

SEMANTIC CONSTRAINTS ON THE DISTRIBUTION OF ENGLISH HIGHER ADVERBS¹

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The present study focuses on the different distribution of a group of current English adverbs and adverb occurrences, viz higher adverbs. Regarding distribution, these adverbs can be divided into monoperipheral and biperipheral higher adverbs. Delving into the semantics of these two classes of adverbs leads to a distinguishing semantic feature: eventivity. The work puts forward a number of data and arguments favouring the hypothesis that only biperipheral higher adverbs are eventive. Finally, the hypothesis is explored that focalization, an event-related phenomenon according to current studies, lies at the source of the different distribution of monoperipheral and biperipheral higher adverbs.

1. ENGLISH HIGHER ADVERBS

Regarding their structural semantic properties, adverbs and adverb occurrences can be divided into those that can and those that cannot take scope over other sentence constituents. The adverb *always*, for example, can take a quantified NP in its scope. Contrariwise, it is impossible for an adverb like *well* to scope outside a quantifier. The contrast is observable in (1)-(2), respectively.

- (1) Mary always greets everyone.
- (2) Lewis treats everyone well.

One interpretation of (1) has it that, on every relevant occasion, Mary greets the set of individuals denoted by the quantifier *everyone*. On the other hand, whatever the denotation of *well* in (2), it will be true as many times as individuals are picked out by the quantifier. On the premise that scope relations have a configurational basis (Chomsky 1977; May 1977; 1985), I will call *always* a higher adverb and *well* a lower adverb.

Higher adverbs also interact with the scope of other categories. They can take scope over other adverbs, a possibility not open to lower adverbs. (3)-(4) (with the brackets providing a rough analysis of the relevant configurations) illustrate this point.

- (3) Mary always [greet[s] everyone twice]
- (4) * Lewis [greet[s] everyone twice] well

¹ An earlier version of this paper was presented at the 2002 LAGB Spring Meeting. I am grateful to participants in this conference for interesting comments and criticisms.

In most of the cases, it is not the adverb proper, but one of its structural occurrences that is either higher or lower. The different occurrences of *luckily* in (5)-(8) provide relevant examples.

- (5) Anthony luckily saved both goals.
- (6) Anthony saved both goals luckily.
- (7) Anthony luckily [saved a goal twice]
- (8) * Anthony [saved a goal twice] luckily.

For the sake of brevity, I will henceforth use the term *higher adverb* to refer to both adverbs and adverb occurrences.

Higher adverbs constitute the object of study of this work. More precisely, I will deal with the linguistic contrasts between two markedly different classes of higher adverbs. In the following section I will outline and exemplify these differences.

2. THE PROBLEM NEEDING ANALYSIS

There is a very important distributional difference among the adverbs that come out higher by the test put forward above. Unlike lower adverbs, whose distribution seems to be highly idiosyncratic,² higher adverbs exhibit a very regular distributional asymmetry. Some of them can occur both in the left and in the right periphery, while others are confined to the left periphery. Let us see what this means.

The higher adverbs in (1)-(8) above are distributionally “well behaved”. Neither *always* nor *luckily* can occur to the right of the main verb (i.e. the right periphery) without rendering the sentence ungrammatical or taking on a lower reading, respectively.

- (9) * Mary greets everyone always.
- (10) Anthony saved both goals luckily.

Unlike these adverbs, higher adverbs like *reluctantly* or *twice* can occur on both peripheries.

- (11) Ralph (reluctantly) greeted everyone twice (reluctantly).
- (12) Ralph (twice) greeted everyone reluctantly (twice).

I will adopt the terminological convention of calling the adverbs in (9)-(10) monoperipheral higher adverbs (MHAs henceforth), and the ones in (11)-(12) biperipheral higher adverbs (BHAs henceforth).

² A lower adverb like *perfectly* seems awkward in its left-peripheral occurrence in (i).

(i) She perfectly learnt two languages

However, the VP in (ii) seems to considerably improve its left-peripherality.

(ii) She perfectly understood the question.

