I read my two favorite books many times. This cannot be due to the plural marking of the bare noun since plurality translates as 'at least two'. The inescapable conclusion is therefore that *beaucoup* quantifies over the set denoted by the common noun. In other words, the *de*-phrase in QAD is the restriction of the pre-verbal degree quantifier. Thus, what is needed is an explanation of how *beaucoup* quantifies over both events and the *de*-phrase in QAD constructions with a count object.<sup>15</sup>

- (i) a. Paul a beaucoup mangé de chocolats.  
 Paul has a-lot eaten of chocolates  
 'Paul ate a lot of chocolates.'  
 b. Paul a beaucoup mangé de chocolat.  
 Paul has a-lot eaten of chocolate  
 'Paul ate a lot of chocolate.'

<sup>15</sup> Cyr (1991) contends that Obenauer's MER does not hold in Québec French. She gives examples like (i) to support her claim that QAD constructions with count noun objects can, in Québec French, denote a single, short event. It turns out, however, that my standard French informants accept (i) as well while rejecting (30b) and that my two Québec French informants report similar judgments for both (i) and (30b).

- (i) (Cyr 1991: 46)  
 En arrivant sur place, on a tellement vu de policiers qu'on  
 upon arriving on site we have so-many seen of cops that-we



Burnett (2011) offers a solution to this problem. She proposes that the elements that can license *de*-phrases in French are polyadic quantifiers, that is, quantifiers that can bind more than one variable at a time. Thus, in QAD sentences, a quantifier like *beaucoup* in (33) takes a set of <event, object> pairs and yields true just in case the cardinality of both the first and the second set of co-ordinates is “a lot”. This way, the sentence will be true just in case there are many book-reading events and many books involved in those events.

This hypothesis, which assumes that degree quantifiers in QAD enter the derivation in the position in which they are spelled out, is, at first blush, appealing. However, upon closer examination, it becomes obvious that it raises more questions than it answers. Further, these questions can, in most cases, be answered by a movement analysis of QAD, as I will now show.

First, as Burnett herself points out, the polyadic quantification approach to QAD aims to capture the semantic licensing of *de*-phrases but has nothing to say about their syntactic distribution (see section 2).

Second, it is not immediately clear why a polyadic quantifier like *beaucoup* does not always have to bind the event variable, as evidenced by QAD sentences with objects that are mass nouns like (32).

Third, the degree quantifier *un peu* ‘a little/bit of’ licenses *de*-phrases in canonical quantification sentences (34a) and may quantify over the walking event(s) denoted by the intransitive VP in (34b), yet it does not partake in QAD (44c), at least not in all contexts or for all speakers.<sup>16</sup> Burnett’s (2011) theory does not immediately explain why *un peu* can quantify over events but cannot function as a polyadic quantifier.

- (34) a. J’ai acheté [un peu de chocolat].  
I-have bought a little of chocolate  
‘I bought a little chocolate.’
- b. J’ai un peu marché cette semaine. (True if I took a few short walks)  
I-have a little walked this week  
‘I walked a little this week.’
- c. \*J’ai un peu acheté de chocolat.  
I-have a little bought of chocolate

On a syntactic movement account of QAD, on the other hand, (34c) could be blocked by restricting sub-extraction in QAD to “bare” degree quantifiers; that is, to those that are heads.<sup>17</sup>

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s’est demandé ce qui se passait.  
is wondered that which was-happening  
‘When we got there, we say so many cops that we wondered what was going on.’

In all likelihood, *en arrivant sur place* ‘when we got there’ does not *force* a single-event reading of QAD, as Cyr assumes, as there can be several seeing events taking place at times that are close enough to the time of arrival to be considered simultaneous with it. I am therefore skeptical that there is dialectal variation with respect to MER. Nevertheless, this issue deserves further investigation.

<sup>16</sup> See the discussion in note 1.

<sup>17</sup> There are other contrasts that would seem to require similar assumptions, for example, the following:

- (i) a. Christine a lu beaucoup/une multitude de livres.  
Christine has read a-lot/a great-number of books  
b. Christine a beaucoup/\*une multitude lu de livres.  
Christine has a-lot/\*a great-number read of books

However, as pointed out by a reviewer, one must take into account the fact that QAD (similarly for *tout/rien*) may involve more than a bare quantifier, as the following examples illustrate.

- (ii) a. J’ai presque trop/beaucoup trop/très peu mangé de gâteau.  
I-have almost too much/way too much/too little eaten of cake  
‘I ate almost too much/way too much/very little cake.’

In a similar vein, the polyadic quantifier account encounters a problem with near-synonymous pairs like *énormément/abondamment* ‘a (whole) lot’. If *énormément* can function as a polyadic quantifier in (35a), why can’t *abondamment* do the same in (35b) since both can quantify over intransitive VPs (35c)?

- (35) a. J’ai énormément mangé de pommes.  
I-have enormously eaten of apples  
b. \*J’ai abondamment mangé de pommes.  
I-have abundantly eaten of apples  
‘I ate a lot of apples.’  
c. J’ai énormément/abondamment mangé.  
I-have enormously/abundantly eaten  
‘I ate a lot.’  
d. \*J’ai mangé abondamment de pommes.  
I-have eaten abundantly of apples

On a movement account of QAD, the paradigm in (35a–c) is unproblematic. Because *abondamment* does not c-select *de*-phrases in canonical quantification sentences (35d), there is no source for the movement involved in (35b). On Burnett’s account, one must claim that *abondamment*, unlike *énormément*, is not a polyadic quantifier and explain why this should be so.

Consider next unselective binding, as discussed in Lewis (1975). According to him, generic sentences that contain both sentential operators like *always*, *sometimes*, and indefinites instantiate unselective polyadic quantification due to the fact that the adverbial operator binds all of the indefinites (taken by Lewis to introduce free variables) in its scope. Let us consider (36) as an illustrative example.

- (36) Quelquefois, quand un chat saute sur une fenêtre, il tombe.  
sometimes when a cat jumps on a window (s)he falls

In (36), the adverbial operator *quelquefois* ‘sometimes’ binds the free variables introduced by the indefinites *un chat* ‘a cat’ and *une fenêtre* ‘a window’ to yield an interpretation whereby some <cat, window> pairs are such that when the first member jumps on the second member, the first member falls. Interestingly for our purposes, however, (36) shows that unselective binding of *une fenêtre* can take place inside a PP. This raises an important question regarding Burnett’s analysis of QAD degree quantifiers as polyadic quantifiers, which is why such quantifiers cannot bind *de*-phrases inside PPs (37). As far as I can see, this can only be stipulated.

- 
- b. Il a **presque trop peu** mis de terre pour nourrir toutes ces plantes.  
he has almost too little put of soil for to-nourish all these plants  
‘He put in almost too little soil to feed all of these plants.’

