A multifactorial approach to adverb placement: assumptions, facts, and problems

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Abstract

This paper discusses several data concerning the distribution of adverbs, primarily focusing on data from European Portuguese. It is defended that a proper understanding of the behavior of adverbs must take into account several factors that do not necessarily converge. In particular, it is argued that the following variables must be taken into account: inherent vs non-inherent meaning of the adverb, categorical status, domains of modification, and weight of each adverb. Adverbs are treated as adjuncts, and the constraints on adjunction sites are derived from the variables discussed.

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1. Introduction

The purpose of this paper is to provide some basic ideas on the work that I have been developing on the syntax of adverbs, and see how it provides answers for a set of questions that any analysis of the behavior of this heterogeneous word class is supposed to be able to answer. The organization of the paper is the following:

(a) In section 2, I will present a review of the main aspects of my own research on the syntax of adverbs. I will present results presented in Costa (1997, 1998,
2000), and in Castro and Costa (2002), all pointing to what I will call a multifactorial analysis for the syntax of adverbs. In a nutshell, the main idea is that adverbs may have information in their lexical entries concerning meaning, form, and categorical status. This type of information is mapped onto syntax, respecting the domains for modification. If the meaning of an adverb is not specified in the lexicon, as it is the case for ambiguous adverbs, their syntactic placement will derive their meaning. Under certain specific circumstances, an adverb may surface in an unexpected position. This will happen if there are specific associations between the adverb and information structure requirements. The main idea is that, for an understanding adverb behavior and distribution, one must take into account lexical factors, categorical information, semantic factors, syntactic factors, and information structure factors. All these components will either converge or impose conflicting requirements on determining the position of each adverb. Most data used in the presentation of this analysis will come from Portuguese.

(b) In section 3, I will try to show how the type of analysis laid out in the previous section deals with some additional issues concerning the relation between structure and meaning, and the more general issues concerning structure and the OV/VO distinction.

Since the goal of this paper is not to compare this type of analysis with other views on adverb syntax, I will not explicitly refer to approaches that advocate that adverbs are specifiers of specific functional categories, like Alexiadou’s (1994) and Cinque’s (1999). The purpose of the paper is to present a specific way of looking at the adverb facts, and to check whether some specific empirical data can be solved under the type of analysis proposed. Naturally, the analysis to be presented will not fare as well as other analyses in solving some specific problems, and it may well be the case that the analysis to be presented has nothing to say on some specific problem. Nonetheless, I leave it to the reader to compare and reach conclusions regarding the most appropriate approach to the problems raised by the behavior of adverbs.

2. Adverb behavior: a multifactorial approach

2.1. Assumptions

In this section, I will present a summary of previous work that I have developed on adverb syntax (Costa, 1997, 1998, 2000; Castro and Costa, 2002). I will first spell out the main assumptions underlying these works, trying to show to what extent they are (un)controversial. Then, I will move on to exemplify how to derive some specific data on adverb placement from this set of assumptions. For ease of explanation, I will single out each of the assumptions, and comment on each of them in isolation first.
**Assumption 1. Adverbs are adjuncts**

In the work that I am referring to, I have assumed that adverbs are adjuncts. This is the traditional view on adverbs, and differs from current views that treat adverbs as specifiers (Alexiadou, 1994; Cinque, 1999). Treating adverbs as adjuncts is controversial in theoretical terms, once one assumes views on phrase structure like Kayne’s (1994) antisymmetry hypothesis. It is also controversial empirically, once fixed orders between adverbs are observed, a fact that has been challenged by Ernst (2000) and Costa (2000). On the other hand, it is uncontroversial, since it has the benefits of deriving the different status that adjuncts and specifiers seem to have.1

**Assumption 2. Adverbs adjoin both to lexical and functional categories**

Assuming that adverbs are adjuncts, it is necessary to state what categories they may adjoin to. Here too there may be at least two types of positions. Either adjunction is completely free or adverbs may adjoin only to lexical or functional categories. I assume that adjunction is partly free, that is, an adverb is free to adjoin to a lexical category, like VP, and to functional categories, like TP or CP. This is shown in (1):

(1) `[CP AdvP [CP [AgrSP [TP AdvP [TP [VP AdvP [VP ]]]]]]]`

The next step is to clarify whether the choice between adjoining to a lexical or a functional category is free or somehow constrained by the semantics of the adverb. I will return to this issue below.

Another aspect that calls for clarification is whether all categories are potential adjunction sites for adjunction. In previous work (Costa, 1996, 1998), I have assumed that adjunction to AgrP is impossible. In those works, this came out as a pure stipulation in order to derive some word order facts, in particular some adjacency facts between verb and complements in contexts in which the complement is in the specifier position of an Agr projection, as in (2):

(2) `[TP V [AgrOP DP [VP . . .]]]

Ruling out adjunction to AgrOP in a context like (2) ensures that V and DP are adjacent. Naturally, the question comes up of what the difference is between AgrP and other functional categories that makes it impossible to treat the former as a legitimate adjunction site. As far as I can see, there are two possible answers for that: (i) unlike other functional categories, Agr is contentless, which means that it does not make sense to modify it, or (ii) Agr is basically a nominal category, and adverbs do not modify nominal categories. I am aware of the fact that both answers are problematic.

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1 For comparisons between the specifier analysis and the adjunct analysis, see Costa (2000), Ernst (2000) and Haider (2000).
If Agr is completely contentless, the only reason for its existence is positional, which makes it just a descriptive tool for word order facts. This type of reasoning led Chomsky (1995) to suggest that Agr does not exist. If Agr is nominal, it must be explained what its status is when understood as part of the extended projection of V, in Grimshaw’s (1991) terms. The contribution I can give to this debate is rather modest, or even null. Positionally, when considering potential landing sites for the verb from a comparative perspective, it seems necessary to assume that IP splits into at least three different functional categories (see Costa, 1998). Empirically, it seems that only one of those functional categories, the middle one, may host an adjunct. If this is so, assuming Chomsky’s (1993) version of the clause structure with the hierarchy AgrSP–TP–AgrOP, and acknowledging that there is something strange about the content of Agr categories, one may get close to a possible solution on why not all categories bear adjuncts.

Assumption 3. Adverbs adjoin to the left

The assumption that adverbs are adjuncts makes the prediction that there should be symmetry as far as the placement of adverbs is concerned. In other words, since adjunction is in principle free and not conditioned by any type of directionality parameter, it is expected that an adverb that adjoins to the left is also able to adjoin to the right, as in (3):

(3)  
\[ \text{AdvP} \quad \text{XP} \quad \text{AdvP} \]

This is however one of the domains in which the Specifier analysis for adverbs, defended by Alexiadou (1994) and Cinque (1999) fares better than the adjunction analysis. The lack of symmetry is fairly easy to demonstrate. In (4)–(6), I present data from Costa (1997, 1998), where three major problems for the right-adjunction approach are shown:

(a) Some left-adjuncts do not surface in sentence-final position:

(4)  
(a) O João falou bem com a sua mãe.  
João spoke well to his mother  
(b) *O João falou com a sua mãe bem.  
João spoke to his mother well

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2 In Costa (1998), it is argued, based on the distribution of adverbs, that the landing site for the verb varies across Romance languages, which constitutes evidence for the Split,IP hypothesis. The claim put forward is that French and Portuguese differ in that in the latter the verb undergoes short-verb-movement to T, not reaching the highest functional head of the clause.
For (4b) to be grammatical, the adverb must bear a heavy stress or branch. This is not straightforwardly predicted under a right-adjunction approach, which would predict pure optionality.

(b) The reading of certain adverbs in the left-domain is not preserved in clause-final position:

(5) a. O João estupidamente entornou o café.
   João stupidly spilled the coffee
b. O João entornou o café estupidamente
   João spilled the coffee stupidly

In (5a), the adverb *estupidamente* has a subject-oriented reading, which can be paraphrased as ‘it was stupid of João to spill the coffee’. That reading for this adverb is lost in (5b). In the latter, the adverb has a manner reading. If adjunction were symmetrical, whatever triggers the subject-oriented reading for the left-adjunct in (5a) should not be affected by the direction of adjunction, and this reading should be preserved in (5b).

(c) Adverbs do not stack in sentence-final position:

   a. O João estupidamente tinha provavelmente estado rapidamente a entornar café.
      João stupidly had probably been quickly spilling coffee
   b. *O João tinha estado a entornar café rapidamente provavelmente estupidamente.

Again, the contrast between the two sentences in (6) is problematic for the right-adjunction approach, since one would expect the adverb order in the left-domain of (6a) to stack in the mirrored order in (6b). This prediction is not borne out.

These three pieces of evidence are fatal for a right-adjunction approach. Accepting it, there are several options that come up to mind: (i) is right-adjunction unavailable for adverbs, because adjunction does not exist?; (ii) is right-adjunction unavailable, but left-adjunction exists?; (iii) is right-adjunction unavailable for adverbs only? Option (i) is the one taken in Alexiadou’s and Cinque’s works, and may follow from principled considerations on phrase structure (see Kayne, 1994 a model of phrase structure in which the difference between specifiers and adjuncts fades away). Assuming this type of approach, one is led to consider that adverbs are not adjuncts, which raises a whole array of questions that I will not be addressing in this paper.

The second type of approach may follow from approaches to adjunction that rule out right-adjunction, such as Haider’s (1992) or Barbiers’ (1995). Option (iii) is perhaps the least clear, since it does not follow from any principled design of the options for adjunction. However, it seems to be the most appropriate one on empirical grounds, since it explains differences in behavior between adverbs and PP adjuncts with exactly the same meaning. The most salient difference is that
PP adjuncts are typically in the clause’s right periphery, while adverbs with exactly the same meaning are typically left-adjoined. This is shown in (7):

(7) a. Ele tinha muito estupidamente entornado os dois baldes de água.
    He had very stupidly spilled the two buckets of water

b. *Ele tinha de um modo estúpido entornado os dois baldes de água.
    He had of a manner stupid spilled the two buckets of water

c. Ele tinha entornado os dois baldes de água de um modo estúpido.
    He had spilled the two buckets of water of a manner stupid
    ‘He had spilled the two buckets of water in a stupid manner.’

