Two Types of Split Quantification

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Abstract: This paper provides new evidence in favor of a theory of phrase structure that recognizes adjunction as a grammatical operation distinct from complementation. Specifically, it demonstrates that there exist two distinct types of split quantification constructions and that while their diverging properties can be captured within a theory of phrase structure that recognizes the argument/adjunct distinction, these same properties pose a serious challenge to the view that adjunction should be reduced to complementation.

1.   Introduction

Virtually all grammatical theories assume a distinction between arguments and adjuncts. This distinction can be roughly characterized as in (1).

(1)   a.   If Y is an argument, then it must undergo syntactic merger with an appropriate head X and it semantically "completes" the meaning of X in the sense that X without Y would only yield partial or incoherent meaning.

     b.   If Y is an adjunct, it may (but need not) concatenate with a head or phrase X(P) and the meaning of the newly formed object X(P) + Y is of the same logical type as that of X(P); that is, the contribution of Y is merely to restrict X(P) to a proper subset of the denotation of X(P) alone.

In earlier versions of the generative framework, the intuitions in (1b) were incorporated into syntax via a special structure building operation called Chomsky-adjunction. This operation left the input constituency intact in the sense that adjoining a phrase YP to a constituent XP returned a phrase of the same type, namely XP. This early view of adjunction has been abandoned, however, for two different reasons, and this has led to two competing theories of adjunction.
     The first reason why Chomsky-adjunction has been abandoned is that in Minimalist syntax, it is assumed that a projection can only be maximal if it no longer projects and this, of course, leaves no room for structure building operations that iterate maximal projections. Given this, Hornstein and Nunes (2008) propose an alternative theory according to which arguments are required to integrate into structures with labels, but adjuncts are objects for which only concatenation is required. This idea is further pursued and fully integrated into a general theory of structure building by Hunter (2010) and Hunter and Frank (2011), who argue that adjuncts, though

are introduced into the derivational space, do not undergo Merge, and that therefore it no longer makes sense to ask what adjuncts adjoin to. Rather, the question becomes at what stage in the derivation they are introduced.

A second reason why Chomsky-adjunction has been abandoned is that Kayne's (1994) Linear Correspondence Axiom (LCA), given in (2), appears to be counter-exemplified by Chomsky-adjoined phrases.

(2)   LCA:
           If a non-terminal category A c-commands another non-terminal category B, all
           the terminal nodes dominated by A must linearly precede all the terminal nodes
           dominated by B.

Given that a Chomsky-adjoined phrase c-commands its target constituent, the LCA leads us to expect all the terminal nodes of the adjoined phrase to precede those of the phrase it adjoins to. Adjuncts, however, typically follow the phrase they modify in the linear word order. The desire to bring adjunction in line with the LCA has therefore led to a concerted effort to eliminate syntactic adjunction altogether by reducing cases of adjunction to complementation. While this result has arguably been achieved in a number of cases, it has been noted, for example by Borsley (1997) and Ernst (2002), that the cost of reducing adjunction to complementation is to have to posit ad hoc functional structure and unmotivated instances of movement.

In what follows, I will provide new evidence in favor of a theory of phrase structure that recognizes adjunction as a grammatical operation distinct from complementation.

2.   Distinguishing Features of the Quantifier + comme + N Construction

My arguments are based on a French construction I will call QCN. QCN is a case of split quantification that consists of a quantificational expression semantically linked to a complex constituent that denotes the restrictor set of the quantifier. Those two components are often split in the syntax as in (3a), but can appear together as a phrase, as in (3b).

(3)   a.   Qu'est-ce qu'il a   trouvé comme boulot ? (discontinuous variant)
             what-Q   he has found as   work

       b.   Il a   trouvé quoi comme boulot ? (continuous variant)
             he has found what as   work
             'What kind of work did he find?'

2.1.   Distributional Properties of QCN

The quantificational expressions that can participate in the QCN construction include wh-expressions (4a), negative quantifiers (4b), universal quantifiers (4c), free choice any (4d), and NPIs (4e).