The distributional differences that will be dealt with in relation to higher adverbs are more

(13) shows a possible distributional classification of higher adverbs. The notional classes as well as the general divisional lines are borrowed from Ernst (2000).³

(13)

MONOPERIPHERAL HIGHER ADVERBS	BIPERIPHERAL HIGHER ADVERBS
Discourse-oriented (<i>frankly, honestly</i>)	Aspectual (<i>already, yet</i>)
Evaluative (<i>luckily, regrettably, unbelievably</i>)	Most duration (<i>briefly, momentarily</i>)
Epistemic (<i>probably, obviously, clearly</i>)	Most location-time (<i>immediately, now, then</i>)
Evidential (<i>reportedly, presumably</i>)	Mental attitude (<i>reluctantly, intentionally</i>)
Agent-oriented (<i>wisely, rudely, generously</i>)	Frequency (<i>often, periodically, twice</i>)
Exocomparative (<i>similarly, likewise</i>)	
Domain (<i>politically, historically, stylistically</i>)	
Quantifier (<i>always, usually</i>)	

Some questions arise given the above constellation of facts:

- (a) why are MHAs distributionally different from BHAs?
- (b) are distributional differences due to the existence of two adverb classes (MHAs and BHAs) maintaining deeper and more far-reaching grammatical differences?
- (c) if so, what are these differences and what is their nature?

Questions (b) and (c) seem the right place to start our query, for it seems clear that a proper answer to these questions, if there turns out to be one, should suffice to provide an answer to question (a).

3. MHAS AND BHAS

The literature on adverbs that will be reviewed in the next section is almost unanimous on the theoretical need to set up something like the partition in (13). However, given that, as will be shown below, some of the theoretical arguments put forward to support the partition in (13) are clearly objectionable, it seems convenient to resort to theory-neutral criteria to test the solidity of the MHA/ BHA

³ Unlike Ernst (2000), I make room among MHAs for quantifier adverbs such as *always* and *usually*, which clearly cannot occur in the right periphery. I also depart from Ernst's classification in rating domain adverbs among left peripheral adverbs. Ernst's decision is based on his judgement (Ernst 1985) that sentences like (i) and (ii) are synonymous.

- (i) Intellectually, they won him over.
- (ii) They won him over intellectually.

I do not believe that the adverb in (ii) is identical to the one in (i). For example, unlike the former, the latter fails to take scope over negation.

- (iii) Intellectually, they didn't win him over.
They didn't win him over intellectually.

division. In the rest of this section I will turn to very simple facts about the classification of adverbs in order to test the validity of the division in (13).

Adverb notional classes like the ones depicted in (13) (e.g. epistemic, agent-oriented, evidential, etc) are settled on the basis of cooccurrence restrictions. In general terms, adverbs belonging in the same notional category do not cooccur. This is allegedly the reason why the sentences in (14)-(16) are ill-formed.

- (13) * Frankly, honestly, she kicked the ball first
- (14) * She obviously will probably kick the ball first
- (15) * She intentionally had reluctantly kicked the ball first

If we delve further into the cooccurrence criterion, we see that adverb classes are not only occurrence-compatible or incompatible. When they are cooccurrent, they have to respect certain ordering restrictions. Some adverbs have to occupy more prominent structural positions than others in order for their cooccurrence to be grammatical. Assuming for reasons that will become clearer in section 6 below that in adverb clusters the adverb to the left is structurally more prominent than the one to the right, it follows from the different acceptability of the (a)/ (b) options in (17)-(19) that the adverb classes involved have different structural prominence.

- (16) a. Obviously, she fortunately kicked the ball first
- b. * Fortunately, she obviously kicked the ball first
- (17) a. She intelligently had always kicked the ball first
- b. * She always had intelligently kicked the ball first
- (18) a. She always reluctantly kicked the ball first.
- b. * She reluctantly always kicked the ball first.

These structural constraints on cooccurrence have led linguists to analyse adverb classes as hierarchically arranged.

The hierarchical arrangement of the adverb classes in (13) shows an interesting difference between MHAs and BHAs. The different classes of adverbs falling within the former group maintain a strict hierarchical relationship between one another (see (17)-(18) above) and to BHAs (see (19)), which are hierarchically less prominent than them. On the other hand, the hierarchical ordering of the adverb classes listed under the label *BHAs* is much less clear. The orderings in the (a)-(b) options of (20)-(21) do not seem to have consequences other than the different scope of the adverbs involved.