The relevant contrasts are between (7a) and (7b), on the one hand, and between (7b) and (7c), on the other hand. The first contrast shows that the position between the auxiliary verb and the main verb, which is available for the manner adverb, is unavailable for the manner PP. The second contrast shows that the PP may easily surface in clause-final position, arguably in a right-adjunction configuration. It may well turn out to be the case that the clause-final position for PP adjuncts is conditioned by their prosodic weight. In that case, PP clause-final position may be interpreted as a type of extraposition. But if this is the case, its target position is still a right-adjunction configuration.3

Summing up, the assumption that adverbs adjoin to the left only, and that this is a category specific constraint, has descriptive merits, but it calls for a grounded explanation, that must be found within more general assumptions about phrase structure. As far as I know, Haider’s (1992) proposal is the closest approximation to the type of proposal I am looking for, since it does not deny the existence of adjunction, it proposes that it should be constrained in terms of its directionality, and it does not deny the need of assuming that right-adjunction is necessary for accounting for some derived structures.

It is important to stress at this point that whatever theoretical explanation or proposal is found that rules out right-adjunction must incorporate some way of analyzing the cases in which adverbs surface in sentence-final position, and which are typically analyzed as instances of right-adjunction. I will return to this issue while spelling out the assumption on how adverbs get their meaning derived in some specific syntactic configurations.

Assumption 4. There are basically two domains for adverbs: IP and VP

Although there is little consensus on the nature of adverb distribution, and on what are the relevant classes of adverbs, there is consensus on the basic distinction put forward in Jackendoff’s (1972) book that a difference must be acknowledged between sentential-adverbs and VP-adverbs. Even if one rejects adjunction, and by accepting the VP-internal subject hypothesis is forced to

3 In Lobo (in preparation), it is claimed that the properties of some adverbial clauses are best understood if they are analyzed as right-adjuncts.
assume that there is no VP-adjunction, the basic difference between adverbs that attach high in the clause and adverbs that attach low in the clause must be accounted for. The exact label assigned to the attachment sites depends on at least two factors: (i) the assumption one makes regarding clause-structure, and (ii) the assumption one makes regarding the syntax–semantics relation, in particular, the relation between position and meaning of each adverb. I will skip the spelling out of the assumptions in (ii) for a while, and concentrate on (i). Since I assume, following Grimshaw (1991) that the several functional categories that are sentential, and that make up the higher part of the clause, are different instantiations of the verbal extended projection, there are no major differences in meaning between the several functional categories, an exception being possibly made for Agr projections, as mentioned above. In this sense, the potential differences between the several functional categories are lost. If this is so, then the clause is basically split into two parts: a sentential functional domain, made up of the several functional categories that are here understood as extended projections of the verb, and a lexical domain, constituted by VP. This reduces the domains of modification by adverbs to two: (a split) IP and VP, bringing back Jackendoff’s (1972) original claim. The need for acknowledging two different domains for modification is empirically supported by the well-known fact that some adverbs may not be high:

(8) *John completely has read the book.

The explanation for the ungrammaticality of (8) is to be found in the necessary association of the adverb completely with the lexical domain.

In Costa (2000), I presented some data supporting the claim that there is only need for another domain of modification besides VP. In a sentence containing a single sentential adverb and many lexical heads, the adverb may surface in between any of the verbal heads, without necessarily triggering meaning differences. This is shown in (9):

(9) a. O João frequentemente tinha estado a falar com os amigos.
    the João frequently had been talking to the friends
 b. O João tinha frequentemente estado a falar com os amigos.
    the João had frequently been talking to the friends
 c. O João tinha estado frequentemente a falar com os amigos.
    the João had been frequently talking to the friends
 d. O João tinha estado a falar frequentemente com os amigos.
    the João had been talking frequently to the friends

On the lack of evidence for the auxiliary heads to be occupying different head positions in each of the cases of (9), one is led to assume that it is the adverb that is attaching to different projections. Independently of the specific label of each of the XPs headed by

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4 See Costa (1998) for counterarguments for such an analysis.
the verbal heads in the sentences in (9), the lack of meaning differences between these examples shows quite clearly that it does not really matter where the adverb is attached in the IP domain. If there are several heads, more adjunction sites are created, if there are less heads, less adjunctions sites are available. This is expected if no explicit reference is made to a given functional category, but just to the sentential domain, no matter how split it is. Additional evidence for this claim comes from the following contrast:

(10) a. O João frequentemente tinha provavelmente estado simpaticamente a falar com os amigos.
   the João frequently had probably been nicely talking to the friends
b. *O João falou frequentemente provavelmente simpaticamente com os amigos.
   the João talked frequently probably nicely to the friends

The contrast in (10) may be explained under the following terms: if there are verbal heads that project into XPs in the IP-domain, there are adjunction sites available. If the verbal heads are not there, there are no adjunction sites available. This fact crucially shows that the specificity of the category that the adverb adjoins to in the IP-domain is not crucial. Incidentally, note that this contrast also favors the assumption that adverbs are adjuncts, since it reveals the ‘parasitic’ nature of adjunction: if there are no heads, there are no XP, and consequently, there is no site to adjoin to.

Assumption 5. The meaning of adverbs is derived in the syntax, only if it is not inherent, which has consequences on the way adverbs distribute

While explaining the latter assumption, it was mentioned that options must be taken considering the relation between adverb placement and interpretation. This is by no means a trivial question, and the fact that there is little consensus on how to relate the position of adverbs to their meaning is in itself indicative of how far we are from really understanding it. Throughout my work, I have been assuming a version of Ernst’s (1984) loose fit theory, accepting the idea that the meaning of adverbs may vary in their lexical entries. Some adverbs may have an inherent meaning, while other adverbs may be associated with a meaning depending on their syntactic distribution. A clear example of this difference comes from the difference in meaning between an adverb like yesterday and an adverb like stupidly. Independently of its syntactic placement, yesterday has an inherent meaning (something like ‘the day before the reference or utterance time’). A different position will not affect its meaning. An adverb like stupidly, on the other hand, may have two meanings, as discussed above: it may have a manner reading, and be paraphrased by ‘in a stupid manner’ or it can have a subject-oriented meaning and be paraphrased by ‘it was stupid of X to do Y’.

This difference between inherent meanings and non-inherent meanings is crucial, since it may help understanding the much more general issue concerning the relation between adverb syntax and adverb meaning. If an adverb as an inherent meaning, its position will not affect its interpretation, and it is predicted that it will distribute quite freely. This is indeed the case for an adverb like yesterday, as shown in (11):
The same point could be made with the sentences in (9) above. For an adverb without an inherent meaning, this type of free distribution cannot be reproduced. If one takes the adverb *estupidamente* ‘stupidly’ in each of its possible readings, it is possible to show that not all positions are available for the two readings:

(12) Manner reading:
      the João stupidly had been talking to the friends
   b. O João tinha estupidamente estado a falar com os amigos.
      the João had stupidly been talking to the friends
   c. O João tinha estado estupidamente a falar com os amigos.
      the João had been stupidly talking to the friends
   d. O João tinha estado a falar estupidamente com os amigos.
      the João had been talking stupidly to the friends
   e. O João tinha estado a falar com os amigos estupidamente.
      the João had been talking to the friends stupidly

(13) Subject-oriented reading:
   a. O João estupidamente tinha estado a falar com os amigos.
      the João had stupidly been talking to the friends
   b. *O João tinha estupidamente estado a falar com os amigos.
      the João had stupidly been talking to the friends
   c. *O João tinha estado estupidamente a falar com os amigos.
      the João had been stupidly talking to the friends
   d. *O João tinha estado a falar estupidamente com os amigos.
      the João had been talking stupidly to the friends
   e. *O João tinha estado a falar com os amigos estupidamente.
      the João had been talking to the friends stupidly

Although the difference is small, since it only involves the pre-auxiliary position versus all the other potential positions, the contrast between (12) and (13) shows that there

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5 In all these examples, I am leaving out the sentence-initial position on purpose, since I will comment on it in more detail later on.
is a difference with respect to the free distribution of adverbs like *ontem* ‘yesterday’ or *frequentemente* ‘often’. It may well be the case that an adverb distributes freely within its domain of modification (IP or VP) just as long as its meaning is inherently defined in the lexicon. To make a very simple comparison: a pronoun morphologically marked for case, independently of its position, will always be associated with that specific case. A pronoun that is not morphologically specified for case will have its interpretation conditioned by the position it occupies. Therefore, in a sense, it will be less free.\(^6\)

This whole discussion brings back the question of the relation between placement and meaning. So, if at least some adverbs do not have a specified and unique meaning associated to them in their lexical entries, how does their meaning come about in the syntactic configuration. In other words, how does syntax condition the association with a specific meaning in the cases in which it must do so? The answer to this question falls under the spelling out of the next assumption.

**Assumption 6.** Syntactic configurations may force specific readings for ambiguous adverbs

Having spelt out that I am assuming a version of Ernst’s (1984) theory, which proposes that some adverbs do not have an inherent meaning, and that their meaning may be obtained in certain specific syntactic configurations, I now must explain what type of configuration is relevant for deriving the meaning of specific adverbs. In previous work (Costa, 1997, 1998), I have assumed a version of Barbiers’ (1995) Principle of Semantic Interpretation, presented in (14):

\[(14) \quad \textbf{Principle of Semantic Interpretation (PSI)}
\]

(i) The node \(Z\) establishes a \textit{S(emantic)-relation} between the nodes \(X\) and \(Y\) iff
\(X\) immediately \(c\)-commands \(Z\) and \(Z\) immediately \(c\)-commands \(Y\)

(ii) The node \(Z\) is a \textit{qualifier} of \(Y\) iff
\(Z\) establishes a \(S\)-relation between \(X\) and \(Y\), and \(X\) and \(Y\) are coindexed

In accordance with this principle, Barbiers (1995) suggests that every semantic relation will be determined by \(X\)-bar structure. That is, for a qualifier/modifier to be interpreted as such, it has to be in a configuration which permits that interpretation. Under this approach, full interpretation depends on creating the structural relations which determine semantic relations compatible with the lexical information associated with the terminals of the nodes involved. Barbiers (1995) proposes that movement is triggered by interpretation reasons. That is, movement is driven by the need to create an interpretable configuration. This theory allows for explaining extraposition in Dutch, as an instance of leftward movement. For this phenomenon, Barbiers (1995) proposes the analysis drawn in (15), under which extraposition is rephrased in terms of movement of the VP to the Specifier position of the PP.