(4) a. Qui$_i$ tu   connais t$_i$ comme pilote ?
        who you know   as   pilot
        'What pilots do you know?'

   b. Je ne   connais (presque) personne comme acteur.
        I NEG know   almost   nobody   as   actor
        'I'm not familiar with many/any actors.'

   c. Il aime tout comme viande.
        he likes all   as   meat
        'He likes any kind of meat.'

   d. On peut vous   fournir n'importe quoi comme instrument.
        we can   you   provide anything   as   instrument
        'We can provide you with any kind of instrument.'

   e. Je n'ai   jamais vu   qui que ce soit comme dentiste.
        I NEG–have never seen anyone   as   dentist
        'I have never seen a dentist at all.'

Quantifiers in QCN are often direct objects but they can also be subjects (5a), objects of a preposition (5b), and even adjuncts (5c).

(5) a. Qui d'autre comme citoyen doit subir ça au Canada ?
        who of-else as   citizen must bear that in Canada
        'What other citizen has to put up with that in Canada?'

   b. Il a accès à tout comme produits.
        he has access to all   as   products
        'He has access to all sorts of products.'

   c. Notre bibliothèque est un endroit sombre, avec personne comme
        our   library   is a place   dark   with   nobody   as
        lecteurs, et   une gérante peu commode.
        readers   and a   manager   little accommodating
        'Our library is a dark place with no readers and a not-so-kind manager.'

2.2.   Continuous and Discontinuous Variants

In a brief discussion of QCN, Gérard (1980) states that continuous variants of QCN are incompatible with wh-movement. This, however, is incorrect: continuous variants can, in fact, be found in all structural positions created by Move. First, QCN is compatible with passivization and raising and gives rise to both continuous variants, as in (6a) and (7a), and discontinuous variants, as in (6b) and (7b).

(6) a. Si rien   comme solution n'est   proposée/ne   nous est apportée ...
         if nothing as   solution NEG-is proposed/ NEG us   is brought

     b. Si rien   n'est proposé/ne nous   est apporté comme solution ...
         if nothing NEG-is proposed/ Neg. us   is brought as   solution

         'If no solution is proposed/is given to us ...'

(7) a. Rien comme solution ne   semble convenir   à ton frère.
         nothing as   solution NEG seems   to-be-acceptable to your brother

     b. Rien ne semble convenir   à ton   frère comme solution.
         nothing NEG seems   to-be-acceptable to your   brother as   solution

         'No solution seems to be acceptable to your brother.'

Second, constructions involving wh-movement do, though not always, allow continuous variants with both 'bare' wh-elements, as in (8a) and pied-piped wh-PPs, as in (8b).

(8) a. Qui comme pilote ont-ils   congedié ?
         who as   pilot   have-they fired

         'What pilot(s) did they fire?'

     b. Avec quoi comme huile veux-tu faire   les frites ?
         with   what as   oil   want-you to-make the fries

         'What kind of oil do you want to cook the fries in?'

Given the possibilities in (8), it then comes as no surprise that the continuous variant spells out as a unit in cases of ellipsis under sluicing, as shown in (9).

(9)   Je sais qu'elle a mangé du   poisson, mais je ne sais pas
        I know that-she has eaten   of.the fish   but   I NEG know not

        [quoi comme poisson ~~elle a   mangé~~].
        what as   fish   ~~she   has eaten~~

        'I know she ate fish but I don't know what kind.'

However, pied-piping of the restrictor phrase under wh-movement gives rise to varying degrees of acceptability, especially with PPs, yielding judgments that are subtle at times and subject to a fair amount of dialectal variation. The examples in (10) illustrate this point.

(10) a. Pour qui comme candidat vont-ils voter   alors ?
         for   who as   candidate go-they to-vote then

         'Which candidate are they gonna vote for then?'

     b. [?] Dans quoi comme boîte pourrait-on mettre son cadeau ?
         in   what as   box   could-we   to-put his present

         'What kind of box should we put his present in?'

(10)   c. ^{??} A   quoi comme voyage pensais-tu ?

                about what   as   trip   thought-you

                'What kind of trip were you thinking about?'

While the reason behind the variety of judgments in (10) is unclear, it seems significant that the ability of QCN-restrictors to pied-pipe alongside a wh-phrase is in all points similar to the ability of restrictive relatives to do the same, as the paradigm in (11) shows.