If we assume that, as the reviewer suggests, the moved constituents bolded in (ii) are not syntactic heads, we are unable to distinguish between the grammaticality of QAD in (ii) and the ungrammaticality of examples like (ib). The view that the moved constituents in (ii) are phrases rather than heads is based on the assumption that heads are terminal elements. There is, however, an alternative definition of head that has been argued for by e.g., Matushansky (2006) and Vicente (2006); namely that a head is a constituent whose internal structure is opaque for syntactic purposes. If we adopt this definition it then becomes possible to consider the bolded constituents in (ii) to be complex heads composed of a degree quantifier (e.g., *trop*, *peu*, etc.) and one (iia) or more (iib) scale adjusters (e.g., *presque*, *très*), the semantic function of which is to “adjust” the contextually determined standard of comparison. One argument in favor of this view, adapted from Kennedy and McNally (2005), is that the iteration of scale adjusters observed in (iib) must be interpreted in a right branching fashion (i.e., as in (iia)) rather than in the left-branching fashion (iib) a specifier analysis would seem to predict.

- (iii) a. [presque[trop [peu]]  
b. \*[[presque trop] peu]

- (37) \*Mon chat a **beaucoup** sauté [sur **de fenêtres**].  
 my cat has a-lot jumped on of windows  
 ‘My cat has jumped on a lot of windows.’

Another set of facts that are problematic for the polyadic quantifier approach advocated by Burnett is given in (38a–b).<sup>18</sup>

- (38) a. \*Il a **beaucoup** composé **énormément** de chansons.  
 he has a-lot composed enormously of songs  
 b. \*J’ai **beaucoup** découvert **beaucoup** de trésors.  
 I-have a-lot discovered a-lot of treasures  
 c. J’ai **beaucoup** composé.  
 I-have a-lot composed  
 ‘I did a lot of composing.’  
 d. J’ai découvert **beaucoup de trésors**.  
 I-have discovered a-lot of treasures  
 ‘I discovered a lot of treasures.’

What is problematic about examples like (38a–b) is that given that pre-verbal *beaucoup* must be assumed to *optionally* function as a polyadic quantifier in sentences like (38c), and given that *beaucoup* can quantify over objects in canonical quantification sentences (38d), we have no explanation for the fact that e.g., (38a) cannot allow *beaucoup* to quantify over composing events while *énormément* quantifies over songs. On a movement account of QAD, on the other hand, pre-verbal *beaucoup* in (38a) can only come from [*beaucoup* de N], hence examples like (38a–b) are immediately ruled out.

Consider finally the paradigm in (39). The example in (39a) is ungrammatical on the reading forced by the bracketing whereby *trop* ‘too much/many’ scopes over both VPs, which can be glossed as ‘*He claims to have drunk too much wine and eaten too much.*’ On any analysis of QAD that takes the degree quantifier to be base-generated as a VP-adverb, this is surprising because a degree quantifier can scope over conjoined VPs if it is not linked to a *de*-phrase in one of them (39b) or if it is linked to a *de*-phrase in both of them (39c).

- (39) a. \*Il dit avoir [**trop** [bu de vin et mangé]].  
 he claims to-have too-much drunk of wine and eaten  
 ‘He claims to have drunk too much wine and eaten too much.’  
 b. Il dit avoir [**trop** [mangé et bu]].  
 he claims to-have too-much eaten and drunk  
 ‘He claims to have eaten and drunk too much.’  
 c. Elle dit avoir [**beaucoup** [écrit de chansons et composé  
 she claims to-have a-lot written of songs and composed  
 de symphonies]].  
 of symphonies  
 ‘She claims to have written a lot of songs and composed a lot of  
 symphonies.’

<sup>18</sup> The examples in (38a–b) are to be contrasted with those in (i), which will be discussed in section 3.3.

- (i) a. Ses films ont **beaucoup** influencé **énormément** de cinéastes.  
 her films have a-lot influenced enormously of film-makers  
 ‘Her films have greatly influenced a lot of film-makers.’  
 b. Le projet de loi Pinel a **beaucoup** inquiété **beaucoup**  
 the project of law Pinel has a-lot worried a-lot  
 d’auto-entrepreneurs.  
 of-independent-contractors  
 ‘The Pinel bill greatly worried a lot of independent contractors.’

On the further assumption that *trop* is a polyadic quantifier the ill-formedness of (39a) is unexpected as well since there is no limit on the number of variables *trop* can bind.<sup>19</sup> On the other hand, if one assumes that pre-verbal *trop* in (39a) is syntactically extracted out of the conjunct that contains the *de*-phrase, we have a clear violation of the Coordinate Structure Constraint since the left conjunct, but not the right one, contains a silent copy/trace of *trop*. The example in (39b), on the other hand, involves a degree quantifier adjoined to the VP-coordination via external merge, which does not result in a CSC violation and the example in (39c) can be analyzed as a case of across-the-board extraction.<sup>20</sup> Thus, once again, the movement derivation account proves to be empirically superior to the polyadic quantification account. This being said, it is obvious that the movement account of QAD must be enriched so as predict that QAD, but not canonical quantification, can sometimes quantify over events in addition to quantifying over individuals. This is an issue to which I will return in section 4 of this article.

### 3.3 The problem of psychological predicates and degree achievements

There is another restriction on QAD, first uncovered by Obenauer (1983: 70), which has been used as an argument for the base-generation of the degree quantifier in that construction. As Obenauer shows, the availability of QAD is restricted based on the type of predicate that appears in the sentence. Specifically, QAD is unavailable with psychological predicates in standard French, as (40), due to Obenauer, illustrates.<sup>21</sup>

- (40) a. \*Ce critique a **peu** apprécié **de films**.  
           the critic has little appreciated of films  
           ‘This critic appreciated few films.’  
       b. \*Son regard a **beaucoup** impressionné **de minettes**.  
           his gaze has a-lot impressed of kittens  
           ‘His eyes have wowed a lot of cool chicks.’  
       c. \*La nouvelle a **beaucoup** inquiété **d’experts**.  
           the news has a-lot worried of-experts  
           ‘The news got a lot of experts worried.’

<sup>19</sup> As pointed out by a reviewer, a Burnett-style analysis might still be able to account for the paradigm in (39) on semantic grounds as follows. On Burnett’s proposal, *de*-phrases combine with the verb through a non-canonical compositional rule that forms a constituent denoting a binary relation. On the assumption that conjuncts must be of the same semantic type, one could then argue that (39b) is correctly predicted to be well-formed while (39a), whose right conjunct denotes not a binary relation but a property (i.e., does not match the type of the left conjunct), is correctly expected to be ill-formed. I remain skeptical of this type of explanation, however. Indeed, it is well known that coordination does, in fact, allow type mismatches. The sentence in (i), for example, is the conjunction of a collective predicate of type *(et)t* with a “distributive predicate” of type *t*.

(i) They [met in the lounge] and [had a martini].

One could of course hold on to the assumption that conjuncts must match in type and invoke type-shifting or some other mechanism to rule in sentences like (i) but it is unclear to me why such mechanisms could not then also incorrectly allow sentences like (39a) (if all that is wrong with them is that they present a type mismatch).

<sup>20</sup> Note additionally the parallel, pointed out by a reviewer, between (39c) and the across-the-board extraction of *combien* ‘how much/many’ in (i).

(i) Combien a-t-elle écrit de chansons et composé de symphonies ?  
       how-many has-she written of songs and composed of symphonies

<sup>21</sup> Cyr (1991: 45) claims that no such constraint is present in Québec French. However, she herself marks the illustrative examples she gives as not being fully acceptable.