\(^6\) Obviously, this is not a perfect comparison, since the syntax of pronominals is much more constrained than the syntax of adverbs for independent reasons.
Barbiers (1995) claims that this is the modification configuration that one needs to have in order to create the structure allowing for an adjunct to be the qualifier of its host. As illustrated in (15), Barbiers (1995) accounts for PP-extraposition in Dutch as an instance of movement of VP into the specifier of the PP. Under his theory, this movement is obligatory, because the S-relation is not established otherwise. Barbiers (1995) further claims that the level of application of this movement is optional [that is, it can be either made overtly or covertly in the sense of Chomsky (1993)].

Under this configuration, there is a S(ematic)-relation holding between VP, P and NP, since VP immediately c-commands P, and P immediately c-commands NP. There is also a qualification relation between PP and ti: VP immediately c-commands PP, which immediately c-commands ti. Since VP and ti are coindexed, there is a qualification configuration between these nodes. The movement of the VP into SpecPP is required to establish the qualification configuration between VP and PP. Barbiers (1995) gives the following example:

\[(\text{15}) \quad \begin{array}{c}
\text{VP*} \\
\text{PP*} \\
\text{VP}_1 \\
\text{P} \\
\text{NP*} \\
\text{(spec)} \\
\text{(NP)}
\end{array} \]

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\[(\text{16}) \quad \begin{array}{c}
\text{(a) } \text{Jan heeft in de tuin gewerkt.} \\
\text{Jan has in the garden worked} \\
\text{(b) } \text{Jan heeft gewerkt in de tuin.} \\
\text{Jan has worked in the garden} \\
\text{‘Jan worked in the garden’}
\end{array} \]

(16a) is the covert counterpart of (16b). The movement of the VP in (16b) is necessary to establish an S-relation between ‘worked’ and ‘the garden’, and to create the configuration in which ‘in the garden’ is a qualifier of ‘worked’. In other words, there is an in-semantic relation between the working event and the garden.

What are the advantages and problems of accepting Barbiers’ proposals for the syntax of adverbs? The main reason why I am accepting the availability of this type of operation is that it provides a principled way for accounting for clause-final

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7 The stars in PP, VP and NP, mean that these are the nodes relevant for the qualification relations in this substructure.
position for adverbs without having to assume the existence of right-adjunction, which, as I argued above may be problematic. At the same time, basing itself on an interpretation-based movement, this type of analysis provides tools for a simultaneous account of positional facts and interpretative facts. In Section 2.2, I will give an example of how this analysis may accommodate both interpretation and positional facts for some adverb types.

Its main problems are the following: it may overgenerate, creating postverbal adverbial positions in OV languages, contrary to fact. In other words, it does not dispense with some additional stipulation regarding the locus of movement, in the same way that a simple adjunction analysis does not dispense with some stipulation regarding the direction of adjunction. Moreover, this is a VP-remnant movement based analysis, which is not very problematic for movements internal to the upper VP node, but is highly questionable, if VP targets higher nodes, as shown in Costa (in press), among others. As mentioned above, in spite of its problems, I will still adhere to Barbiers’ proposal, since it provides the means for analyzing clause-final position without resorting neither to adverb extraposition nor to right-adjunction.

Another advantage of accepting Barbiers’ proposal is that it accommodates the traditional view that, whenever an adverb does not an inherent meaning, it may get its meaning derived in the syntax. A very clear case of it is the case of scope-taking adverbs like only and even, as described by Jackendoff (1972), for which the domain of modification is determined by their syntactic position, or adverbs like provavelmente ‘probably’, that may scope over the constituents surfacing to its right (underlined in the examples) in the following sentences:

(17) a. O João provavelmente leu o livro com os amigos ontem.
    the João probably read the book with the friends yesterday
    b. O João leu provavelmente o livro com os amigos ontem.
    c. O João leu o livro provavelmente com os amigos ontem.
    d. O João leu o livro com os amigos provavelmente ontem.

In (17), it is not the meaning of the adverb that varies with its position, but rather its domain of modification, or the scope it takes. These sentences therefore differ from the cases of adverbs that are ambiguous, as discussed above for the difference between manner and subject-oriented adverbs. They are not ambiguous in meaning, but they are ambiguous in terms of their scope or domain of modification. In both cases, syntax will be relevant for interpretation, in the sense that syntactic placement conditions the meaning associated with the adverb.

Summarizing, the main idea is that adverbs are lexically associated with meanings, grouping into two major classes—IP-modifiers and VP-modifiers. If adverbs come from the lexicon unambiguously associated with a meaning, there is no need for syntactic principles other than adjunction to the relevant domain to mediate the connection between meaning and position. If an adverb is not necessarily linked to a specific meaning, a syntactic principle of the type proposed by Barbiers (1995) is able to mediate the connection.
In short, one may assume the following syntax-semantics relation: adverbs may be lexically specified as either sentential or VP-modifiers. Syntax codifies this by adjoining them preferentially to the domain that corresponds to their lexical meaning. However, since this information is lexically encoded, changing the base-adjunction position for the purpose of complying to discourse requirements does not necessarily yield ungrammatical results. If, on the other hand, a certain adverb does not have an inherent meaning, as proposed by Ernst (1984), its syntactic placement may force a specific reading.

**Assumption 7. Lexical information on weight and categorical status (X vs XP) is important for determining adverb placement**

In spelling out the preceding assumptions, I am basically showing that for understanding the syntax of adverbs, one must take into consideration information that is specified in their lexical entries. Since there are various factors that are specified in the lexical entries of words, a variety of factors will have to be taken into consideration in order for one to be able to predict what the syntactic behavior of a specific adverb will be like. There are two types of lexical information that are also present in the lexical entries of words, namely their phonological shape, and whether they are X⁰ or whether they are able to project to phrases. The latter may seem more controversial, but if one thinks of clitics in Romance languages, there must be something specified about these words stating that they are minimal categories, behaving like XPs only for the sake of interpretation. I assume that these two types of information are important for understanding the behavior of adverbs.

Let us start with the information on phonological shape. Some manner adverbs may distribute quite freely within the verbal domain. For instance, the adverb *perfeitamente* ‘perfectly’ constitutes an example of this type of adverb:

(18) a. O Pedro tinha perfeitamente lido o livro.
    The Pedro had perfectly read the book.

b. O Pedro tinha lido perfeitamente o livro.
    Pedro had read perfectly the book

c. O Pedro tinha lido o livro perfeitamente.
    The Pedro had read the book perfectly

An adverb like *bem* ‘well’, which has a very similar meaning, does not have the same distribution. Crucially, the position in between the two verbs, corresponding to (18a) is not available for this adverb:

(19) a. *O Pedro tinha bem lido o livro.
    The Pedro had well read the book.

b. O Pedro tinha lido bem o livro.
    Pedro had read well the book

c. O Pedro tinha lido o livro bem.
    The Pedro had read the book well
This difference in distribution cannot be derived from the meaning of the adverb, since it is not different from the meaning of *perfeitamente* in (18). In Costa (1996), I have defended that some light adverbs cannot attach to high positions, and resist right adjunction. This can be clearly illustrated for monosyllabic adverbs in English. These adverbs do not surface in preverbal position like other manner adverbs (20a), they do not surface in clause-final position after PP complements (20b), unless they bear a heavy stress or branch (20c,d). The only context in which they are clause-final is when they follow a nominal complement (20e), which I have taken as evidence for assuming that there is some verb movement in English, as well as obligatory DP movement to Spec,AgrOP:

(20)  
\begin{itemize}
  \item a. *John well read the book.
  \item b. *John spoke to the audience well.
  \item c. John spoke to the audience WELL.
  \item d. John spoke to the audience very well.
  \item e. John read the book well.
\end{itemize}

Clearly, these distribution restrictions do not follow from the meaning of the adverb, since other manner adverbs may surface in preverbal position or after PP complements independently of stress or branching:

(21)  
\begin{itemize}
  \item a. John clearly read the book.
  \item b. John spoke to the audience clearly.
  \item c. John spoke to the audience CLEARLY.
  \item d. John spoke to the audience very clearly.
  \item e. John read the book clearly.
\end{itemize}

Given the lack of salient meaning differences between the two adverbs, and the effects that stress and branching may have on the distribution of *well*, it seems reasonable to assume that its distribution is partly conditioned by its phonological shape. This assumption is consistent with the one made previously regarding inherent lexical meaning. In both cases, information coming from the adverb’s lexical specification is relevant for determining its position in the clause. Depending on each case, the type of information that is at stake can condition the distribution of the adverbs in different ways: when an adverb has an inherent meaning its distribution is freer, when it has a specific prosodic shape, its distribution may be less free.

Another type of information that is specified in a word’s lexical entry is its categorical status. The most well-known case is the one of clitics. Clitics are words that differ from full DPs in that they behave like heads. Their head status is specified in their lexical entries and conditions their syntactic behavior. Cardinalletti and Starke (1999) have argued that the behavior of pronominal forms may be understood better if one considers a tripartite classification for these words: they may be strong, weak or clitics. According to their proposal, strong and weak pronouns behave like XPs, while clitics are heads. In Castro and Costa (2002), in the line of Alexiadou (1994), we have argued that Cardinalletti and Starke’s typology may be extended to
adverbs, with some adaptations. We have shown that some adverbs in European Portuguese display a head-like behavior and a distribution partly similar to the distribution of clitics. The main arguments to consider these adverbs heads are the following:

(a) Parallel with heads in position: like clitics, some of these adverbs may not be preverbal in enclitic contexts:

(22) Clitics:
      I him saw
   a’. Eu vi-o.
      I saw him
   b. *Eu me lavo.
      I myself wash
   b’. Eu lavo-me.
      I wash myself

(23) Weak adverbs:
      I there was
   a’. Eu estive lá.
      I was there
      I here come
   b’. Eu venho cá.
      I come here
   c. ??*Eu lá comprei um livro.
      I there bought a book
   c’. Eu comprei lá um livro.
      I bought a book there

If an adverb has a clear XP status, this type of behavior is not reproduced:

(24) Other adverbs:
   a. Eu ontem estive muito cansado.
      I yesterday was very tired
   a’. Eu estive ontem muito cansado.
      I was yesterday very tired
   b. Eu hoje venho.
      I today come
   b’. Eu venho hoje.
      I come today
c. Eu provavelmente comprei um livro.
   I probably bought a book

c'. Eu comprei provavelmente um livro.
   I bought probably a book

In some proclitic contexts, the adverbs at stake may surface in preverbal position:

(25) **Weak adverbs:**
   a. Nunca lá estive.
      (I) never there was
   b. Já cá vim.
      (I) already here came
   c. Só aqui estive uma vez.
      (I) only here was once

The exact same position is unavailable for XPs with the same syntactic function:

(26) a. *Nunca nessa casa estive.
   (I) never in that house was
   b. *Já a esta cidade vim.
      (I) already to this city came

At a first approximation, one might suppose that these adverbs are clitics. However, such an analysis is not tenable, since it the distribution of the adverbs under consideration does not totally overlap with the distribution of clitics:

(a) Unlike what happens with clitics, the preverbal position in proclisis contexts is not obligatory:

(27) **Weak adverbs:**
   a. Nunca lá estive.
      (I) never there was
   a'. Nunca estive lá
      (I) never was there
   b. Já cá vim.
      (I) already here came
   b'. Já vim cá.
      (I) already came here
   c. Só aqui estive uma vez.
      (I) only here was one time
   c'. Só estive aqui uma vez.
      (I) only was here one time

(b) In some contexts in which clitics are obligatorily proclitic, the preverbal position for these adverbs is impossible:
(I) not there was
b. *A Maria disse que cá esteve.
The Maria said that here was
(c) Unlike clitics, these forms may occur in isolation and in first position:
(29) A: Onde é que ficas?
    Where do you stay
    B: Lá.
    there
(30) Lá moram três pessoas.
    There live three people
(d) Unlike clitics, these adverbs may be coordinated:8
(31) Ando cá e lá.
    (I) wander here and there
Since it is impossible to argue that these adverbs are clitics, in Castro and Costa (2002), we proposed a classification of these adverbs as weak forms, suggesting contra Cardinalletti and Starke (1999) that some weak forms may be heads.
(b) Parallel with heads in movement: the second piece of evidence in favor of treating some adverbs like heads comes from the fact that the adverbs under consideration may move as heads, that is, they move together with the verb, in I-to-C contexts, as shown in (32):
(32) a. O que já tinhas tu feito?
    What already had you done
b. Com quem lá tinhas tu ido?
    With whom there had you gone
c. O que aqui tinham eles tratado?
    What here had they treated
d. ?O que então se chamava às mulheres?
    What then was called to women
This behavior is not reproduced by adverbs that uniformly display an XP status. Adverbs corresponding to the English -ly type and adverbs with the same meaning of those in (32) do not move along with the verb in I-to-C movement contexts:
(33) a. *O que ontem tinhas tu feito?

8 In Castro and Costa (2002), we entertain the hypothesis that in postverbal position the adverbs at stake are XPs, since coordination is impossible when the adverbs are preverbal. This hypothesis would weaken the evidence given by the data in (30) and (31).
What yesterday had you done
b. *Com quem provavelmente tinhas tu ido?
With whom probably had you gone
c. *O que surpreendentemente tinham eles tratado?
What suprisingly had they treated

(c) Parallel with heads in verbal answers: Portuguese yes–no questions may be answered with verbs. It is possible to show that this type of answers may only include heads. This is illustrated in (34) and (35), in which a repetition of parts of the question is either total or may only involve the verb and head elements like clitics:

(34) A: Já o viste com óculos?
(you) already him saw with glasses
B: Já o vi, já.
(I) already him saw, already

(35) A: Já viste o João com óculos?
(you) already saw the João with glasses
B: *Já vi o João, já.
(I) already saw the João, already

It is interesting to note that the adverbs that display head-like behavior pattern like heads in being able to answer yes–no questions, as in (36), and in being able to be preserved in answers that do not repeat the whole question, as shown in (37):

(36) A: Já tinhas lido o livro?
(you) already had read the book
B: Já.
Already

(37) A: Já lá foste com a Maria?
(you) already there went with the Maria
B: Já.
already
B’ Já lá fui, já.
Already there went, already

For completeness, note that if the adverb is not postverbal, not displaying head-like properties, it exhibits the same behavior as the DP in (35), not being able to occur in an answer that does not constitute of a complete repetition of the question:

(38) A: Já foste ali com a Maria?
(you) went there with the Maria
B: *Já fui ali, já
Already went there, already
Summing up, as argued in Castro and Costa (2002), the type of adverbs presented above seems to behave like heads, and their position in the sentence is conditioned by their categorical status rather than by their meaning. A similar point for adverbs is made by Rivero (1992) for Greek, who shows that certain low manner adverbs are able to incorporate, forming a word with the verb, which provides evidence for their head-like status.

**Assumption 8. Information structure requirements may conflict with the ‘normal’ position for adverbs**

Adverb placement may be conditioned by the information structure of the sentence. This is particularly obvious in the case of some types of movement that affect other XPs leaving adverbs in a position where they receive focus stress, as has been claimed for Dutch by Reinhart (1995), and for European Portuguese in Costa (1998). In such cases, the position of the adverb is affected by a process involving some other category. The representation of such a situation for an OV language is given in (39):

\[
\begin{align*}
&\text{(39)} \quad \text{a. } [\text{VP Adv} [\text{VP O V}]] \\
&\text{b. } [\text{VP Oi} [\text{VP Adv} [\text{VP ti V}]]]
\end{align*}
\]

If, as proposed in Reinhart’s work (among others), the focal stress falls onto the most embedded constituent, the adverb position is the focus position in (39b), and its position is conditioned by information structure requirements.

The latter is a case in which the position of the adverb is affected by an operation involving another constituent. In spelling out the assumption, I claimed that information structure requirements may conflict with the ‘normal’ position for adverbs. This is more obviously shown in the Portuguese examples in (40) and (41), for which I proposed in Costa (1998) an analysis similar to Germanic scrambling. In an out-of-the-blue context, the unmarked position for the manner adverb is in between the verb and the object:

\[
\text{(40) } \text{O Pedro fala bem francês.} \\
\text{The Pedro speakes well French}
\]

However, if the adverb is focused and the object is out of focus, as in the question–answer pair in (41), the adverb ends up in sentence-final position:

---

9 There is an issue that I would like not to leave unnoticed, but calls for further research. If the behavior of these adverbs in postverbal position turns out to be always XP-like, it is necessary to further study the relationship between phrase structure and categorical status, since it would be the case that it is not the X vs XP status that conditions the placement, but the position of the adverb would be conditioning their behaving like heads or XPs. A deeper study of this issue needs to take into consideration other word classes that display the same type of asymmetry.
A: Como é que o Pedro fala francês?
   How does Pedro speak French?

B: O Pedro fala francês bem.
   Pedro speaks French well.

(41) is therefore an example of a sentence in which the normal or unmarked position of the adverb is affected by an information structure requirement, which, according to the scrambling analysis forces the object to move leftwards past the adverb.

Information structure requirements may also affect adverb placement by forcing an adverb to be base-generated in a position different from the unmarked one.\(^{10}\) The most obvious such case is fronting, which places a low manner adverb in sentence initial position in contrastive contexts, as illustrated in (42):

(42) Rapidamente, o João foi à praia; lentamente, ele foi para o escritório.
    Quickly, Joao went to the beach; slowly, he went to the office

A similar point concerning base-generation being affected by information structure requirements may be made with adverbs with a freer distribution. In such case, what seems to be an optional distribution for adverbs becomes more rigid due to requirements imposed by the information structure of the sentence. An example may be constructed by looking at the possible base-generated position for of adverbs like \textit{yesterday} is European Portuguese. This type of adverb not only gives temporal information, but also marks the occurrence of new information to its right.\(^{11}\) The possibilities of forming contrastive readings in (43) and (44) show that the presuppositions associated with each placement of the adverb are different:

(43) a. O Paulo ontem discutiu com a mãe,  
      the Paulo yesterday argued with the mother
   a'. hoje com o pai.  
      today with the father
      ‘Yesterday Paulo argued with his mother, today with his father.’
   a''. hoje fez as pazes.  
      today (he) made the peace
      ‘Yesterday Paulo argued with his mother, today he made up.’

\(^{10}\) Although it is not crucial for the point being made here, I am assuming a base-generation analysis for fronting in Portuguese, following the conclusions reached by Duarte (1987). If fronting in some other specific language is the result of movement, the position of the adverb is still affected by information structure requirements, but then the process involved is movement rather than different base-generation possibilities.

\(^{11}\) See Zwart (1993) for a similar point with respect to Dutch.
(44) a. O Paulo discutiu ontem com a mãe.
   the Paulo argued yesterday with the mother

   a’. hoje com o pai.
   today with the father
   ‘Yesterday Paulo argued with his mother, today with his father’.

   a”. *hoje fez as pazes.
   today (he) made the peaces
   ‘Yesterday Paulo argued with his mother, today he made up.’

   If ontem ‘yesterday’ is to the right of the verb, it is not possible to retrieve the latter in a contrastive reading. That this is not just a case of structural parallelism required by deletion is shown by English, which always allows for retrieving the verb, independently of the position of the adverb.

(45) a. John argued with his mother yesterday, today with his father.
   b. John argued with his mother yesterday, today he made up.
   c. Yesterday John argued with his mother, today with his father.
   d. Yesterday John argued with his mother, today he made up.

   Given these different properties of the temporal adverbs in both languages, it is to be expected that in Portuguese, the possibilities for getting different orderings in sentence-final position are not as restricted as they are for English. As a result, (46a) is allowed in Portuguese while it is bad in English.

   the Paulo spoke with the mother yesterday politely

   b. O Paulo falou com a mãe delicadamente ontem.
   politely yesterday
   ‘Paulo spoke to his mother politely yesterday.’

   Note that the presuppositions are different in (46a) and (46b):

(47) a. O Paulo falou com a mãe ontem delicadamente,
   the Paulo spoke with the mother yesterday politely

   a’. hoje agressivamente.
   today roughly.
   ‘Paulo spoke to his mother politely yesterday, roughly today.’

   a”. *hoje com o pai.
   today with the father
   ‘Paulo spoke to his mother politely yesterday, to his father today.’

(48) a. O Paulo falou com a mãe delicadamente ontem.
   the Paulo spoke with the mother politely yesterday
The Portuguese data are the crucial ones here, since they show that adverb placement may depend on information structure requirements, in the sense that their base-adjunction may be constrained by the type of focal information conveyed by each sentence.