(11)   a.   Pour qui qui met l'emphase sur l'économie vont-ils voter alors ?

                for   who who places the-emphasis on the-economy go-they   to-vote then

                'Who are they gonna vote for that cares the most about the economy then?'

      b. [?] Dans quoi qui fasse classe pourrait-on mettre son cadeau ?

                in   what that makes class   could-we   to-put   his present

                'What could we put his present in that looks classy?'

      c. ^{??} A   quoi qui nous changerait les idées pensais-tu ?

                about what that to-us would-change the ideas   thought-you

                'What were you thinking about that would give us a fresh perspective on things?'

2.3.   QCN Restrictors and Restrictive Relative Clauses

In fact, there is evidence that the restrictor phrase in QCN has the same distribution as restrictive relative clauses. For example, restrictive relatives can 'extrapose' to the right, even when their head is a wh-element that has undergone movement in the overt syntax, as in (12a). This property is shared by QCN, as illustrated in (12b).

(12)   a.   Qui pourrait travailler là-dessus [à qui tu fais confiance] ?

                who could   to-work   on-this   to who you make trust

                'Who could work on this that you can trust?'

      b.   Qui pourrait travailler là-dessus [comme maçon] ?

                who could   to-work   on-this   as   mason

                'What mason could work on this?'

Second, relative clauses modifying a head in the subject position of small clauses cannot be stranded in that position but must instead extrapose to the right of the small clause as shown in (13). The same is true of the restrictor phrase in QCN, as the paradigm in (14) makes clear.

(13)   a.   * Qui considères-tu [[qui joue pour Montréal] valable] ?

                who consider-you   that plays for   Montreal   worthy

      b.   Qui considères-tu [[e] valable] [qui joue pour Montréal] ?

                who consider-you   worthy   that plays for   Montreal

                'Who do you consider worth his salt that plays for Montreal?'

(14)   a.   *   Qui considères-tu [[comme joueur] valable] ?
            who consider-you   as   player   worthy

       b.   Qui considères-tu [[e] valable] [comme joueur] ?
            who consider-you   worthy   as   player
            'Which players do you consider worth their salt?'

Finally, extraposed relatives show a nested linear order. This constraint, illustrated in (15) for relatives, is also at work with respect to the distribution of QCN restrictor phrases, as (16) shows.

(15)   a.   [?]   Un homme a   admiré la pièce hier   [que j'avais juste
            a   man   has admired the room yesterday that I-had   just

            fini   de peindre] [qui portait une perruque].
            finished of to-paint   who wore   a   wig

       b.   *   Un homme a   admiré la pièce hier   [qui portait
            a   man   has admired the room yesterday who wore

            une perruque] [que j'avais juste fini   de peindre].
            a   wig   that I-had   just   finished of to-paint

            'A man admired the room yesterday that I had just finished painting
            who wore a wig.'

(16)   a.   [?]   Personne n'a   rien   reçu   hier   comme salaire comme travailleur.
            no one   NEG-has nothing received yesterday as   salary   as   worker

       b.   *   Personne n'a   rien   reçu   hier   comme travailleur comme salaire.
            no one   NEG-has nothing received yesterday as   worker   as   salary

            'No worker received any compensation yesterday.'

3.   Two Types of Split Quantification Constructions

QCN is reminiscent of another phenomenon in French, often referred to in the literature as Quantification at a distance or QAD (see e.g., Doetjes 1995). QAD is illustrated in (17).

(17)   J'ai   beaucoup lu   d'articles cet été.
            I-have a-lot   read of-articles this summer
            'I read a lot of articles this summer.'

However, QCN and QAD differ syntactically. First, while the restriction in QCN may be extraposed to the right and be spelled out following a temporal adjunct, this option remains unavailable in cases of QAD. This is illustrated in (18).

(18)   a.   J'ai rien lu [cet été]   comme articles.
              I-have nothing read this summer   as   articles
              'I read no articles this summer.'

         b. * J'ai beaucoup lu [cet été]   d'articles.
              I-have a-lot   read this summer of-articles
              'I read a lot of articles this summer.'