(i) a. ? Ce jeune peintre a beaucoup impressionné de connaisseurs.  
           this young painter has a-lot impressed of connoisseurs  
       b. ? On a trop regretté de décisions.  
           we have too-many regretted of decisions

As Obenauer notes, in addition to psychological predicates, the verb *accélérer* ‘accelerate’ is also incompatible with QAD. In fact, all degree achievement verbs block QAD. The class of degree achievements can be described by means of lexical decomposition along the lines of (41) where X ranges over properties.

(41) [CAUSE [BECOME [MORE X]]]

Such predicates include *ralentir* ‘slow down’, *aplatir* ‘flatten’, *assombrir* ‘darken’, *allonger* ‘lengthen’, *affaiblir* ‘weaken’, *épaissir* ‘thicken’, *engraisser* ‘fatten’, *raccourcir* ‘shorten’, etc. Their incompatibility with QAD is illustrated in (42).

(42) (Obenauer 1983)

- a. \*La réorganisation a beaucoup accéléré de procédures.  
the reorganization has a-lot sped-up of procedures  
‘The reorganization sped up a lot of procedures.’
- b. \*Cette maladie a beaucoup affaibli de personnes âgées.  
this illness has a-lot weakened of persons old  
‘This illness weakened a lot of senior citizens.’
- c. \*Ce fermier a beaucoup engraisé de poulets.  
this farmer has a-lot fattened of chickens  
‘This farmer has fattened up a lot of chickens.’

Obenauer (1983: 71) makes the argument that under a movement derivation of QAD the ungrammaticality of (40) and (42) is unexpected because there are no known cases of syntactic movement that are constrained by the lexical properties of the verb that selects the item moved/sub-extracted from. He further notes that even if one were to deem extraction sensitive to the lexical properties of verbs in some *ad-hoc* fashion, this would make the wrong predictions with respect to *combien*-extraction, as the latter proceeds unhindered in the presence of psychological predicates and degree achievements, as (43) shows.

- (43) a. Combien<sub>i</sub> ont-ils apprécié [[e]<sub>i</sub> de films] ?  
how-many have-they appreciated of films  
‘How many films did they appreciate?’
- b. Combien<sub>i</sub> a-t-elle accéléré [[e]<sub>i</sub> de procédures] ?  
how-many has-she accelerated of procedures  
‘How many procedures did it speed up?’

The question is therefore whether the facts in (40) and (42) can be reconciled with those that we have seen clearly point to a movement analysis of QAD. I believe that the answer to this question is positive, as I will now show.

What psychological predicates and degree achievements have in common is that they are gradable predicates. This comes from the fact that they both describe a change of some property of one of their arguments. Interestingly, with these predicates (cf. (44a–e)), and with these predicates only (cf. (44f–g)), pre-verbal *beaucoup* and *tellement* freely alternate with the intensifiers *très* ‘very’ and *si* ‘so’ (see Gaatone 2008 for discussion). These intensifiers are specific to gradable predicates, regardless of their syntactic category. Thus, they can also combine with gradable adjectives (44h–i).

- (44) a. Ça a **beaucoup/très** surpris/amusé/inquiété Céline.  
this has a-lot/very surprised/amused/worried Céline  
‘This surprised/amused/worried Céline a lot.’
- b. Ça a **tellement/si** surpris/amusé/inquiété Céline que...  
this has so-much/so surprised/amused/worried Céline that...  
‘This surprised/amused/worried Céline so much that...’



- c. Joséphine a **beaucoup/très** apprécié/aimé tes commentaires.  
 Joséphine has a-lot/very appreciated/liked your comments  
 ‘Joséphine appreciated/liked your comments a lot.’
- d. Une cuisson plus longue aurait **beaucoup/très** épaissi la sauce.  
 a cooking more long would-have a-lot/very thickened the sauce  
 ‘Cooking it longer would have thickened the sauce quite a bit.’
- e. Cette maladie l’a **beaucoup/très** affaibli.  
 this illness him-has a-lot/very weakened  
 ‘This illness weakened him a lot.’
- f. Céline a **beaucoup/\*très** dansé/travaillé/mangé.  
 Céline has a-lot/\*very danced/worked/eaten  
 ‘Céline danced/worked/ate a lot.’
- g. Céline a **tellement/\*si** dansé/travaillé/mangé que...  
 Céline has so-much/\*so danced/worked/eaten that  
 ‘Céline danced/worked/ate so much that...’
- h. Céline est **très** intelligente.  
 Céline is very intelligent
- i. Céline est **si** gentille que...  
 Céline is so kind that

However, intensifiers like *très* and *si* never combine with *de*-phrases, as (45) shows.

- (45) a. \*Céline a mangé [très de frites/purée].  
 Céline has eaten very of fries/mashed potatoes
- b. \*Céline a bu [si de vin] qu’elle est devenue morose.  
 Céline has drunk so of wine that-she is become morose

I conclude that the pre-verbal instances of *beaucoup* and *tellement* that appear with the gradable V-type predicates in (44a–e) alongside *très* and *si* are base-generated VP-adjoined intensifiers.<sup>22</sup> It then comes as no surprise that a pre-verbal intensifier like *beaucoup* can co-occur with a degree quantifier *beaucoup* heading a *de*-phrase (46a–c) but the pre-verbal degree quantifier *beaucoup* is ruled out in the same context (46d–e).<sup>23</sup>

- (46) a. Ces modifications ont **beaucoup** accéléré [**beaucoup** de procédures].  
 these modifications have a-lot accelerated a-lot of procedures  
 ‘These modifications greatly sped up a lot of procedures.’
- b. Ce projet de loi a **beaucoup** inquiété [**beaucoup** d’auto-entrepreneurs].  
 this project of law has a-lot worried a-lot  
 d’auto-entrepreneurs].  
 of-independent-contractors  
 ‘This bill greatly worried a lot of independent contractors.’
- c. La forme de ces ruines a **beaucoup** intrigué [**beaucoup** d’archéologues].  
 the shape of these ruins has a-lot intrigued a-lot of-archeologists  
 ‘The shape of these ruins has greatly intrigued a lot of archeologists.’
- d. \*Ils ont **beaucoup** composé [**beaucoup** de chansons].  
 they have a-lot composed a-lot of songs

<sup>22</sup> This is also the conclusion reached by Doetjes (1994: 18) on different (though related) grounds.

<sup>23</sup> A reviewer notes that if pre-verbal *beaucoup* in (46) is an intensifier, it should be able to freely alternate with *très* and that this is indeed the case for him/her in (46c) but not in (46a–b). This is not entirely unexpected given that it has been noted in the literature that while *beaucoup* and *très* freely alternate as intensifiers, particular speakers sometimes express a preference for one over the other in a given context (see e.g., Gaatone 2008).



- e. \*On a **beaucoup** découvert [**beaucoup** de ruines] en Egypte.  
 they have a-lot discovered a lot of ruins in Egypt

We are now in a position to provide a syntactic explanation for the absence of QAD with gradable predicates. With psychological predicates and degree achievements, which require intensifiers rather than quantifiers as modifiers, *beaucoup* cannot do “double duty” since [Q de N] phrases require that Q be a degree quantifier rather than an intensifier. We therefore must merge two distinct *beaucoup*, as in (46a–c), which makes a QAD derivation impossible, provided that we rule out the QAD derivation in (47a) as a case involving a (featural) Relativized Minimality effect.