Summing up, there seems to be at least three ways in which the position of an adverb may be affected by information structure: (i) either an adverb appears in a certain position because information structure affected other elements of the sentence, as in scrambling configurations, (ii) or an adverb is moved/base-generated in a uncommon position due to its information status, (iii) or an adverb is base-generated in positions that are normal, but each position conditions the set of focal presuppositions associated with it.

2.2. Summary and examples

In the preceding section, I spelled out the assumptions of what I named a multifactorial analysis of adverbs. To summarize, the factors that I assume that must be taken into account in order to understand the behavior of adverbs are the following:

(A) Lexical information associated with each adverb, comprising:
   i. inherent vs non-inherent meaning;
   ii. prosodic shape;
   iii. categorical status (X vs XP)
(B) Syntactic information, comprising:
   i. adjunct status of this word class;
   ii. possible adjunction sites;
   iii. directionality of adjunction;
   iv. syntactic operations affecting other sentential constituents.12
(C) Syntax–semantic relations, comprising:
   i. Scopal relations between adverbs;
   ii. Domains of modification (IP and VP);
   iii. Derivation of meanings for adverbs without inherent meaning.
(D) Information structure requirements.

12 This was probably the least developed assumption in the preceding section, although it was referred to in the discussion of how scrambling may affect adverb placement. The assumption underlying this factor is that information on how other sentence constituents are affected by movement operations may have consequences on the distribution of adverbs, an assumption that is widely accepted since Emonds’ (1976) and Pollock’s (1989) work. In the example to be given below concerning the distribution and interpretation of subject-oriented adverbs in Portuguese, the evidence for the relevance of V-movement will become more obvious.
The relevance of most of these factors was illustrated in the previous section. The only case that was left open was the type of mechanism necessary for deriving the effects of right-adjunction, and the type of mechanism necessary for deriving the meaning of ambiguous adverbs in the syntax. I left the illustration of these two aspects for this section, since they correlate.

As mentioned above, I assume that a principle like the one proposed in Barbiers’ (1995) work, repeated from above under (49), may mediate the relation between syntax and interpretation:

(49) **Principle of Semantic Interpretation (PSI)**

(i) The node $Z$ establishes a *S(emantic)-relation* between the nodes $X$ and $Y$ iff

- $X$ immediately c-commands $Z$ and $Z$ immediately c-commands $Y$

(ii) The node $Z$ is a **qualifier** of $Y$ iff

- $Z$ establishes a $S$-relation between $X$ and $Y$, and $X$ and $Y$ are coindexed

Let us then see how the implementation of this principle may both derive right-adjunction effects, and derive the meaning of ambiguous adverbs. I am reporting here work from Costa (1997, 1998). The main asymmetries I was concerned with in the works referred to were between the possible interpretations for adverbs that are ambiguous between a manner reading and a subject-oriented reading. As mentioned above, the subject-oriented reading is available in preverbal position, and is lost in sentence-final position, which posits a serious challenge for symmetric right-adjunction. The relevant data are repeated in (50):

(50) a. O João estupidamente entornou o café. *Manner/Subj-Or

  João stupidly spilled the coffee

b. O João entornou o café estupidamente Manner/*Subj-Or

  João spilled the coffee stupidly

c. O João entornou o café estupidamente Manner/*Subj-Or

  João spilled the coffee stupidly

The position in between the verb and the complement is also associated with the manner reading only:

(51) O João entornou estupidamente o café. Manner/*Subj-Or

  João spilled stupidly the coffee

As argued in Costa (1998), these relations between position and meaning may follow from Barbiers’ proposals in the following way: Assuming that the verb moves only up to $T$ in Portuguese, the preverbal position for the adverb may be assumed to be an adjunction position to $TP$, while the post-verbal position may be argued to be an adjunction position to $VP$, as in (52):

(52) $[\text{AgrSP O João} \ [\text{TP estupidamente} \ [\text{TP t_i} \ [T \ \text{entornou} \ [\text{VP estupidamente} \ [\text{VP t_v o café}]])]])$
I will leave aside the motivation for verb movement, referring the reader to Costa (1998). I will now explain how the Principle of Semantic Interpretation is satisfied in the configuration proposed for subject-oriented adverbs: Subject movement to Spec,AgrS establishes the qualification relation between the subject and the adverb. Consider the tree diagram in (53), illustrating the English case, though the position of the verb will be shown to be irrelevant for the relation to be established in between the subject and the adverb:

(53)

In (53), the adverb may be interpreted as a modifier of the subject, because the following structural relations, which are conform to the Principle of Semantic Interpretation, are observed. The subject NP_i has been moved from the VP-internal position cyclically, stopping in all intermediate Specifier positions, among which Spec,TP. According to traditional assumptions on movement, these intermediate steps leave traces in the landing positions, which are co-indexed with the displaced constituent. Whatever the status and purpose of the relation between Spec,AgrS and AgrS is, that is, independently of whether there is checking or just simple agreement, AgrS will be co-indexed with the subject via Spec–Head Agreement. Having observed all the steps of this representation and the implications of those steps for the indices attached to the several categories, it is now possible to see which structural relations allow for establishing a qualification relation: the adverb is the modifier, hence it must be immediately c-commanded by the modifiee and simultaneously it must be able to immediately c-command something co-indexed with the modifiee. This is exactly what happens: by virtue of Spec–Head Agreement, AgrS, bearing the index of the subject, immediately c-commands the adverb, which immediately c-commands the trace of the subject in Spec,TP. Since the indices on the subject, AgrS and on the trace are all identical, the Principle of Semantic Interpretation is
respected in (50), and the adverb may be interpreted as a modifier/qualifier of the subject. Structurally, the adverb is establishing a Semantic relation between AgrS and the trace of the subject, but since the reference of AgrS is dependent on the reference of the subject, the interpretative result is that the adverb modifies the subject.

Note that the fact that the adverb is adjoined to a projection of the clause, and not directly to the subject, allows for expressing the relation between the adverb and the subject, but also the fact that the adverb is a sentence modifier, and not a nominal modifier. The locus of adjunction combined with the derivation above permits deriving this interpretation. In the discussion above, the fact that the subject is in Spec,AgrS seems to be quite crucial, since otherwise all the indices that enable the qualification relation would be absent, assuming that indexation is a consequence of the relation established after movement. In Costa (1998), I tested this by showing that low subjects obviate this reading for the adverb.

So far I have not mentioned how to derive the manner reading. However, this turns out to be the simplest case: if the manner adverb is adjoined to VP, manner interpretation arises by moving the VP into Spec,AdvP, as represented in (54):

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(54)
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If this movement does not take place in overt syntax, the base configuration in (55) arises:

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(55)
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The two configurations in (54) and (55) generate the two positions associated with the manner reading in (56a) and (56b) respectively:
It is crucial for deriving these two word orders that the verb has been moved out of the VP.

In fact, the assumptions made here derive the fact that postverbal adverbials are, in general, ordered inversely with respect to preverbal adverbials. This asymmetry between postverbal and preverbal adverbials represented schematically in (57) follows straightforwardly from Barbiers’ (1995) proposal.

(57) a. \[ \text{Adv}_1 \text{ [Adv}_2 \text{ [V]} \]

b. \[ \text{[V] Adv}_2 \text{ [Adv}_1 \]

Assuming a general ban on right-adjunction, the postverbal positions are derived in terms of VP-movement into the specifier position of the adverb. Accordingly, if, for scopal reasons, \( \text{Adv}_1 \) is generated as a left VP-adjunct higher in the structure than \( \text{Adv}_2 \), VP-movement will proceed cyclically. This will generate the following derivation:

(58) a. Base-generation:
\[ [\text{VP Adv}_1 \text{ [VP Adv}_2 \text{ [VP V]}]] \]

b. VP-movement into Spec,Adv_2
\[ [\text{VP Adv}_1 \text{ [VP [[VP V] Adv}_2] t]} \]

c. VP-movement into Spec,Adv_1
\[ [\text{VP [[VP [VP V] Adv}_2] t]} \text{Adv}_1] t] \]

Moving the inner VP over \( \text{Adv}_2 \) directly to Spec,Adv_1 would make it impossible to obtain the configuration with immediate c-command between VP, the adverb and the VP trace, not conforming with the Principle of Semantic Interpretation, as defined above. In other terms, the mirror order turns out to be a consequence of the type of movement proposed, which makes it impossible to derive non-asymmetric orders.

One may wonder what prevents VP from moving into the specifier position of the adverb adjoined to TP, in order to achieve a manner interpretation, yielding the ungrammatical word order in (59):


There are two mechanisms excluding the configuration in (59). First, it violates the ECP. The trace of the verb in VP is not governed by its antecedent. This might however be circumvented once we know the exact A or A-bar status of the movements proposed in Barbiers (1995). If these movements are of the A-bar type, one could probably assume some kind of reconstruction operation, enabling the VP to be in its base-position at LF, where the trace could be bound. Even if such an
explanation would work out, and I am not going to test it here, there would still remain problems with respecting the Principle of Semantic Interpretation. In (59), the VP does immediately c-command the adverb, but the adverb does not immediately c-command the trace of the VP. Hence the qualification relation may not be established, and the sentence is ungrammatical. This together with the availability of the subject-oriented reading as a consequence of there being subject movement derives the ungrammaticalness of sentence-final subject-oriented adverbs.

Before concluding this section, I would like to point out that this type of analysis is very much dependent on the availability of some type of remnant VP movement, as defended in Kayne (1998). In work on argument word order (Costa, in press), I criticized the assumption that massive remnant VP and TP movement derive word orders with inverted subjects in Romance languages. The type of counter-arguments presented in that work do not, however, challenge this type of analysis, which resorts to remnant movement for a much more limited domain. Moreover, as the derivation of the subject-oriented reading shows, remnant movement is not the only way for determining the link between the placement of the adverb and its position.

All together, these assumptions derive variable adverb positioning. Considering the set of assumptions above, it basically follows from the interaction of various constraints:

(a) The interaction between the meaning of the adverb and information structure requirements: adverbs with an inherent meaning distribute more freely than ambiguous adverbs, and base-adjoining them in different positions will not condition their interpretation. Instead, the option for base-generating the adverb in different position may trigger different information structures for the sentence.