- (19) a. She soon kicked the ball reluctantly
- b. She reluctantly kicked the ball soon
- (20) a. She had already kicked the ball first
- b. She had often already kicked the ball

The upshot is that BHAs are occurrence-different from MHAs. More specifically, the cooccurrence data suggests that BHAs constitute a more homogeneous adverb group than MHAs. As pointed out above, this allows us to seek for an explanation for the different distribution of higher adverbs at the boundary between BHAs and the rest of higher adverbs. Given the parallelism

between the cooccurrence and the distributional behaviour of higher adverbs, we can provisionally assume that distribution is but the grammatical manifestation of deeper differences between the adverb classes under study. It also seems clear that only by spelling out these underlying differences can we aim at fully understanding why higher adverbs are distributionally different. This is the programme that I will follow in the rest of this work. The BHA/ MHA opposition (or something close to it) has been the focus of attention of part of the current literature on adverbs. Before pursuing a new approach to the topic, I will assess the explanatory capacity of current theoretical accounts of the BHA/ MHA opposition.

4. PREVIOUS ACCOUNTS AND THEIR PROBLEMS

4.1. Syntactically centred approaches

It is common place in current generative syntax that the left-peripheral occurrences of adverbs are derivationally more basic than the right-peripheral ones.

Right-peripheral occurrences of higher adverbs are scope-ambiguous in a way that can be overtly expressed in the left periphery. (22), for example, can receive the interpretation of both (23) and (24).

(21) Liz didn't knock on the door twice reluctantly.

(22) Liz reluctantly didn't knock on the door twice.

(23) Liz didn't reluctantly knock on the door twice.

The upshot is that these higher adverbs have different structural occurrences, the structural variation being overtly realised in the left-periphery but only covertly expressed in the right-periphery.

These facts have led syntacticians to defend that higher adverbs are base-generated in their left-peripheral positions and surface to the right as a result of movement.⁴ There are two major and competing approaches to the base-generation of adverbs, the so-called right-adjunction (Andrews 1983; Ernst 1984, 2002), and left-adjunction (Kayne 1993; Alexiadou 1997; Cinque 1999) accounts. Basically, right-adjunction and left-adjunction theorists differ in the way they have syntactic constituents surface to the right. The former allow for a certain amount of symmetry in the overall asymmetric design of X' structure and defend that categories adjoining to syntactic projections are allowed to symmetrically branch to the right. The latter are conceptually opposed to right-adjunction. On their view, linearization demands that constituents be strictly ordered in terms of c-command, which allows only for structures that are radically asymmetric. In order to account for the right-

⁴ For an alternative view with BHAs base-generated as verb complements, see Larson (1990) and Alexiadou (1997).

periphery facts reviewed, they posit a generalised constituent movement across adjuncts to higher projections.

Right-adjunction advocates tend to favour an analysis of adverb distribution in terms of constituency. Jackendoff's (1972) classical analysis makes the I(nflectional) P(hrase)/ V(erb) P(hrase) divide responsible for the different distributional behaviour of adverbs. Specifically, Jackendoff argues that VP adverbs are allowed to occur on both peripheries whereas IP adverbs are distributionally restricted to the left periphery. Empirically, the analysis fails to capture the division in (13), for some MHAs (e.g. agent-oriented adverbs) have been shown to be base-generated in VP (Frey 2000). Theoretically, the account does not provide a motivated answer to question (a) above. Both the left-peripherality/ IPhood and the bi-peripheality/ VPhood associations follow from stipulation.

Regarding left-adjunction accounts, the different distribution of the adverbs in (13) is held to follow from their different structural prominence. The higher in structure, the less likely an adverb will be to let its c-command domain be raised to projections high above. As Cinque (1999) points out, this is descriptively unobjectionable in view of the parallelism between adverb hierarchy and distribution. However, there is, to the best of my knowledge, no account of which is the precise functional category providing the structural divide behind the partition in (13). More importantly, there is no indication as to why this category should lead adverbs above it to block constituent movement. In failing to provide such an explanation left-adjunction accounts also leave question (a) above unanswered.

4.2. Modification approaches

There is a group of studies (Williams 1994, 23-24; Peterson 1997; Shaer 2000) that, with more or less fortune, have tried to follow Heny's (1973) early indication that the syntax and semantics of higher adverbs should be tackled in terms of the restrictive/ non restrictive opposition. Among them, Williams (1994) is the only one that provides an explanation for the distributional puzzle posed by higher adverbs. He observes that, as (26) shows, non restrictive modifiers generally cannot occur in the right periphery, unless separated from the rest of the sentence by a pause.

(24) The Greeks as philosophical as Bob...

(25) The Greeks, as philosophical as Bob...