- (47) a. \*Ces modifications ont beaucoup<sub>i</sub> beaucoup accéléré [[e]<sub>i</sub> de procédures].  
 these modifications have a-lot a-lot sped-up of procedures  
 b. Elle a tout<sub>i</sub> beaucoup apprécié [e]<sub>i</sub>.  
 she has everything a-lot enjoyed  
 ‘She enjoyed everything a lot.’  
 c. \*Elle a beaucoup tout apprécié.  
 d. [Combien de livres]<sub>i</sub> a-t-elle beaucoup apprécié [e]<sub>i</sub> ?  
 how-many of books has-she a-lot enjoyed  
 ‘How many books did she enjoy a lot?’  
 e. \*Combien a-t-elle beaucoup apprécié [[e] de livres] ?  
 how-many has-she a-lot enjoyed of books

The reasoning leading to consider (47a) a Relativized Minimality violation is as follows. First, recall that in section 2, I suggested that remerged degree quantifiers like *beaucoup* ‘a lot’ and remerged argumental bare quantifiers like *tout* ‘everything’ occupy the same structural spell-out position. If so, then the fact that *tout* can move over intensifier *beaucoup* in (47b) and must precede it (47c) suggests that bare argumental quantifiers and degree quantifiers occupy a position that is higher than that of intensifiers. With this in mind, let us turn next to the question of why a wh-phrase like [*combien de livres*] ‘how many books’ in (47d) and a bare argumental quantifier like *tout* in (47b), but not a degree quantifier like *beaucoup* ‘a lot’ in (47a) nor bare *combien* ‘how many’ in (47e) can move over intensifier *beaucoup*. What I wish to suggest is that all of these facts straightforwardly follow from the type featural Relativized Minimality (RM) argued for in Rizzi (2013). Rizzi’s featural RM develops the observation made by Starke (2001) that a more richly specified element can move over a less richly specified element by not vice-versa. In a nutshell, Rizzi proposes that RM effects arise within the same feature class, but not across classes and hypothesizes that there exist at least four classes: Argumental (person, number, gender, case), Quantificational (Wh, NEG, measure, focus), Modifier (evaluative, epistemic, NEG, manner, etc.), and Topic. Rizzi also notes that there is a certain amount of cross-classification across classes; for example, negation belongs to both the quantificational and the modifier class. Following Rizzi, I assume that RM is a constraint that blocks any local relation between a moved element X and its silent copy Y if there is an element Z that c-commands Y and *fully* matches the specification of X in the relevant features. Returning now to the paradigm in (47), notice that the featural specification of intensifier *beaucoup* in (47a) and (47e) fully matches that of degree quantifier *beaucoup* in (47a) and that of bare *combien* in (47e): all of these elements belong to the quantificational class [+Q]. As a result, intensifier *beaucoup* acts as an intervener in (47a) and (47e) and both examples are ruled out as RM violations. The situation in (47b) and (47d) is different, however. Indeed, while intensifier *beaucoup* is simply [+Q], *tout* ‘everything’ in (47b), being argumental, is a Phi-feature bearing Case valued element that is also quantificational and is therefore cross-classified as [+A, +Q]. As such, *tout*, being more

richly specified than intensifier *beaucoup*, does not fully match the specifications of the latter and can therefore move over it without triggering a RM violation. This situation is exactly parallel to the one found in (47d) where the moved wh-phrase is both [+A, +Q] (argumental because of its Phi-feature bearing restriction *de livres* ‘of books’ and quantificational because of its wh-determiner *combien* ‘how many’) and can therefore move over [+Q] intensifier *beaucoup* without violating RM.

This leaves us with one last remaining question; namely, why QAD remains illicit with gradable predicates when no intensifier is present. Under such circumstances, a RM constrained movement analysis of QAD should allow *beaucoup* to move, as in (48), and, in doing so, incorrectly predict such sentences to be grammatical.

- (48) \*J’ai beaucoup<sub>i</sub> apprécié [[e]<sub>i</sub> de films].  
 I-have a-lot appreciated of films  
 ‘I appreciated a lot of movies.’

To rule out derivations like (48), I propose that gradable predicates always come with an adverbial intensifier. In (48), this adverbial intensifier must be assumed to be covert. There is, however, indirect evidence that supports this hypothesis. Consider the fact that while activity verbs like *travailler* ‘work’ do not lexically encode a scale (i.e., there is no “workness” scale associated with *travailler*), there is a speed scale associated with *accélérer* ‘accelerate’, a strength scale associated with *affaiblir* ‘weaken’ and a length scale associated with *raccourcir* ‘shorten’. This suggests that gradable predicates are always modified by an intensifier, the function of which is to return a value on the scale used by the measure function argument of the predicate. Thus, the semantic contribution of the null intensifier that sometimes modifies such predicates can be glossed as “to a significant extent.” This semantic contribution is made manifest by the contrast between (49a), which does not encode a scale and therefore does not require an adverbial modifier and (49b), which does.

- (49) a. J’ai travaillé/mangé des nouilles. (OK mais très peu)  
 I-have worked/eaten some noodles but very little/few  
 b. J’ai NI apprécié ses commentaires. (# mais très peu)  
 I-have appreciated her comments but very little  
 (Where NI = null intensifier which returns the value: “to a significant extent”)

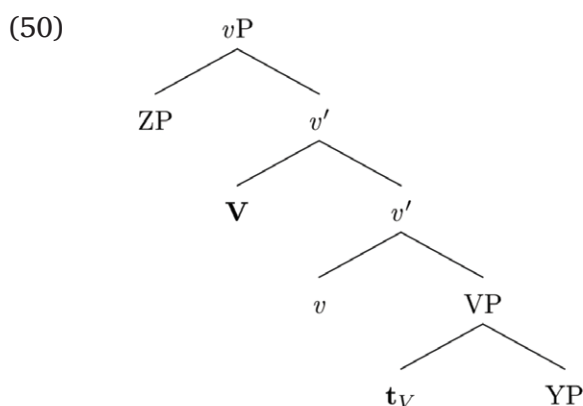
I conclude that the incompatibility of QAD with gradable predicates should not be taken as evidence against a movement analysis of QAD since, as I have just shown, it can, in fact, be predicted by such an analysis on purely syntactic grounds.

#### 4 Refining the movement derivation of QAD

I have been suggesting, at various points in the preceding discussion, that the movement of degree quantifiers in QAD is an instance of “head movement”. Under the traditional conception of head movement, a head can only be adjoined to another head, as opposed to phrases, which undergo movement to a specifier. If we were to adopt this view of head movement as applied to QAD movement, we would have to test its predictions against an alternative hypothesis, partially based on Cinque’s (1999) claim that adverbs are specifiers of hierarchically ordered semantically “matching” functional heads. Given that Cinque also assumes that some light manner adverbs such as Italian *bene* ‘well’ move from a VP-internal position to Spec, VoiceP (see Cinque 1999: 23), we could then model QAD movement after this option, hypothesizing that QAD degree quantifiers are generated in the specifier position of a *de*-phrase and move to the specifier of a functional projection dominating *v*P. As I will show, however, given a bare phrase structure theory, there is

virtually no distinction between a head-to-head movement analysis of QAD and a Cinque-style head-to-spec movement analysis of the same.