Second, the class of quantifiers that licenses QCN only partially overlaps with that which licenses QAD. The universal quantifier *tout* 'all', for example, admits QCN but resists de modification, as (19) shows.

(19)   a.   Elle mange tout comme légumes.
              she eats   all   as   vegetables
              'She'll eat any vegetable.'

         b. * Elle comprend tout d'important. (cf. tout ce qui   est important)
              she understands all of-important (cf. all   that which is   important)
              'She understands everything that's important.'

Third, intervention effects can be used to show that syntactically, QAD sharply contrasts with QCN.

3.1.   Minimality/Intervention Effects

As is well known, in QAD, an intervening adverb such as *beaucoup* 'a lot', or an intervening monotone decreasing quantifier in subject position, blocks the discontinuous variant. This is illustrated in (20b) and (21b).

(20)   a.   [Combien de livres]$_i$ a-t-il beaucoup lu t$_i$?
              how-many of books   has-he a-lot   read

         b. * [Combien]$_i$ a-t-il beaucoup lu [t$_i$ de livres] ?
              how-many   has-he a-lot   read of books
              'How many books has he read a lot?'

(21)   a.   [Combien de livres]$_i$ est-ce que peu d'étudiants ont acheté t$_i$?
              how-many of books Q   few of-students   have bought

         b. * [Combien]$_i$ est-ce que peu d'étudiants ont acheté [t$_i$ de livres] ?
              how-many   Q   few of-students have bought   of books
              'How many books did few students buy?'

On the basis of contrasts like (20), Obenauer (1984) argued that adverbs like *beaucoup* have a blocking effect on *combien* sub-extraction because of their similarity to the extracted element, an

idea that has led to Rizzi's (1990) notion of Relativized Minimality and the various subsequent theories of intervention. But then, why is the discontinuous version of QCN possible in the presence of similar interveners, as (22) shows?

(22) a. Qu'a-t-elle beaucoup lu   comme livres ?
          what-has-she a-lot   read as   books
          'What kind of books did she read a lot?'
      b. Qui est-ce que peu d'étudiants aiment comme professeur ?
          who Q   few of-students   like   as   professor
          'What kind of professor do few students like?'

This would be expected if in QAD, the restrictor is syntactically active, while in QCN it is not. In a theory like that of Hunter and Frank (2011) where adjuncts do not undergo Merge, the fact the restrictor phrase in QCN is syntactically inactive will follow if we assume that it is an adjunct. Restrictor phrases in QAD could then be assumed to be merged as complements, and therefore syntactically active for the purposes of Relativized Minimality. In a theory that seeks to reduce adjunction to complementation, on the other hand, it remains unclear how to capture the differing behavior of restrictor phrases in the two types of split quantification constructions.
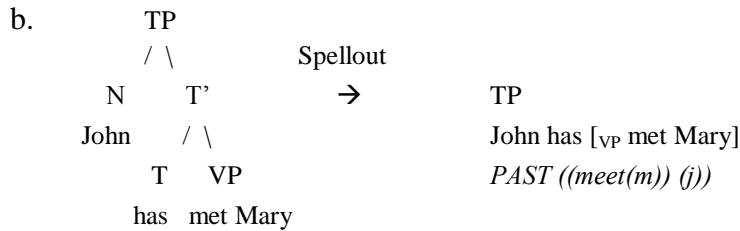
4.   QCN Restrictors as Adjuncts
4.1.   The Derivational Flexibility of Adjuncts
The treatment of QCN that I wish to propose is grounded in the independently motivated derivational flexibility of adjuncts proposed by Hunter (2010). Hunter assumes a version of cyclic Spellout whereby every maximal projection is a Spellout domain. Thus, a derivation is partitioned into phases. Each phase in the derivation consists of one or several merge steps involving a head X and its 'arguments' and creating a complement and/or a specifier position in the projection line of X. At the end of each phase, Spellout applies to yield a word-like object called a 'unit' that lacks internal structure in the sense that it no longer retains information about the structural relations between X and its arguments. (Although a unit is not a tree-shaped structure, it does retain the bare minimum of required information to allow movement operations.) A simple illustration of this is given in (23).