He argues that (27)-(28) depicts the adverbial counterpart of the pattern in (25)-(26), for, as (29) and (30) respectively show, the adverb in (27) is a restrictive modifier while the one in (28) is a non restrictive one, i.e. the latter can fall within the scope of negation while the former cannot.

(26) John left reluctantly.

(27) John left, probably.

(28) He didn't reluctantly leave.

(29) * He didn't probably leave.

The idea is that adverbs are inherently either restrictive or non restrictive. It hence follows that some adverbs can be used either restrictively or non restrictively.

(30) He didn't leave rudely.

(31) * He didn't rudely leave quickly.

Williams' proposal does not trivially link up to the fact that non restrictive adverbs are confined to the left-periphery. However, given the fact that the structural principle extensionally carries over to the adjectival domain, such an explanation may yet be thought to be worth pursuing. There is, nevertheless, strong empirical evidence that Williams' restrictive/ non restrictive classification of adverbs does not really extensionally correlate with the distributional classification in (13). (33)-(34) clearly show that evidential adverbs are radically monopipheral.

(32) He reportedly left.

(33) * He left reportedly.

However, Williams' negation test dubs these adverbs restrictive.

(34) He didn't reportedly leave.

The data suggests that the distribution of adverbs does not correlate with their restrictive import, hence undermining the basis of a possible explanation for the distribution of adverbs along the lines suggested by Williams.

The above revision shows that the currently available accounts of adverb syntax and semantics prove incapable of capturing the distributional pattern of higher adverbs and/or to provide a motivated account of it.

In what follows I will pay attention to the structural semantic properties of the adverbs at issue in the hope that this will provide a more convincing answer to questions (a) and (c) above.

5. MHAS AND BHAS: SEMANTIC DIFFERENCES

The hypothesis that I will explore in the rest of this work is semantic in nature and is rooted in the traditional view (Thomason and Stalnaker 1973; Bellert 1977) that the adverb hierarchy is based on differences in the semantic type selected by adverbs.

The fact that BHAs are hierarchically subordinate to MHAs but not to one another suggests that the grammatical homogeneity of the former class might be due to a coincidence in the semantic type required by these adverbs.

It is interesting to observe that the adverb classes included in the group of MHAs have frequently been related to different types. Thus, for example, agent-oriented adverbs can be related to the expression of facts, or speaker-oriented adverbs to the illocutionary content of the utterance. This is the reason why the former adverbs are infelicitous in non factive contexts (see the different

acceptability of (36) and (37)) or why the latter are awkward in illocutionary opaque contexts (compare (38) to (39)).

(35) ? Mary thinks that John foolishly knocked on the door.

(36) Mary knows that John foolishly knocked on the door.

(37) * Mary said that John, frankly, knocked on the door.

(38) Frankly, Mary said that John knocked on the door.

BHAs do not demand such higher types, i.e. they can replace the adverbs in (36)-(39) without giving rise to unacceptability. The upshot is that whichever the type selected by BHAs, it must be lower than these two. A possible candidate is the proposition expressed by the utterance. Unlike agent-oriented and speaker-oriented adverbs, BHAs are part of the propositional content of utterances. This can be shown on the basis of Infantidou-Trouki's (1993) test for propositionality. Infantidou-Trouki (1993) suggests that an interesting test to determine which adverbs contribute to the propositional content of the utterance is to embed them in a conditional clause and to check whether or not they scope within the conditional operator. If they do, they are part of the proposition expressed. According to this test, the BHAs in (40) and (41) are fully propositional, i.e. the conditions under which Chris will be scorned include his intentionally or often kissing Sandy passionately, respectively.

(39) If Chris intentionally kisses Sandy passionately, he will be scorned.

(40) If Chris often kisses Sandy passionately, he will be scorned.

Contrariwise, agent-oriented and speaker-oriented adverbs are not propositional according to the conditional test, i.e. they are not part of the conditions that will lead to Chris's being scorned in (42) and (43).

(41) If Chris foolishly kisses Sandy passionately, he will be scorned.

(42) If Chris, frankly, kisses Sandy passionately, he will be scorned

However, the proposition cannot be the minimal type required by BHAs, for some MHAs are also propositional according to the conditional test. As pointed out by Infantidou-Trouki (1993), evidential adverbs are fully propositional, i.e. they scope within the conditional operator (e.g. in (44), Chris will be scorned if he is reported to kiss Sandy passionately).

(43) If Chris reportedly kisses Sandy passionately, he will be scorned.