As has been pointed out in the literature, head movement, being an instance of Internal Merge, should satisfy all of the conditions imposed on Merge, namely the Extension Condition, which derives the c-command condition on movement. However, under the traditional view of head movement as adjunction of a head to another head, it does not, due to the fact that the target of head movement (i.e., an  $X^{\min}$ ) is internal to the root element (defined as the node that dominates all other nodes) at the stage in the derivation where movement occurs. This has led Fukui and Takano (1998), Nakamura (2000) and Matushansky (2006) to propose that head movement does obey the extension Condition/c-command requirement, just like phrasal movement, and therefore targets the specifier of the attracting head (i.e., the specifier of the root at the relevant point in the derivation). Let me illustrate the consequences of their assumptions with respect to V-movement to  $v$ , now taken to proceed as in (50).



In (50), V, an  $X^{\min}$ , has undergone “head movement;” that is, internal merge through “substitution” into a specifier position of  $v$ , though “substitution into spec” is no longer an appropriate term in bare phrase structure theory since projections are taken to be derivationally and relationally defined. The morphological amalgam V +  $v$  that arguably takes place, forming a syntactically atomic, internally complex element can then be taken, following Matushansky (2006), to be the result of a subsequent head merging operation called *m-merger*. Matushansky argues that this is an operation of the morphological component that is separate from the movement itself. The exact mechanics of m-merger need not concern us here. What is important for our purposes is that Matushansky’s theory leads to the expectation that one should find, in natural language, instances of head movement without m-merger. I will argue below that QAD movement is one of those instances. Before getting into the details of my analysis, however, I would like to point out that under the “substitution” analysis of head movement, the only difference between such an analysis as applied to QAD and the Cinque-based analysis of the same alluded to earlier is that the nature of the element that triggers movement is verbal on the former and functional on the latter. This is a rather minimal difference, which has no significant impact on the head movement treatment of QAD I am about to propose, and which I will therefore set aside for the purposes of the present article.

#### 4.1 A head movement analysis of QAD

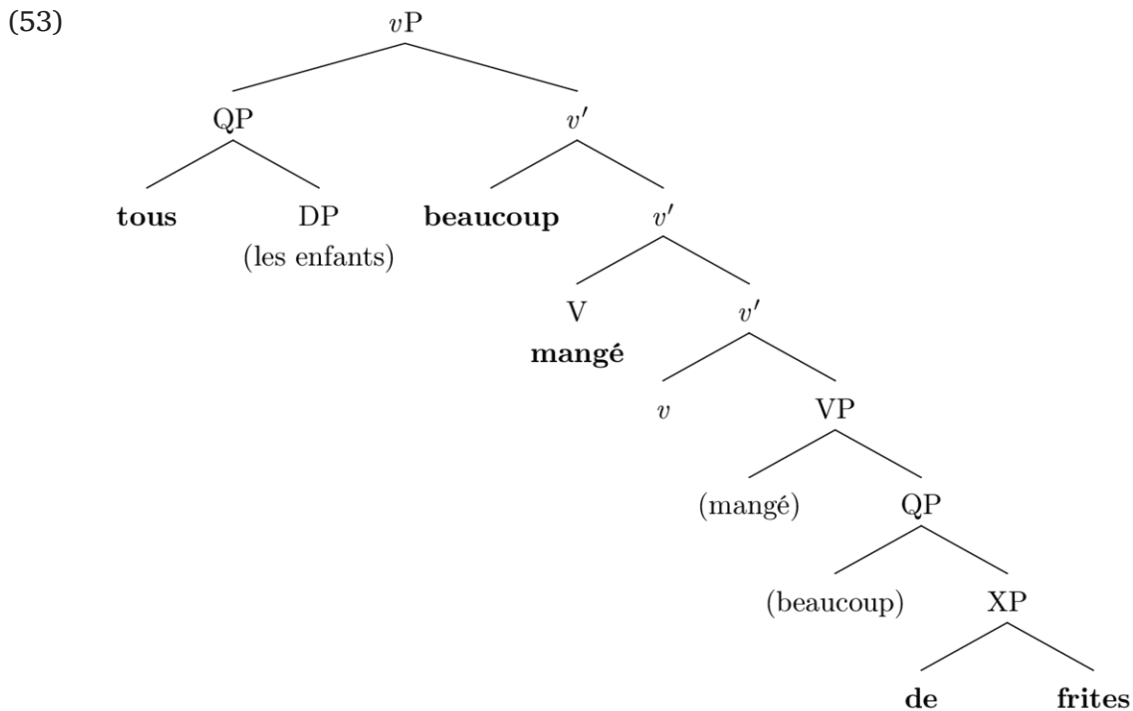
My analysis of QAD rests on a number of assumptions, which I will consider in turn. First, I will assume that in QAD, the degree quantifier undergoes internal merge to “head adjoin” to  $v$ , where a “head adjoined” position in  $vP$  counts as a specifier position of  $v$ ,

following Fukui and Takano (1998), Nakamura (2000) and Matushansky (2006). Second, while V adjunction to *v* additionally involves morphological merger (Matushansky 2006), I will take adjunction of a degree quantifier to *v* to not involve this extra step. The reason for this can be seen in (51) where the complex *V + v*, spelled out as *mangerai* ‘will eat’, has moved to T, as it must in French. If *mangerai* and the degree quantifier *beaucoup* were assumed to undergo m-merger to form a syntactically atomic, morphologically complex word capable of moving to T, we would expect (51) to be grammatical, contrary to fact.

- (51) \*Je beaucoup mangerai de frites. (cf. Je mangerai beaucoup de frites.)  
 I a-lot will-eat of fries I will-eat a-lot of fries

Third, I will assume, given the arguments presented in Section 3.2, that Vs that denote a gradable predicate, once merged with *v*, require an internal Spec filled by an intensifier, the function of which is to return a value on the scale used by the measure function argument of the predicate. Fourth, I will follow Shima (2000), Richards (2002: 230), Deal (2009: 21), and Roeper (2013: 261), in assuming that economy considerations dictate that internal merge has primacy over external merge (i.e., there is a preference for manipulating objects already present in the workspace over going back to the lexicon to select new material). This will be used to explain why, in QAD, we end up with two copies of the same degree quantifier, one overt, one silent, rather than two (lexically) distinct, phonologically overt instances of the same. To see how these assumptions conspire to yield the characteristic properties of QAD, consider first the partial derivation of (52), given in (53), which assumes an analysis of Q-float along the lines of Sportiche (1988).

- (52) Les enfants ont tous beaucoup mangé de frites.  
 the children have all a-lot eaten of fries  
 ‘The children have all eaten a lot of fries.’