(23) a.   VP
               / \   Spellout   VP
              V   N   →   met Mary
              met   Mary   *meet(m)*

b.
```
           TP
          / \              Spellout
       N     T'       →         TP
      John    / \               John has [VP met Mary]
           T    VP              PAST ((meet(m)) (j))
          has  met Mary
```
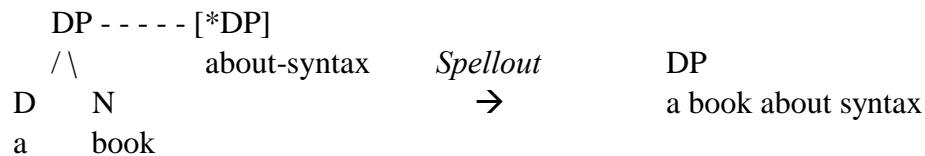
Consider next the treatment of adjuncts argued for in Hunter and Frank (2011). Their basic claim is that the syntactic attachment of adjuncts is relatively free (constrained only by the system of cyclic interpretation just sketched), while that of non-adjuncts is not, since particular thematic relations are only compatible with certain syntactic positions (UTAH). Thus, in contrast to arguments, adjuncts are introduced into the derivational space but not merged. In their system, an XP modifying adjunct can be introduced in one of two ways. Either it is introduced during a chunk where XP is being constructed, or it is introduced during a phase where XP is present as the complement or specifier of another head. This is illustrated in (24).

(24) a. "early option" = during the construction of the DP the adjunct modifies.
```
         DP - - - - - [*DP]
        / \              about-syntax    Spellout          DP
       D   N                             →                 a book about syntax
       a   book
```

b. "late option" = during the phase that immediately follows the DP phase.
```
         VP
        / \                              Spellout          VP
       V   DP - - - - [*DP]              →                 read a book about syntax
      read a-book   about-syntax
```

Before going any further, let us briefly explore a basic prediction made by this theory. Consider the fact, illustrated in (25), that DP-modifying adjuncts like about syntax and VP-modifying adjuncts like yesterday are freely ordered phonologically.

(25) a. Paul read books [about syntax] [yesterday].
      b. Paul read books [yesterday] [about syntax].

According to this theory, the unmarked word order in (25a) is expected under any of the three scenarios in (26).

(26) a. Both adjuncts are introduced early: the [*DP] adjunct *about syntax* is linearized at the right edge of the object DP while *yesterday*, being a [*VP] adjunct, is linearized at the right edge of the VP.

b. Both adjuncts are introduced late: the [*DP] adjunct *about syntax* is linearized at the edge of the VP while the [*VP] adjunct *yesterday* is linearized at the edge of the TP.

c. The [*DP] adjunct *about syntax* is introduced early and is linearized at the edge of the object DP while the [*VP] adjunct *yesterday* is introduced late and is linearized at the right edge of the TP.

The ordering displayed in (25b), on the other hand, corresponds to a scenario in which both the DP adjunct and the VP adjunct linearize at the right edge of the VP due to the fact that the DP adjunct was introduced late (during the VP phase) and the VP adjunct was introduced early. Thus, two adjuncts introduced during the same phase are freely ordered.

Finally, in Hunter and Frank's theory, phrases in non-base positions can act as hosts for late-introduced adjuncts. Their theory allows such adjuncts to be linearized in one of two ways: they can either linearize at the right edge of the specifier hosting the moved XP (cf., for example, the position of the relative in (27a)), or they linearize at the right edge of the string produced by the application of Spellout at the end of the phase that immediately dominates the moved XP (cf., for example, the position of the relative in (27b)).

(27) a. [C-field Which books [that were lying on the table] did [TP someone pick up yesterday]]?

b. [C-field Which books did [TP someone pick up yesterday]] [that were lying on the table]?

4.2. QCN Restrictors as [*QP] Adjuncts

Let us now assess the validity of the predictions made by this theory on the assumption that QCN restrictor phrases are adjuncts that target quantificational phrases. Consider first the case of QCN restrictor phrases linked to an object QP in its first-merge position. On the assumption that QCN restrictor phrases are adjuncts, we expect them to be introduced at the object QP phase (early option) or the VP phase (late option). As the examples in (28) suggest, this is what we find.