(b) The interaction between syntactic position of the adverb and other syntactic operations: I have been working on the assumption that some clause-final positions are derived in terms of VP-movement or as a consequence of scrambling to the left of the adverb, as defended above. Since neither of these operations is obligatorily overt, the result is that, at least apparently, the adverbs around complements and VP will appear to have a free distribution. Another type of operation that may yield the effects of variable adverb position is verb-movement. Two situations may arise: either not all verbs move equally high in a given language, as traditionally defended for the difference between auxiliary and main verbs in English, which has consequences on the behavior of adverbs, which might seem to have variable positioning, while the cause of variation lies on the behavior of the verbs. Another possibility is that all verbs move uniformly, but to a landing site in which it may be both preceded and followed by an adverb. This is the type of situation defended above for Portuguese. According to Costa (1998), V moves only until T in this language, which makes it possible for the adverb to occur in between two adverbs. If the adverb belongs to a freer class in terms of possible adjunction sites, this may lead to the suspicion that it is the adverb alone that has a variable distribution, while it is a combination of factors that yields this result. A comparison between French and Portuguese is enough to make this point. While in Portuguese, adjunction to TP and VP makes it possible for the adverb to surface in different positions, as schematized
in (60), in French, since the verb moves up to the highest functional head, both adverb positions will not yield different results, as schematized in (61)

(60) **Portuguese:**
\[
[AgrSP Subj [TP Adv [TP tsubj V [VP Adv [VP ...]
\]

(61) **French:**
\[
[AgrSP Subj V [TP Adv [TP tsubj tv [VP Adv [VP ...]
\]

The difference between (60) and (61) clearly shows that it is not just the possibility for an adverb to be able to adjoin that yields variable positioning: it may be this factor interacting with V-movement.

(c) The availability of adjunction sites in the extended projection: in Costa (2000), I argued that adverb variable positioning may be a consequence of there being adjunction sites independently made available by the need of creating structure for projecting verbal nuclei. Consider the following example: in Portuguese, many adverbs may appear in between verbal nuclei in a sentence. This is illustrated in (62):

(62) **O Paulo cuidadosamente tinha simpaticamente lido bem o livro à avó.**

Paulo carefully had nicely read well the book to the grandmother

In (62), a subject-oriented adverb occurs in between the subject and the auxiliary verb, a manner adverb occurs in between the auxiliary verb and participial form of the main verb, and a low manner adverb occurs between the participial form of the main verb and the complement of the verb. These positions create the impression that adverbial distribution is quite variable. In some contexts, the occurrence of adverbs seems to be dependent on the existence of a lexical head. This fact may be seen when (62) is contrasted with (63). The difference between these two sentences is that (63), unlike (62), does not have any auxiliary verb. If the adverbs occurring in (62) were present independently of the lexicality of the heads, the prediction made is that they will surface independently of the overt realization of the heads. However, this prediction is not borne out, as the ungrammaticality of (63) shows:

(63) a *O Paulo leu cuidadosamente simpaticamente bem o livro à avó.*

Paulo read carefully nicely well the book to the grandmother

Note that each of the adverbs may appear alone:

(64) a **O Paulo leu cuidadosamente o livro à avó.**

Paulo read carefully the book to the grandmother

b **O Paulo leu simpaticamente o livro à avó.**

Paulo read nicely the book to the grandmother

c **O Paulo leu bem o livro à avó.**

Paulo read well the book to the grandmother
The only possibility for these adverbs to co-occur in a sentence with one verbal head is for them to be coordinated, as in (65):

(65) O Paulo leu bem, cuidadosamente e simpaticamente o livro à avó.
Paulo read well carefully and nicely the book to the grandmother

The fact that the adverbs must be coordinated may be interpreted as evidence in favor of an analysis according to which they are adjuncts. Arguably, an adverb may be only adjoined to an existing category. If the functional categories of the clause are only projected when there is a lexical head, it is predicted that the occurrence of adverbs depends on the existence of lexical heads. If there is only one lexical head, there is only one adjunction site. In this case, multiple adverbs are forced to be coordinated.

The coordination of adverbs in this context is possible even if the adverbs belong to different semantic classes. This is shown in (66), where an aspectual adverb is coordinated with a manner adverb:

(66) O Paulo leu frequentemente e simpaticamente o livro à avó.
Paulo reads often and nicely the book to the grandmother

Note that this is true coordination. As in common cases of coordination, the order of the conjoined elements may be reversed:13

(67) O Paulo leu simpaticamente e frequentemente o livro à avó.

This dependency between the existence of structure and variable positioning is expected under the assumptions spelled out above. If adverbs split with respect to their domain of modification (IP or VP), and if the several functional categories are extended projections of VP, not differing in meaning, the prediction is that, if for independent reasons more functional verbal heads project, there will be more adjunction sites made available, and the distribution of adverbs will be freer.

Summing up, the approach to the free distribution of adverbs is again multifactorial, in the sense that different types of aspects concerning syntax and meaning must be taken into account in order to understand variable positioning. Crucially, none of the aspects referred to hinges on explaining adverb variable positioning in terms of adverb movement, as proposed in earlier works such as Keyser (1968). This would lead to serious technical problems concerning the motivation for moving the adverbs.

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13 For some reason, this type of coordination is not universally available. Elena Anagnostopoulou and Artemis Alexiadou (p.c.) report that it is ungrammatical in Greek. Carmen Dobrovie-Sorin (p.c.) reports to me that Romanian behaves like Portuguese. I have no explanation for this cross-linguistic difference.
3. Issues on adverbs: facts, assumptions and difficulties

In this section, I will finally address some issues that any syntactic analysis of adverbs is supposed to be able to account for. The solution for most issues was already given while spelling out the assumptions in Section 2. In such cases, I will briefly refer to the relevant factor involved.

This section is organized in accordance with the two types of problems proposed:

(a) Structure, syntax–semantics interface and adverbial distribution
(b) Structure and VO/OV distinction and stacking

Unlike in the previous section, in some occasions, comparisons will have to be made with other types of syntactic analyses for the sake of clarification.

3.1. Structure, syntax–semantics interface and adverbial distribution

A first type of issue to be taken into account relates to clause structure, and the way adverb meaning is linked with syntactic structure.

As mentioned in Section 2, I assume that meaning and structure may interact in the following way: there are inherent and derived meanings. If an adverb is ambiguous, its syntactic placement conditions its reading.

These assumptions bring up the issue concerning the existence of zones in the structure for specific adverb classes. As assumed above, the inherent semantics of adverbs may trigger different classifications as either IP-modifiers or VP-modifiers, as proposed by Jackendoff (1972). Accordingly, manner and other circumstantial adverbs typically modify the verbal domain, occurring low in the clause, while temporal adverbs, for instances, attach to high positions. There are at least two comments that must be made here. The first one is that the assumption that some forms come specified from the lexicon as IP-adjuncts or VP-adjuncts is not so controversial, as it might look at first sight. If one considers the behavior of Romance clitics or adjectives, these forms are lexically specified as verbal adjuncts and NP-adjuncts, respectively. The second comment that must be made regards the variable position of sentential adverbs, compared with the more rigid position of VP-adverbs, as exemplified in (68) and (69):

(68) a. O João ontem tinha estado a ler o livro.
    the João yesterday had been reading the book
b. O João tinha ontem estado a ler o livro.
    the João had yesterday been reading the book
c. O João tinha estado ontem a ler o livro.
    the João had been yesterday reading the book
d. O João tinha estado a ler ontem o livro.
    the João had been reading yesterday the book
e. O João tinha estado a ler o livro ontem.
    the João had been reading the book yesterday
(69) a. *O João completamente tinha estado a ler o livro.
the João completely had been reading the book
b. *O João tinha completamente estado a ler o livro.
the João had completely been reading the book
c. *O João tinha estado completamente a ler o livro.
the João had been completely reading the book
d. O João tinha estado a ler completamente o livro.
the João had been reading completely the book
e. O João tinha estado a ler o livro completamente.
the João had been reading the book completely

The differences between (68) and (69) follow from the assumptions regarding ranges of positions for adverbs. The VP-adverb completamente ‘completely’, specified as a VP-modifier may only occur low, because this is the VP-domain. The two well-formed word orders in (69) are the only ones for which it is tenable an analysis in terms of adjunction of the adverb to VP. The free distribution of the IP-modifying adverb also derives from the assumptions regarding ranges of positions for adverbs, once additional assumptions regarding the status of functional categories are also spelled out. If functional categories are extended functional projections of VP, they are not necessarily different in terms of content among them. Therefore, it is irrelevant which category the adverb adjoins to, since any functional category will be identical in being part of the sentential domain of the clause. In this sense, any of the adjunction positions in the functional domain will satisfy the requirement that sentential adverbs be mapped onto the IP-domain. The fact that some sentential adverbs may attach in low positions while few or no VP-adverbs attach to high positions may also follow from this assumption on the status of functional categories: VP-adverbs are not linked to the functional domain, while sentential adverbs attach to any of the extended projections of VP—including the lexical ones.

The assumption of Barbiers’ (1995) approach derives different distributions for different adverb classes, in particular the case of predicational adverbs. In the preceding section, the behavior of a specific subtype of predicational adverb, the subject-oriented subclass, was discussed in detail, when the application of the assumptions was exemplified. As for the asymmetry between predicational adverbs and VP-adverbs in terms of distribution, it was claimed that the former are typically preverbal, since they modify IP, and their reading is contingent on the existence of other syntactic operations. In particular, for the case of subject-oriented adverbs, it was argued that this reading comes about as a consequence of the chain formed between the subject in Spec, AgrSP, the adverb adjoined to TP, and the trace left by the subject in Spec,TP. Assuming the ban on right-adjunction, and that the effects of right-

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14 As mentioned above, an exception must be made for Agr for positional reasons. This exceptionality is obviously problematic under the extended projection view.
adjunction are the consequence of VP-movement, economy reasons rule out the occurrence of these adverbs in clause-final position. There is no reason to move VP or TP to the left, leaving the adverb in that position, therefore that movement does not take place.

So far, nothing has been said concerning the status of clause-initial adjuncts, as in the examples in (70):

(70)  a. Felizmente, o João leu o livro.
    Luckily, the João read the book

  b. Rapidamente, o João leu o livro.
    Quickly, the João read the book

For these cases, I assume there are two possibilities: either they are base-generated in this position or they establish a chain with their base-adjoined position. In order to understand which of these options is used, several factors must be taken into account. The first aspect under consideration is the fact that most adverbs in clause-initial position receive a contrastive topic interpretation. This is the case in (70b), in which the low manner adverb is clause-initial. When this happens, there seems to be no reason to treat this position differently from cases in which some other topic is clause-initial, like in normal topicalization sentences. If, in these cases, the adverb behaves like other topics, the type of configuration obtained will be of the same type of the configuration obtained in other topicalization constructions. For instances, in European Portuguese, there is robust evidence to claim that topicalization constructions are instances of topic-base-adjunction to IP or CP, a chain being established with the topic’s base position (cf. Duarte, 1987). The consequence is that, if an adverb is a topic, it will be base-generated as such, establishing a link to a variable in its base-position. If, in other languages, topicalization displays clear properties of wh-movement, then it must be assumed that topic-adverbs are no different from other topics.