In (53), the past participle form of the verb *mangé* ‘eaten’ adjoins to the causative light verb *v*, semantically combining to give the “full meaning” of the predicate (i.e., the causing and the eating of the fries are the same event). At this point, a degree quantifier can (optionally) be merged, the function of which is to quantify over events. Given the pref-

erence for internal merge over external merge we are assuming, the degree quantifier *beaucoup* that heads to object phrase will have to be used because it is of the right type syntactically and semantically. Syntactically, it is an atomic element, and semantically, given that its restriction (fries) is a count noun, the criterion for evaluating *beaucoup* is the number of separate objects (cardinality). Importantly, the same criterion can be used for evaluating *beaucoup* with respect to events (i.e., *beaucoup* can do double duty and quantify over both fries and events). Thus, *beaucoup* can be remerged in a position adjoined to *v* and yield coherent meaning. Consider next what happens if *beaucoup* takes a restriction that is a mass noun, as in (32), repeated here as (54).

- (54) Pendant ces dix minutes, la fontaine a beaucoup craché d'eau.  
 during these ten minutes the fountain has a-lot spat-out of-water

As Doetjes (1995) points out, despite being a QAD construction, (54) can denote a single event and this is linked to the fact that it contains an object mass noun. What I would like to suggest is that the criterion for evaluating *beaucoup* in (54) is tied to its first merge position as head of the phrase containing the mass noun *water*. That is, it is a global quantity of “stuff” (volume with respect to water). After internal merge, *beaucoup* can be evaluated with respect to a global amount of disgorging, which can, of course, be a continuous single event. This means that *beaucoup* in (54) can also do double duty semantically and this in turn obligatorily triggers movement given the preference for internal merge over external merge that we are assuming. Notice finally, that the same preference for move over merge immediately rules out examples like (55) (see also (38a–b)) as economy violations.

- (55) a. \*Il a beaucoup découvert beaucoup de trésors.  
 he has a-lot discovered a-lot of treasures  
 b. \*La fontaine a beaucoup craché beaucoup d'eau.  
 the fountain has a-lot spat-out a lot of-water

#### 4.2 Consequences of the proposed analysis

To the best of my knowledge, no one in the literature has offered a good explanation for why QAD is impossible when the *de*-phrase is the derived subject of a passive sentence (56). This is puzzling given that, presumably, the *de*-phrase was first merged in the object position of the verb, which rules out any explanation based on a constraint requiring that the degree quantifier c-command its restriction.<sup>24</sup>

- (56) \*De pièces d'or ont beaucoup été découvertes.  
 of coins of-gold have a-lot been discovered  
 (Cf. Beaucoup de pièces d'or ont été découvertes.)  
 'A lot of gold coins have been discovered.'

Sentences like (56) should in fact be possible under the polyadic quantification account since the polyadic quantifier would bind the free variable contained in the silent copy of the derived subject, as illustrated in (57).

- (57) [De pièces d'or] ont *beaucoup* été découvertes [~~de pièces d'or~~].

<sup>24</sup> Equally puzzling (for the same reasons) is the impossibility of A-bar moving the *de*-phrase from a direct object position to a focus position in the left periphery of the clause. The paradigm in (i), which involves mirative focus fronting, illustrates this point.

- (i) a. Des pièces d'or (qu'il a découvert.  
 some coins of-gold (that)-he has discovered  
 'Gold coins he found.'  
 b. \*De pièces d'or (qu'il a beaucoup découvert.  
 of coins of-gold (that)-he has a-lot discovered  
 'Lots of gold coins he found.'



Again, what is wrong with (57) cannot be a matter of scope if we assume that the scope of the quantifier *beaucoup* is determined by c-command of at least a member of the chain headed by the *de*-phrase, in accordance with Aoun & Li's (1989) Scope Principle, extended to adverbs by Ernst (1991).

On the syntactic account of QAD I am defending, the only way to generate the ungrammatical (56) involves a remnant movement derivation whereby the quantifier *beaucoup* undergoes sub-extraction from the head position of the object phrase to adjoin to *v* then the remnant (i.e., the trace of *beaucoup* along with the *de*-phrase) is moved to subject position, as in (58).

(58) [[e]<sub>i</sub> de pièces d'or]<sub>j</sub> ont beaucoup<sub>i</sub> été découvertes [e]<sub>j</sub>  
of coins of-gold have a-lot been discovered

The derivation in (58) is, however, an illicit remnant movement derivation, one that violates the general constraint on remnant movement argued for in Takano (2000: 146–147). As Takano argues, there are many cases of illicit remnant movement that indicate that remnant movement of a phrase XP is impossible once the head of XP has moved out of XP. Following Chomsky (1995: 304), he assumes that only the head of a chain CH can enter into the operation Attract/Move, which means that Move cannot apply to traces. As Takano puts it, movement of a phrase is contingent upon Attract applying overtly to the formal features of its head before Spell-Out. Thus, the reason why the derivation in (58) crashes is because Move cannot apply to the silent copy of *beaucoup*, which prevents the object remnant phrase from ever being attracted by the EPP feature of T. This not only accounts for the ungrammaticality of (56) but also for the ungrammaticality of active sentences like (59) since the remnant subject phrase is prevented by the same constraint to move from Spec,*v* to Spec,T.

(59) \*De musiciens ont beaucoup joué cette chanson.  
of musicians have a-lot played this song  
(Cf. Beaucoup de musiciens ont joué cette chanson.)  
‘A lot of musicians have played this song.’

I turn next to the paradigm in (60), which shows that the ‘distance’ between the adjoined degree quantifier in QAD and the *de*-phrase is subject to a strict locality constraint. Specifically, sub-extraction in ECM contexts is restricted to the subject position of the infinitive (60a–b) while sub-extraction out of the subject position of an embedded tensed clause is disallowed (60c).

(60) a. J’ai **beaucoup** vu [d’étudiants utiliser ces logiciels].  
I-have a-lot seen of-students to-use this software  
‘I’ve seen a lot of students use this software.’  
b. \*J’ai **beaucoup** vu [ces étudiants utiliser **de** logiciels].  
I-have a-lot seen these students to-use of software  
(Cf. J’ai vu [ces étudiants **beaucoup** utiliser **de** logiciels].)  
I-have seen these students a-lot to-use of software  
‘I’ve seen these students use a lot of software.’  
c. \*J’ai **beaucoup** vu [que d’étudiants utilisaient ces logiciels].  
I-have a-lot seen that of students were-using this software  
‘I saw that a lot of students were using this software.’