If some MHAs are part of the proposition, propositionality cannot be the factor distinguishing BHAs from MHAs. Therefore the type modified by BHAs must be pursued below the propositional level.

According to the current literature on event semantics (Davidson 1980; Parsons 1990) the semantic type closer to and lower than the proposition is the event. The point to be made in the rest of this paper is that the event⁵ is the semantic type required by BHAs. Fortunately, the empirical evidence on the linguistic

⁵ My use of the term *event* will be as broad as in the Neo-Davidsonian tradition (Parsons 1990), i.e. it will cover instances of genuine events as well as states.

realisation of the semantic type *event* is large enough to allow us to test the validity of this claim. In the sections that follow, I will check the behaviour of MHAs and BHAs in relation to some grammatical phenomena generally assumed to be related to the expression of events.

5.1. Perceptual reports

The exact syntactic import of events is the focus of much current empirical research. An eventive denotation has been traced in nominal (Parsons 1990, 132-135; Grimshaw 1990, 47-63), functional (Travis 1988; Kratzer 1994) and clausal projections (Higginbotham 1983; Vlach 1983). Especially convincing are the arguments in favour of the event denotation of the so-called naked infinitive complements to perception verbs.

As Kearns (2000: 193-195) notes, the complements to the verb *see* in (45) and (46) are not of the same semantic type. Specifically, the latter denotes a proposition, while the former clearly does not: a proposition cannot be physically perceived.

(44) Maurice saw Lydia talk to Ralph twice.

(45) Maurice saw that Lydia talked to Ralph twice.

Postulating events as the semantic denotation of naked infinitive complements to perception verbs is not only intuitively appealing but also empirically adequate. It has, for example, been noticed that the complement clauses in (45) and (46) are not equally transparent to reference. Referentially identical definite descriptions bring about different truth conditions in the complement clause of (46), but not in that of (45). This can be seen by comparing (45) and (46) with (47) and (48), respectively. In a context where Ralph is the Dean, (45) and (47) are synonymous, while (46) neither entails nor is entailed by (48).

(46) Maurice saw Lydia talk to the Dean.

(47) Maurice saw that Lydia talked to the Dean.

Higginbotham (1983), Vlach (1983) and Parsons (1990: 15-17) argue that the different referential transparency of the complement clauses of *see* in (45) and (46) is due to the fact that the former denotes an event while the latter denotes a proposition.

Turning to higher adverbs, it is interesting to observe that infinitival complements to perception verbs discriminate between the two classes in (13). As (49) and (50) show, only BHAs are acceptable in these contexts.

(48) Maurice saw Lydia immediately/ intentionally/ briefly talk to the Dean twice.

(49)* Maurice saw Lydia obviously/ reportedly/ intelligently talk to the Dean twice.

It hence seems that, unlike MHAs, BHAs are fully compatible with, and indeed demand, the expression of an event. The possibility arises of relating BHAs

to the semantic type *event* and of making this the distinctive feature between MHAs and BHAs. Let us turn to more evidence that this is indeed the case.

5.2. Focus

Focus has traditionally been associated with the expression of an assertion, whereas topic is believed to express what the main assertion is about (Chomsky 1971; Jackendoff 1972; Rooth 1994). A sentence like (51), for example, talks about a kissing event in which an individual named *David* was the agent, and asserts that the theme of the kissing event was Susan.

(50) David kissed SUSAN.

Seen this way, the difference seems to be mainly pragmatic and to pertain to the informational layout of the sentence. (51) is not truth-conditionally different from (52).

(51) DAVID kissed Susan

However, associating focus-sensitive operators like negation with focus has immediate truth-conditional consequences.

(52) David didn't kiss SUSAN.

(53) DAVID didn't kiss Susan

The more salient interpretation of (53) makes reference to a kissing event where David played the agent role. In (54), the fact that David was the agent in the kissing event is claimed to be false.

Current linguistic literature (Chomsky 1971, Jackendoff 1972) abounds in attempts to dissociate the semantic from the pragmatic effects of focus. I will follow a recent proposal by Elena Herburger.