(28) a. Ils ont accepté [QP n'importe qui] [comme bénévoles] hier. (early option)
they have accepted   anybody   as   volunteers   yesterday

b. Ils ont [VP accepté [QP n'importe qui]] hier   [comme bénévoles]. (late option)
they have   accepted   anybody   yesterday as   volunteers
'They accepted any volunteers yesterday.'

Turning next to the case of subject-modifying restrictor phrases, we expect those to be introduced during the subject QP phase and only for the re-merged copy of that phrase on the as-

sumption that the higher attachment is the only option for moved hosts. We also expect them to be introduced during the TP phase, which corresponds to a projection that properly contains the re-merged copy of the subject QP. These predictions are the correct ones, as shown in (29).

(29)   a.   [_QP_ Rien][comme vin] ne   les a   satisfait hier.
           nothing   as   wine NEG them has satisfied yesterday
           'No wine pleased them yesterday.'
   b.   [_QP_ Rien] ne les a satisfait (hier) [comme vin] (hier).
   c.   * [_QP_ Rien] ne les a [_vP_ ~~rien~~ [comme vin] satisfait].

The example in (29a) illustrates the case of a restrictor phrase adjunct modifying a subject QP that has been re-merged in Spec,TP. Such an adjunct can also be introduced during the TP phase, as (29b) shows, in which case it interacts with the introduction of the [*VP] adjunct *hier* 'yester-day.' Indeed, since the latter can also be late-introduced at the TP phase, the two adjuncts are freely ordered phonologically. Finally, the ungrammaticality of (29c) follows from the assumption that the silent copy of the moved subject QP in Spec,vP cannot host an adjunct; only the higher phonologically realized copy can.

Let us now turn to those cases involving two instances of QCN in the same clause. The first prediction is that each restrictor phrase should be able to avail itself of the early option and be linearized to the right of its host during the QP phase. For the object, this should occur in situ, for the subject, this should occur at the right edge of the higher copy. This prediction is borne out, as (30) illustrates.

(30)   On s'est aperçu que [_QP_ rien] [comme uniforme] ne   plaisait à
       we SE-is realized that   nothing as   uniform   NEG pleased   to
       [_QP_ personne] [comme joueur].
       nobody   as   player
       'We realized that no uniform pleased any player.'

Suppose next that both of the restrictor phrases avail themselves of the late option. Given our assumptions, the restrictor phrase linked to the object QP will be introduced at the VP phase, and the restrictor phrase linked to the subject QP will be introduced at the TP phase. We therefore expect a nested linear order whereby the restrictor phrase linked to the subject QP should appear to the right of that linked to the object QP, and not vice versa. This is the correct prediction, as the paradigm in (31) shows.

(31)   a.   ? [Personne] n'a mangé [quoique ce soit] hier   [comme légumes] [comme invité].
               nobody   NEG ate   anything   yesterday as   vegetables as   guest
   b.   * [Personne] n'a mangé [quoique ce soit] hier [comme invité] [comme légumes].
           'No guest ate any vegetables yesterday.'

Finally, we predict that if the object QP undergoes wh-movement, the late option for the introduction of its restrictor phrase will be the CP. As a result, we expect the linear order of the restrictor phrases exhibited by the ungrammatical (31b) to become possible in this context because we now have, once again, a nested dependency between QPs and restrictor phrases. This prediction also is borne out as (32) illustrates.

(32)   ? [Qui] est-ce que [rien] ne   dérange [comme bruit] [comme étudiant] ?
         who   Q   nothing NEG bothers as   noise   as   student
         'Which student does no noise bother?'

5.   Conclusion

In conclusion, we have argued that a coherent account of the properties of French QCN that contrast with those of QAD can only emerge from a theory of phrase structure that recognizes that arguments and adjuncts are subject to different requirements within the workspace. We have shown that the patterns of locality restrictions observed for QCN can be accounted for if one assumes that QCN restrictor phrases are QP-modifying adjuncts that need not be present in the derivation while their QP host is undergoing Merge or Move, but can be introduced at a later stage in the derivation when their host is acting as the complement or specifier of some other projection.

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