In the Government-Binding days, (60) would have been straightforwardly accounted for via the following two assumptions: (a) QAD involves head movement of the degree quantifier *beaucoup* from an argument phrase and (b) head movement is subject to the Head Movement Constraint (Travis 1984: 131), which states that a head X can only move to another head Y if Y properly governs X (i.e., a head cannot skip a governing head posi-

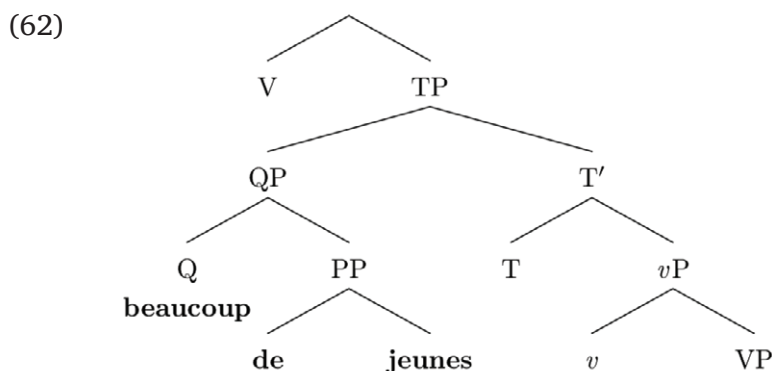


tion). The notion of Government is, however, no longer used in the Minimalist framework, due to its lack of explanatory power. For example, the remnant phrase containing *d'étudiants* 'of students' in (60a) would have been assumed to be lexically governed by the verb *vu* 'seen' due to the stipulation that if a head governs a phrase, it also governs into its specifier. So, how are we to derive the Head Movement Constraint in minimalist terms? Matushansky (2006) suggests an elegant solution that recasts the HMC in terms of independently needed assumptions. She first assumes that just like phrasal movement, head movement is feature valuation followed by internal merge (i.e., head movement is pied-piping applied to a feature). Second, she assumes that there is a link between c(ategorial)-selection and head movement as both show the same kind of locality (a head can only c-select the head of its complement). Third, she makes the standard assumption that when two phrase markers are merged (e.g., XP and YP), it is necessary to determine which of them projects, from which it follows that the computational component must be able to access the featural makeup of both the X and the Y heads. So, if we merge a head X that bears the uninterpretable categorial feature [uY] with a non-trivial phrase marker YP, c-select will establish an asymmetric relation between X and Y, which may result in head movement of Y to the domain of X. Matushansky (2006: 78) then proposes that the HMC boils down to what she calls the *Transparence Condition* stated in (61).

(61) *A head ceases to be accessible once another head starts to project.*

The condition in (61) derives the HMC by restricting the syntactic relation between the heads of two independent phrase markers at Merge (when both are still involved in the determination of the categorial status of the new projection thus created), but no later. This condition is in line with minimalist assumptions in the sense that once it has been established which head is the projecting head, there is no need to keep track of the non-projecting head separately from its projection and therefore economy considerations dictate that it no longer be accessible to the computation. The *Transparence Condition* immediately rules out QAD constructions where the degree quantifier appears adjoined to *v* while the remnant phrase (*de*-phrase) appears as a complement to P (e.g., (13d)) because as soon as the PP is constructed, the degree quantifier that heads the phrase complement to P is no longer available for head movement. The same condition does, however, raise an interesting issue with respect to QAD in ECM constructions, to which I now turn.

Suppose that we take to configuration in (62) to be that of an ECM complement clause.



In (62), V c-selects TP and therefore T is considered a possible search domain for V. Given the *Transparence Condition*, however, the head of the specifier of T (i.e., Q) is not a possible search domain for any head c-commanding TP because at the point at which T' merges with QP, it is established which head projects (i.e., T) and this closes off the search domain for Q. We therefore predict that head movement of Q to a head in the matrix clause should be impossible and are thus unable to explain the grammaticality of (60a).

This means either that QAD does not involve head movement (which is doubtful given the locality constraints exhibited by this construction) or that the structure in (62) is not the right structure for ECM constructions. In what follows, I will argue that given the right assumptions about ECM, the Transparency Condition does, in fact, correctly predict the distribution of QAD in ECM contexts.

Recall that according to Matushansky, the head of a projection ceases to be accessible for movement once it merges with its own selector. The next question is then what happens when a head X that is ineligible to attract another head Y due to the Transparency Condition bears an uninterpretable feature that matches its interpretable counterpart on Y. Matushansky's answer is that in such a case, the next smallest constituent containing Y, i.e., YP, is pied-piped. With this in mind, consider the fact that subjects of ECM complement are Case-marked by the matrix verb. Assuming Case-marking is a by-product of Agree, this raises the possibility that the subject phrase in ECM contexts is subject to both Agree and pied-piping. In fact, this is known as the overt raising account of ECM, an account first introduced by Rosenbaum (1967) and Postal (1974) and revived in the Minimalist framework by Koizumi (1995), Lasnik (1995), Bošković (1997), and Taguchi (2015), among many others. This account is based on the observation that in English and Japanese, the embedded thematic subject in ECM constructions exhibits syntactic properties similar to those of regular main clause direct objects. In French, Guimier (1998) points out that the pre-nominal exclusive focus particle/adjective *seul* 'only', which is known to only modify subjects, is incompatible with ECMed subjects (63a). She also points out that the negative particle *ne*, which normally (optionally) appears on the verb selecting a subject that is an N-word like *personne* 'no one', cannot attach to the ECM embedded verb but must appear on the matrix verb (63b–c). Finally ECMed subjects can undergo raising to the subject position of the matrix if the perception verb is passivized (63d–e), although certain aspectual features (e.g., progressive *en train de* 'in the process of') sometimes need to be present in the embedded clause for the result to be fully grammatical (see Marsac 2006 for discussion).<sup>25</sup>

(63) (Le Figaro – Flash actualité – 04/16/2010)

a. \*Annie a vu seul Marc faire ses devoirs.

Annie has seen only Marc to-do his homework

<sup>25</sup> An additional argument can be made based on the observation made by Marsac (2006: 135) (see also Bošković 1997 for English) that complements to ECM perception verbs, unlike embedded tensed clauses (ia) and Control infinitivals (ib), cannot appear in pseudoclefts (ic), which suggests that overt shift of the embedded subject is blocked in those contexts.

- (i) a. Ce qu'elle a vu, c'est [que Pierre traversait la Seine].  
that which-she has seen it-is that Pierre was-crossing the Seine  
'What she saw was that Pierre was crossing the Seine.'  
b. Ce que Pierre veut, c'est [PRO traverser la Seine].  
that which Pierre wants it-is to-cross the Seine  
'What Pierre wants is to cross the Seine.'  
c. \*Ce qu'elle a vu, c'est [Pierre traverser le Seine].  
that which-she has seen it-is Pierre to-cross the Seine

Note that (ic) cannot be ruled out based on the inability of *être* 'to be' to assign case, as (ii) shows.

- (ii) Ce qu'elle a vu, c'est le gâteau que tu avais préparé.  
that which-she has seen it-is the cake that you had prepared  
'What she saw was the cake that you baked.'