Herburger (2000: 40-47) defends that focus plays a key role in the syntax-semantics interface. Specifically, she argues that focus builds on the Davidsonian event structure providing the semantic translation of syntactic structures. A Davidsonian event structure (Davidson 1980; Parsons 1990) consists of (at least) a quantification over an event variable. This is like other quantifications in being made up of a quantification proper, a restriction and a scope (Lewis 1975, Heim 1982). According to Herburger, the semantic role of focus is to map event predicates into either the restriction or the scope of the event quantification. She dubs this process *focal mapping*. On this view, (55) is the logical form of both (51) and (52) before focusing takes place. (56) and (57) show the logical form after focus maps event predicates into the restriction or the scope of the event quantification. (56) and (57) provide the semantic translation of (51) and (52), respectively.

(54) $[\exists e: C(e) \ \& \ \text{Kiss}(e) \ \& \ \text{Past}(e) \ \& \ \text{Agent}(e, \text{David}) \ \& \ \text{Theme}(e, \text{Susan})]$

(55) $[\exists e: C(e) \ \& \ \text{Agent}(e, \text{David}) \ \& \ \text{Kiss}(e) \ \& \ \text{Past}(e)] \ [\text{Theme}(e, \text{Susan}) \ \& \ \text{Agent}(e, \text{David}) \ \& \ \text{Kiss}(e) \ \& \ \text{Past}(e)]$

- (56) $[\exists e: C(e) \ \& \ \text{Theme}(e, \text{Susan}) \ \& \ \text{Kiss}(e) \ \& \ \text{Past}(e)] \ [\text{Agent}(e, \text{David}) \ \& \ \text{Agent}(e, \text{David}) \ \& \ \text{Kiss}(e) \ \& \ \text{Past}(e)]$

As expected, (56) and (57) are truth-conditionally equivalent. Contrariwise, (58) and (59) differ in truth conditions in the way (53) and (54) do.

- (57) $[\exists e: C(e) \ \& \ \text{Agent}(e, \text{David}) \ \& \ \text{Kiss}(e) \ \& \ \text{Past}(e)] \ \neg \text{Theme}(e, \text{Susan}) \ \& \ \text{Agent}(e, \text{David}) \ \& \ \text{Kiss}(e) \ \& \ \text{Past}(e)$
- (58) $[\exists e: C(e) \ \& \ \text{Theme}(e, \text{Susan}) \ \& \ \text{Kiss}(e) \ \& \ \text{Past}(e)] \ \neg \text{Agent}(e, \text{David}) \ \& \ \text{Agent}(e, \text{David}) \ \& \ \text{Kiss}(e) \ \& \ \text{Past}(e)$

Although Herburger is not very explicit about this kind of consequence, something like principle (60) seems to follow from her account:

- (59) the semantic content of focusable constituents contributes to the event description (i.e. predicates of the event variable); constituents whose semantic content contributes to the event description are focusable.

Turning now to higher adverbs, we find a striking contrast between MHAs and BHAs: only the latter are focusable.⁶ The point can be shown in relation to a variety of focusing procedures.

(61)-(66) show the result of clefting a representative sample of the two classes of adverbs depicted in (13).⁷

- (60) It was reluctantly that Mary ate grapes twice.⁸
- (61) It was twice that Susan travelled abroad reluctantly.
- (62) It was immediately that she discovered the truth.
- (63) * It was wisely that Mary ate the grapes twice/ didn't hit the button.
- (64) * It is certainly that Susan will come back some day.
- (65) * It is fortunately that she discovered the truth.

Another privileged way of testing for focusability is provided by focus adverbs. Adverbs like *even* and *only* are known to associate with focus (Karttunen and Peters 1979; Atlas 1991). They can modify virtually any kind of constituent, and can also occur in left-peripheral positions. The sentences in (67)-(72) show a sample list of higher adverbs in association with sentence-initial *only*.

- (66) Only reluctantly did Mary eat grapes twice.
- (67) Only twice did Susan travel abroad reluctantly.

⁶ Frey (2000) makes a similar observation, though he restricts non focusability to what he calls sentential adverbs, a subset of MHAs (e.g. agent-oriented adverbs are not genuine sentential adverbs, according to Frey). The data and arguments below support the position that non focusability correlates with monoperipherality as defined in (13) above.

⁷ I will keep to the same adverb classes throughout the work. This will help make the relevant contrasts sharp. For lack of space, I will leave it to the reader to check that whatever is said about these MHAs and BHAs carries over to the rest of cases in (13).

⁸ Incidentally notice that, on their lower occurrence, some BHAs are manner adverbs. As is well-known (Emonds 1985) manner adverbs cannot be the focus of a cleft construction. Hence the different acceptability of (70) and (i).

(i) * It was reluctantly (in a reluctant manner) that Mary smiled.