There is another option, typically occurring with speaker-oriented adverbs, like in (70a), in which no contrastive topic reading necessarily emerges. In such cases, there is no need for assuming that there is any type of chain being established with another position in the clause. The simplest analysis for such cases is to claim that these adverbs are IP or CP-modifiers, and as such, are base-adjoined in adjunction to IP or CP.

Another issue closely related to the relation between structure and adverbs hinges on the role played by prosodic and morphological considerations. When I mentioned the behavior of monosyllabic adverbs and the availability of weak adverbs, displaying an X0-like behavior, it became clear that both prosodic and morphological information are crucial for determining the distribution of adjuncts. This straightforwardly follows from the type of multifactorial approach defended in this paper. In many cases, it was pointed out that the information associated with the adverb in its lexical entry plays a crucial role in determining its syntactic behavior. Since the information on prosodic shape and on head vs non-head status is available in a word’s lexical entry, and since this type of infor-
Information is crucial for the syntax–prosody interface and for the syntax–morphology interface, it is expected that this information conditions the behavior of adverbs.

Just to exemplify with the two cases discussed above concerning light adverbs and weak adverbs, the two relevant interface constraints are:

(71) **Syntax–prosody interface constraints:**
   a. Sentence stress falls on the rightmost position
   b. Non-branching words must occur in stressed contexts

(72) **Syntax–morphology interface constraint:**
   a. Weak forms are preverbal.

It falls beyond the scope of this paper to try to understand the nature of the descriptive constraints in (71) and (72). The former is inspired from the works of Nespor and Vogel (1986), Cinque (1993), Inkelas and Zec (1995) among others, while the latter is a descriptive statement on how heads tend to distribute in Romance languages (setting aside enclitic contexts). To the extent that constraints of this type mediate the relation between syntax and other levels of the grammar, adverbs will behave accordingly. If an adverb is light, such as bem ‘well’, as described above, it will have to occur in a context in which it may bear sentence stress. If an adverb is a head, by virtue of being lexically specified as weak form, it must occur in the syntactic configuration in which heads are licensed. This is the behavior defended for adverbs like cá ‘here’ or lá ‘there’, as illustrated above.

In all cases in which general prosodic constraints do not conflict with the lexical specification of an adverb, or in which adverbs are ‘well-behaved’ XPs, the application of constraints of the type in (71) and (72) will be vacuous, and not play any role. Under those circumstances, the pure syntactic constraints on adverb placement will apply.

Taking into consideration what I have been assuming so far, it is predicted that no isomorphy is **necessarily** expected with respect to adverb placement in domains other than the verbal clause. Under the type of approach defended here for explaining adverb distribution, there is no reason to suppose that adverb position will be isomorphic in other domains. So far, the distribution of the adverbs on the clause has been shown to depend quite strongly on many factors external to adverb syntax. Assuming this, it is expected that there may be no complete isomorphy in other domains. In other words, the position of AP or DP-internal adverbs will be contingent on AP and DP syntax, and on adverb syntax. If some specific constraints on some syntactic domain conflict with adverb syntax, lack of isomorphy may arise. Just to give a clear example, it has been argued by Castro (2001) and Miguel (2001) that the prenominal position in Portuguese DPs only hosts heads. This explains that pronominal adjectives and possessives display head-like behavior. The preverbal domain in the clause is able to host adverbial XPs, as shown in many examples above. As a consequence of
this difference, a situation arises in which an adverb that is typically preverbal in clausal domain will have to be realized as a head or postnominally in the nominal domain.

A different type of mismatch occurs between adverb positions in the clause and adverb positions within AP. In this case, it is not because the adverb occurs in a different position, but rather because verbs undergo movement to the functional domain while adjectives do not. Considering a manner adverb like *completamente completely*, which occurs obligatorily in postverbal position, like in (73), it is possible to show that this position is a consequence of there being V-to-I movement, since in AP-contexts, the adverb will occur optionally in a pre-adjectival position, as in (74), since, by hypothesis, there is no functional category where the adjective may go to:

\[
\begin{align*}
\text{(73) a. } & \text{O João resolveu completamente o problema.} \\
& \text{The João solved completely the problem} \\
\text{b. } & *\text{O João completamente resolveu o problema.} \\
& \text{The João completely solved the problem} \\
\text{c. } & [\text{IP Subj V } [\text{VP completamente } [\text{VP tV DP}]]] \\
\end{align*}
\]

\[
\begin{align*}
\text{(74) a. } & \text{Completamente resolvido} \\
& \text{completely solved} \\
\text{b. } & \text{Resolvido completamento} \\
& \text{solved completely} \\
\text{c. } & [\text{AP completamente } [\text{AP A}]] \\
\end{align*}
\]

In short, in this case, there is some isomorphy between the clausal domain and the adjectival domain, in the sense that in both cases, the adverb is an adjunct to the lexical phrase. The lack of identity in behavior comes about as a consequence of there being additional syntactic operations taking place within the clausal domain only.\(^{15}\)

Pesetsky (1995) has presented a paradox concerning the structural positioning of adverbs. Pesetsky shows that VP-movement provides evidence for layered structures, while binding and scope facts provide evidence for embedding. As noted by Haider (2000), this problem may be solved by adopting Phillips’ (1996) idea that merge operates in a left-to-right fashion, and that, whenever binding relations must be established, the relevant c-commanding configurations must take place. This yields two possible configurations, represented in a simplified way in (75):

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\(^{15}\) In both cases, assuming the ban on right-adjunction, the final position may be derived in terms of XP-movement, as defended above for VP-adverbs. The equally controversial alternative would be to consider the availability of some optional Adjective-movement to some AP-related functional category.
The type of configuration represented in (75a) is obtained either by right-adjunction of the adverb, or by assuming that there is VP-movement, as was done above assuming Barbiers’ (1995) framework. The type of configuration in (75b) is not compatible with Barbiers’ proposals. Phillips’ proposal is that the evidence for the two types of structure is not necessarily contradictory, if one assumes that merge operates in a left-to-right fashion, creating VPs that are reanalyzed whenever new material is added to the right.

In Costa (2002), I propose a less radical view on phrase structure generation. Since the evidence for embedded VPs only shows up in binding and scope contexts, one may suppose that this type of VP is only generated if required for binding and scope reasons. Independent evidence for the need to assume configurations of the type in (75b) for binding and scope contexts only comes from ditransitive constructions in European Portuguese. In Costa (2002), it is suggested that the normal DO–IO order of the language may be reversed on the base, only if the Indirect Object must bind onto the Direct Object, as in (76):

(76) Entreguei a cada autor o seu livro.
     (I) gave to each author his book
The proposal made in Costa (2002) is that the word order in (76) is generated in a left-to-right fashion. Evidence from the markedness of this construction, e.g. in idioms, shows that this is option is only taken for satisfying binding requirements. The fact that direct objects do not bind into subjects to their right (cf. 77) shows that this process is not the only one available to generate phrase structure:

(77) *Viou a sua mãe cada filho.
Saw his mother each child

The point made in Costa (2002) is that the choice between left-to-right merge or layered structures for binding between arguments is contingent on theta role assignment. For adverbs, again more than one factor seems to be at stake: if there is no binding involved, a layered structure may be generated. If binding and scope are involved, it is possible to violate the layered structure and create the embedded structure.

This line of argumentation clearly has an OT-like flavor: left-to-right merge occurs only if binding requires it, at the expenses of not creating the unmarked word order. I did not want to put the focus on an Optimality theoretical view of the issues under discussion in this paper,16 since the type of more general framework does not seem to me to be crucial for the discussion of each of the factors involved for understanding adverb distribution. However, at this point it must be made clear that any analysis taking into account interactions between multiple factors and different degrees to which each of them is satisfied ends up resorting to some elsewhere condition, easily formalized within OT.

3.2. Structure and the VO/OV distinction and stacking

The second set of issues an analysis of adverb placement must deal with is linked to the theoretical question on what a possible position for an adverb is, which was widely discussed in Section 2, and on the empirical questions regarding the difference between OV languages and VO languages, and whether these differences have reflexes in the syntax of adverbs.

Let us start with differences in adverb placement found in between OV and VO languages. Having assumed a general ban on right-adjunction, it is not possible to derive the main differences between OV and VO languages in terms of a directionality parameter that applies both to complements and to adjuncts. In other words, a purely syntactic account will not do the job. The two main differences that must be accounted for between VO and OV languages are:

(a) The lack of possibility for adverbs to take complements between C and V in VO languages, but not in OV languages, as exemplified in (78):

(78) He has (much (more (often *(than Bill)))) guessed the right solution.

(b) The fact that adverbs do not occur easily in clause-final position in OV languages, as exemplified in (79) for Dutch:

(79) a. Hij heeft Marie vaak gezien.
    He has Marie often seen

b. *Hij heeft Marie gezien vaak.
    He has Marie seen often

As for the first difference, let me first qualify it. It is indeed true that an adverb must not take complements when it occurs preverbally in VO languages. However, this raises an interesting question. Is this true for all adverbs or only for those that have the option of occurring to the right of the verb? If an adverb is obligatorily preverbal and takes a complement, what happens? If the constraint is a rigid one, these adverbs must not take complements. If the constraint is soft, the adverb may take a complement, in spite of being in the range between C and VP. Since it was shown above that subject-oriented adverbs are obligatorily preverbal in European Portuguese, this may be tested in this language. The sentence in (80) shows that the subject-oriented adverb may take a complement:

(80) Eu disse que a Maria (muito (infelizmente (para todos nós))) entornou o café.
    I said that the Maria very unhappily for all of us spilled the coffee

Assuming the fact in (80) as relevant, it challenges the possibility of formulating a syntactic constraint forbidding adverbs from taking complements in the relevant range in VO languages. Nevertheless, the difference still holds in the most general cases. However, showing that it is not a rigid syntactic constraint opens up possibilities of deriving it in other terms. I think it is possible to relate it with the second difference between OV and VO languages noted above. In syntactic terms, there is nothing interesting to say concerning the impossibility of having right-peripheral adverbs in OV languages. For instances, in Barbiers’ (1995) framework, it must be stipulated that the VP-movement deriving the clause-final position in OV languages is obligatorily covert with adverbs but optionally overt with PPs. Although it is not unconceivable that PPs and adverbs behave differently in their possible adjunction sites, ideally the differences between OV and VO could at least relate to other independently motivated differences between the two languages, lying outside syntax.