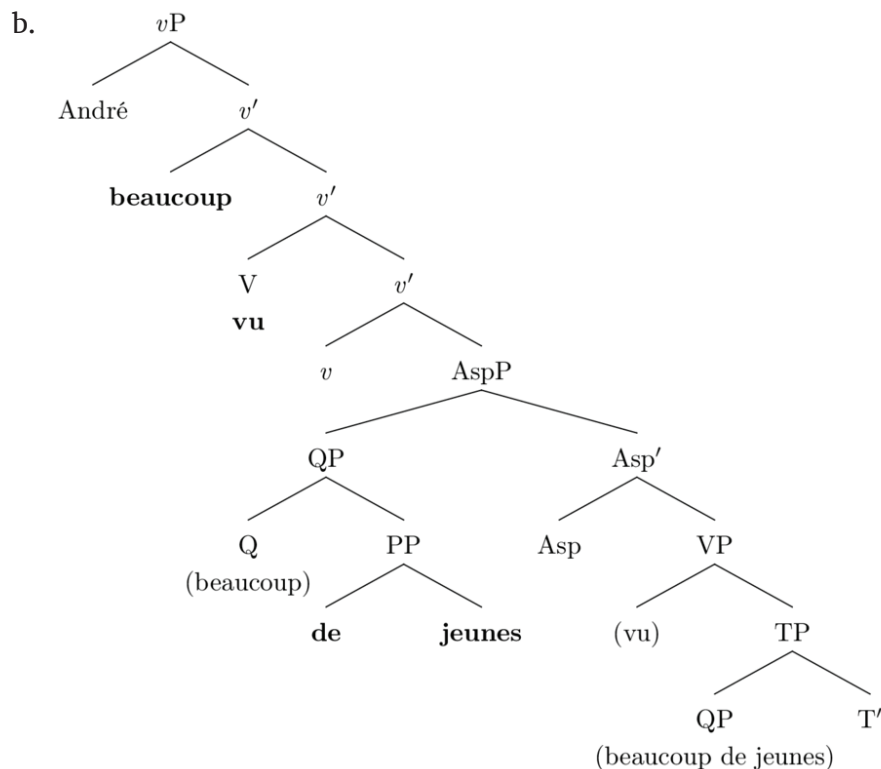
Marsac also notes that the infinitival complement to a perception verb, unlike its tensed counterpart (iiib), cannot be used as an elliptical answer to a question (iiiia), which he takes to mean that it does not constitute a clausal constituent.

- (iii) Qu'as-tu vu?  
'What did you see?'  
a. \*Mlle Huot danser.  
Miss Huot to-dance  
b. Que Mlle Huot dansait.  
that Miss Huot was-dancing

- b. Je (**\*ne**) vois que [**personne (ne)** vient].  
I (**\*NEG**) see that nobody (NEG) come  
'I see that no one is coming.'
- c. Je (**ne**) vois [**personne (\*ne)** venir].  
I (NEG) see nobody (**\*NEG**) to-come  
'I see no one coming.'
- d. Les pirates présumés ont été vus jeter des objets à la mer.  
the pirates alleged have been seen to-throw some objects at the sea  
'The alleged pirates were seen throwing objects overboard.'
- e. (L'Humanité – 11/02/1999)  
Des anglais passablement éméchés ont été entendus chanter  
some Englishmen rather inebriated have been heard to-sing  
la Marseillaise dans des trains revenant dimanche  
the Marseillaise on trains coming-back sunday  
soir de Twickenham,...  
night from Twickenham

If the embedded ECMed subject phrase undergoes internal merge to a position in the matrix clause, the overt raising account must explain why it ends up being spelled out in a position structurally lower than that of the main verb. A possible explanation that yields the right results with respect to QAD is to assume the “Split VP” hypothesis advocated by Travis (1991; 2010), Koizumi (1995), Carnie (1995), and MacDonald (2008), among others. The basic assumption is that the lexical verbal projection divides into two parts, a lower part associated with object properties (AgrOP or AspP) and a higher part associated with subject properties (vP or VoiceP). For concreteness, I will follow the overt raising account first advocated by Travis (1991), who assumes that the landing site for the embedded subject phrase in ECM constructions is the specifier position of a functional category that encodes completive aspect and is located between vP and VP in the matrix clause. Given these assumptions, the derivation of (64a), a QAD construction involving head movement out of a thematic embedded ECMed subject phrase is as in (64b).

- (64) a. André a beaucoup vu de jeunes danser.  
André has a-lot seen of young-people to-dance



In (64b), the thematic embedded subject QP [*beaucoup de jeunes*] ‘a lot of young people’ undergoes phrasal movement to Spec, AspP. The (optional) [Q] categorial feature on  $v$  then attracts its head in accordance with the Transparency Condition.<sup>26</sup> The plausibility of having XP movement precede sub-extraction of the head of XP can, in fact, be motivated independently from the assumption that ECMed subjects undergo overt shift, as (65) illustrates.

- (65) J’ai beaucoup vu [[de jeunes joueurs]<sub>i</sub>] s’avérer t<sub>i</sub> impuissants  
 I-have a-lot seen of young players to-turn-out powerless  
 devant une équipe aggressive].  
 in-front-of a team aggressive  
 ‘I’ve seen a lot of young players turn out to be powerless when confronted by  
 an aggressive team.’

In (65), the complement to the ECM verb contains a raising predicate, which means that the subject phrase [*de jeunes joueurs*] is a derived subject, yet head movement of *beaucoup* to the matrix  $vP$  projection is still possible. Thus, we must assume that XP movement can feed head movement.

## 5 Conclusion

In conclusion, there appears to be a compelling body of evidence showing that preverbal degree quantifiers like *beaucoup* in QAD are heads that are extracted from an argument phrase to adjoin to  $v$ . From this position, the silent copy of *beaucoup* serves as the variable that allows the measure function that *beaucoup* incorporates to map the individuals denoted by the plural NP or the portion of matter denoted by the mass NP to a high degree on a cardinality scale (plural NP) or volume scale (mass NP). Given that *beaucoup* is adjoined to  $v$  and that  $V$  has moved to  $v$ , the complex [*beaucoup + v + V*] is also linked to the silent copy of  $V$  in  $VP$ , which can function as a variable, allowing *beaucoup* to also serve as a measure function in the verbal domain. In that case, *beaucoup* associates degrees with events and the predicate receives a plurality of events rather than ‘once only’ interpretation provided that the NP associated with *beaucoup* is a plural because a cardinality scale is needed. If the NP is mass, we do not expect (and do not get) an iterated-event reading because the scale is that of volume.

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For comments and suggestions on earlier drafts of the present article, I would like to thank Richie Kayne, Lisa Reed and four anonymous reviewers. All remaining errors are, naturally enough, my own.

<sup>26</sup> I will not consider here the (dialectally restricted) apparent violations of the Transparency Condition observed with respect to the long-distance movement of both degree quantifiers and bare quantifiers in examples with subjunctive clauses like (26) and (27). I will simply note that many poorly understood transparency effects are known to correlate with embedded subjunctive clauses. For example, Icelandic allows long distance anaphor binding across subjunctive CPs (Johnson 1985) and the Romance languages allow wh-island violations (Tsoulas 1995) and show obviation effects (see Costantini 2005 for overview of this phenomenon) across the same. Additionally, as noted by a reviewer, my treatment of QAD leaves aside other long-distance cases of movement out of infinitives such as (ia), a type of movement that is limited to certain verbs (ib) but is by no means dialectally restricted. (The examples in (i) are due to Taraldsen 1981: 254)

- (i) a. Ils ont trop voulu visiter de musées.  
 they have too-many wanted to-visit of museums  
 ‘They wanted to visit too many museums.’  
 b. \*Ils ont trop avoué connaître de jongleurs.  
 they have too-many confessed to-know of jugglers  
 ‘They confessed knowing too many jugglers.’

Note however, that the contrast in (i) suggests that a restructuring/monoclausal analysis of (ia) might be possible. Spelling out the details of such an analysis is, however, beyond the scope of the present paper.

## Competing interests

The author declares that he has no competing interests.

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
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