- (68) Only later did she discover the truth.
 (69) * Only wisely did Mary eat grapes twice.
 (70) * Only certainly will Susan come back.
 (71) * Only fortunately did she discover the truth.

Contrastive focus yields the same results. BHAs are, but MHAs are not focusable.

- (72) Mary (twice, not once,) ate grapes (twice, not once)
 (73) Susan (reluctantly, not willingly) travelled abroad (reluctantly, not willingly).
 (74) She (immediately, not later,) discovered the truth (immediately, not later).
 (75) * Mary wisely, not foolishly, ate grapes twice.
 (76) * Susan certainly, not probably, will come back.
 (77) * She fortunately, not regrettably, discovered the truth.

On the basis of Herburger's (2000) theory of focus, and, more specifically, of principle (60) above, the data in (61)-(78) can be interpreted as indicating that, unlike MHAs, BHAs are part of the event quantification conveyed by the sentence. This is fully in line with the perceptual complement data in the previous section and further reinforces the idea that the key difference between MHAs and BHAs lies in the semantic type to which they are attuned.

5.3. Quantifier adverbs

Always, generally or usually are standardly analysed as quantifier adverbs. These adverbs occupy an outstanding position in the overall picture of facts outlined above. On the one hand, they can be shown to quantify over events. On the other, they are hierarchically ordered between MHAs and BHAs, i.e. they scope over the latter and within the former. I believe that these two facts can receive a natural explanation under Herburger's conception of focus as a key constraint on event quantification. Let us see how.

Herburger (2000: 60) argues that "...quantifier adverbs are nothing but phonologically realized quantifiers over events" and that the only difference between sentences with and without event quantifiers is that in the former "...the quantifier is not tacit, but phonologically realized" (Herburger 2000, 60). On such a view, the sentences in (79) and (81) have the semantic representations in (80) and (82), respectively.

- (78) David always kissed SUSAN.
 (79) [$\forall e$: C(e) & Agent(e,David) & Kiss(e) & Past(e)] [Theme(e,Susan) & Agent(e,David) & Kiss(e) & Past(e)]
 (80) DAVID always kissed Susan.
 (81) [$\forall e$: C(e) & Theme(e,Susan) & Kiss(e) & Past(e)] [Agent(e,David) & Agent(e,David) & Kiss(e) & Past(e)]

- (80) has it that every (contextually) relevant kissing event by David had Susan as the theme; i.e. on every occasion in which David kissed someone, it was Susan that he kissed. Conversely, (82) states that every (contextually) relevant kissing event of Susan had David as its agent; i.e. every time Susan got kissed it was David that did it. The truth conditional differences between (79) and (81) are hence captured by the analysis.⁹

Once the eventivity of quantifier adverbs has been settled, we can ask ourselves what their relation to the rest of higher adverb classes is. If, as defended above, BHAs are event adverbs, we expect them to fall within the scope of quantifier adverbs. This expectation is born out by adverb hierarchy facts: adverb sequences like the ones in (83)-(84) are ruled out, while others like the ones in (85)-(86) are perfectly natural.

- (82) * Adrian has reluctantly always knocked on the door twice.
 (83) * Adrian immediately generally grasps new ideas.
 (84) Adrian has always reluctantly knocked on the door twice.
 (85) Adrian generally immediately grasps new ideas.

Contrariwise, MHAs reverse the pattern in (83)-(86). Combinations of MHAs and quantifier adverbs are felicitous only as long as the former take scope over the latter.

- (86) (Obviously,) Adrian (obviously) must always do what he deems right.
 (87) (Fortunately,) Adrian (fortunately) had always done what he deemed right.
 (88) * Adrian always must obviously do what he deems right.
 (89) * Adrian always had fortunately done what he deemed right.

Cinque's (1999) hierarchical arrangement of the adverb classes in (13) yields the same results.

- (90) Discourse-oriented > domain > exocomparative > evaluative > epistemic > agent-oriented > quantifier (e.g. *always*) > mental attitude > aspectual > location-time > frequency (*periodically*) > duration

As can be seen, quantifier adverbs range lowest among MHAs.

If the above reasoning is correct, (87)-(90) show that BHAs are, but MHAs are not part of the event description quantified over by the adverbial quantifier. Hence the quantifier adverb data support the conclusion drawn in the previous sections: only BHAs are event adverbs.