A well-known difference between OV and VO languages concerns the locus of sentence stress: in VO languages, it falls on the rightmost position to the right of the verb, while in OV languages, it falls on the most embedded constituent to the left of the verb (Reinhart, 1995, among others). How can this relate with the two differences mentioned above? Adverbs taking complements are heavy, bearing stress.

17 For example, there is evidence that PPs do not left-adjoin to VP in Icelandic (Costa, 1998), and that adverbs but not adjunct PPs may break the adjacency between verbs and objects in Italian (Lino Mioni, p.c.).
According to the prosody of each language type, they are expected to occur in the position where sentence stress falls: to the left of the verb in OV, and to the right of the verb in VO. The same type of argumentation holds for the lack of postverbal adverbs in OV languages: clause-final adverbs are typically focused. Scrambling the object to the left of the adverb leaves the latter in a position where it bears focal stress. If the adverb is not focused, the object remains in its base position, yielding the order Adv-O-V. In other words, moving the VP to the left, yielding the effects of adverb extraposition would create a configuration problematic for prosody.

Note that this is just an attempt to derive the differences in terms that are not strictly syntactic. The reason for not deriving the differences in syntax alone are the fact that one of the differences does not to seem very robust, and the fact that I have assumed so far a general ban on right-adjunction for adverbs. There is still quite some stipulation in this answer, which basically consists of claiming that adverbs and PPs are different, both in their syntactic behavior, and in their prosodic behavior. Although this difference is well-attested in the literature, I know of no principled account for such a difference.

Another difference between OV and VO languages concerns the set of wh-adverbials (like why or how) that cannot be left in situ in the latter. At first sight, Haider’s (2000) account for this difference seems to make the right predictions. He looks at the following contrasts:

(81)  a. What did he buy *where/*when/*why/*how?
    b. Was hat er *wo/*wann/*warum/*wie gekauft
        what has he where/when/why/how bought
    c. *Wie hat er es warum gekauft?
        how has he it why bought?

The claim is the following: reason and manner adverbs belong to a higher semantic type, and cannot depend on each other. This claim rules out (81c), allowing (81b). It is further claimed that higher adverbials must c-command (the trace of) the tensed verb, which can be understood in Barbiers’ terms: if these adverbs are VP-modifiers, they must c-command VP. This rules out (81a), if the manner and reason adverbials are VP-joined,18 and if do is generated in I. However, it allows (81b), since there is evidence that all tensed verbs in German are generated within VP.

In spite of not having anything new to offer regarding this discussion, I would like to mention that, to my knowledge, the fact that some wh-adverbials that cannot be left in situ in VO, can in OV languages has been described for Dutch and German, and on sentences involving multiple wh-questions or scopal interactions. Haider’s analysis is based on the difference between the base-position of the tensed verb in English and German. Let us now bring Romance into the picture. Like in German, there is evidence that tensed verbs are generated in lower VPs (e.g. the distribution of infinitives in French in Pollock, 1989). Yet, French behaves like English, in not allowing some adverbs to occur in situ:

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18 In Haider’s analysis, the manner adverb is VP-internal, which derives other scopal interactions.
(82) a. Pourquoi tu dis cela?
   Why you say that
b. *Tu dis cela pourquoi?
   You have done it why

The contrast in (82), from Rizzi (1990), is crucial, since it does not depend on the interaction between the wh-adverbia
tive and any other wh-element or scope-taking constituent. Moreover, in European Portuguese, another VO language, the same
counter does not hold:19

(83) a. Porque disseste isso?
   Why you said that
b. Disseste isso porque?
   You said that why

The lack of scopal interactions and the difference between two VO languages may cast some doubt on the generalization. A potential way of rethinking these facts is to link it with the V2 characteristics of German and Dutch. Being V2 languages, the first position is not necessarily reserved for wh-items, being able to host subjects, topics, or constituents with other functions. In this sense, the interrogative nature of an adverb is not tight with its position. French would behave like English, since the two languages behave alike with respect to the use of Spec,CP: it is reserved for wh-items. Portuguese would behave like German, since it has topicalization with (optionally) inverted subjects (sitting in Spec,IP or Spec,VP), like German.20 There is then an array of questions that may be raised: if the differences in (81) are not due to the OV/VO difference, what is the source of these differences? Can it be attributed to V2? If so, how to explain the difference between French/English and Portuguese? Are non-V2 OV languages like German? What seems to be obvious is that the study of wh-adverbials in situ must tease apart at least two factors: scope interactions and simple wh-in-situ, since:

(a) Scopal facts and simple wh-in-situ are different, since European Portuguese allows it only if there is no other wh-phrase moved, yielding superiority-like effects:

(84) a. *O que fizeste porque?
   What you did why
b. Porque fizeste o quê?
   Why you did what

(b) Portuguese behaves partly like German, in allowing wh-in-situ, and partly like French, in not allowing it in multiple wh-questions.

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19 For completeness, note that (83b) is not necessarily an echo-question.
20 However, topicalization in Portuguese does not seem to be a case of wh-movement (Duarte, 1987).
If there is no generalization on a OV/VO distinction, and if it turns out to be the case that an attempt to relate these facts with V2 fails, an alternative is to assume an analysis of this problem along the lines of Rizzi (1990). Rizzi (1990) claims that there is no wh-movement of sentential adverbs, since it would be impossible for the wh-phrase to govern its trace. Proper head-government of an adverb adjoined to TP by AgrS is also ruled out by Rizzi (1990: 47), who claims that AgrS can only govern the elements it agrees with (its specifier). Given this analysis, Rizzi proposes that sentential adverbs are base-generated in Spec,CP. Rizzi notes the French facts concerning pourquoi. His hypothesis receives further confirmation by the following data, discussed in Kuno and Takami (1993):

(85) a. Why, man, did you come to the US?
    b. How, man, can you drink hot coffee so quickly?
    c. *When, man, did you come to the US?
    d. *Where, man, did you meet Mary?

(86) a. Why, that man you were dating, did you decide not to date him any more?
    b. *When, that man you were dating, did you meet him first?

The data in (85) and (86) show that it can be argued along with Rizzi that at least why and how are base-generated as CP-adjuncts. If they were in Spec,CP, strict adjacency would be expected between them and the auxiliary in C. The sentences above show, however that an interjection or a left-dislocated constituent may interrupt the sequence wh-auxiliary. This account in terms of base generation in a left-dislocated position would account for the difference between German/Dutch vs English/French, since the former do not have contexts of left-dislocation without adjacency to the verb. In this sense, the only option for fronting a wh-item would be to move it, forcing the tail of the chain to be an available position as well. The contrast between French and Portuguese remains however unaccounted for, since Portuguese does not lack left-dislocation structures.

Still concerning differences in adverb behavior plausibly connected with other parametric differences, it is known that in V2-languages a series of adverbs—temporal, local, conditional—can apparently form a single constituent in sentence initial position, as in (87):

(87) [Morgen, im Buero, wenn das Telephon klingelt] werde ... [tomorrow, in the office, if the telephone rings]

This phenomenon may be linked with the observation made above that adverbs belonging to different semantic classes may coordinate. The relevant data is repeated in (88):

21 The following contrast also seems to indicate that why in English is not moved, since it does not induce agrammaticality by crossing the negation:

(i) a. *How didn’t you come?
    b. Why didn’t you come?
As discussed above, this happens under specific circumstances. If adverbs are adjuncts, and if adjunction is parasitic on the existence of adjunction sites, the only option for two adverbs to co-occur is to group in a cluster, forming a single coordinated constituent. Note that this option is not completely free. It is related with the assumptions spelled out above concerning meaning of adverbs. It is noted that the phenomenon exemplified in (87) is more frequent with temporal adverbs. These adverbs are not ambiguous. They do come from the lexicon with an inherent meaning. Hence, as mentioned above, independently of the syntactic context in which they occur, their meaning will not be affected. This contrasts with ambiguous adverbs. It is not possible to create a sentence parallel to the one in (88), in which one of the adverbs has a manner reading while the other one has a subject-oriented meaning:

(89) a. *O Paulo simpaticamenteSubj-Or e cuidadosamenteManner le o livro.

Paulo nicely and carefully reads the book
b. *O Paulo le simpaticamenteSubj-Or e cuidadosamenteManner o livro.

Paulo reads nicely and carefully the book

The restriction of cluster formation by coordination to adverbs with inherent meaning derives the general tendency to observe this phenomenon with temporal adverbs, which are typically unambiguous. Moreover, the fact that this phenomenon is observed in V2-languages follows from the claim that it must occur whenever no other adjunction site is made available. V2 is such a syntactic context: there is only one XP position; therefore if more than one adverbial phrase needs to occur in sentence-initial position, coordination must occur.

4. Conclusions

I have defended in this paper a multifactorial approach for understanding the behavior of adverbs. Among the factors to be taken into account, the following were mentioned:

(A) Lexical information associated with each adverb, comprising:
   i. inherent vs non-inherent meaning;
   ii. prosodic shape;
   iii. categorical status (X vs XP)
(B) Syntactic information, comprising:
   i. adjunct status of this word class;
   ii. possible adjunction sites;
   iii. directionality of adjunction;
   iv. syntactic operations affecting other sentential constituents.
Syntax-semantic relations, comprising:
   i. Scopal relations between adverbs;
   ii. Domains of modification (IP and VP);
   iii. Derivation of meanings for adverbs without inherent meaning.

In addressing several issues in Section 3, it became obvious that these assumptions do not provide a full explanation for all the relevant data, and some additional assumptions needed to be made, especially on how phrase structure is built, and on how the several factors interact. In Costa (1998), it was claimed that some of the factors above interact in an optimality-like fashion. New empirical facts and questions may shed some light on different types of interactions triggering different types of relations between the multiple factors at stake.

References