⁹ Further confirmation for the view that these adverbs are quantificational comes from the fact that focus is sensitive to the kind of quantifier that ranges over the event description. For example, the fact that, unlike the default existential quantifier, *always* brings about truth conditional variation upon different focusings is due to the generalised quantifier properties of the quantifier involved: the existential quantifier is intersective (i.e. there is an event with such and such features) whereas the universal quantifier is inclusive (i.e. the set of events with such and such features is a subset of the set of events with such and such features).

The data and arguments accrued in the previous three sections allow us to address the issue of the grammatical coherence of the adverb classes in (13). BHAs select a semantic type, the event, to which MHAs are largely insensitive. Having come by a semantic generalisation for the division in (13), we are now in a position to address the distributional puzzle posed at the beginning of this work. The ultimate validity of the semantic generalisation advanced depends on its relevance to the best-known grammatical difference between MHAs and BHAs: their asymmetric distributional behaviour. I will turn to this point in the following section.

6. THE DISTRIBUTIONAL PUZZLE SOLVED

Once the grammatical substance of the MHA/ BHA distinction has been spelled out, we can address the first of the questions posed at the beginning of this work: why do higher adverbs exhibit an asymmetrical distributional behaviour? As will become clear, the answer to this question follows from principle (60) (i.e. from the focusable nature of the semantic material contributing to the event quantification) and from the economy of the syntactic operations involved in the biperipheral occurrence of higher adverbs. I will address the latter issue first.

Despite the important theoretical differences in the configurational machinery posited to handle the adjunction and movement of adverbs, there is widespread consensus on its economy: the primary goal of optional right-displacement is to bring displaced constituents into focus (Cinque 1993; Reinhart 1995). Let us see how the argument works. Both contrastive and non-contrastive focus are realised through stress on the rightmost word in the focused constituent (Chomsky 1971; Cinque 1993). Non-contrastive focus is associated with default sentence stress, which in English falls on the rightmost word. The result is that any sentence constituent containing the rightmost word comes out a suitable candidate for non-contrastive focus. The syntactic literature has made a crucial use of this linearisation principle to account for the variable occurrence of adverbs. The idea is that constituents are right-displaced for informational reasons, viz to set them into exclusive focus. Therefore, whichever syntactic device has adverbs displaced from the left to the right periphery will automatically bring them into focus.

The above argument has been raised and applied almost exclusively to the differences between left-peripheral and right-peripheral occurrences of BHAs. I now turn to show how it can also provide the key to a motivated account of the distributional differences between BHAs and MHAs.

In the light of the above picture of the grammatical differences between MHAs and BHAs, adverb right-displacement seems not to be a possible alternative for MHAs. The reason is trivial. Principle (60) forbids that semantic material unrelated to the event quantification be focused. Being non eventive, MHAs simply

cannot be set into focus by right-displacement, but are rather forced either to stay in their base-generated positions or to move to TopicP (Rizzi 1997) or some such explicitly topicalised position in the left periphery. Conversely, eventive BHAs, which according to the data and analysis above are tributary to the event quantification, can be focused through right-displacement or, as shown above, through any other grammatically available means. This provides the kind of satisfactory answer to question (a) above that we were seeking, for it establishes a trivial connection between the grammar, more specifically the semantics, and the distribution of higher adverbs.

To further support this conclusion, in the next section I will put forward some extra empirical evidence that focus is in fact the key constraint on higher adverb right-displacement. The evidence will concern some internal constraints on the realisation of sentential focus and a cross-linguistic variant of the morphosyntactic pattern found in English adverbs.

6.1. Double focus

BHAs are not equally likely to associate with focus in their left-peripheral and in their right-peripheral occurrences.

As is well known (Wyner 1994: 181-184), higher adverbs can generally associate with focus. This is the reason for the different truth-conditional import of (92) and (93).

(91) Tony reluctantly knocked on the door TWICE.

(92) Tony reluctantly KNOCKED ON THE DOOR twice.

In (92) Tony may have been quite willing to knock on the door (only objecting to doing so twice), a situation that renders (93) false.

Curiously, sentences like (94) and (95) block the right-displacement of the BHA. Ernst (1994) observes that focusing on any but the most right-peripheral adverb does away with the higher reading of the latter.

(93) Tony knocked on the door TWICE reluctantly.

(94) Tony KNOCKED ON THE DOOR twice reluctantly.

(94) and (95) do not mean the same as (92) and (93), respectively: *reluctantly* can only receive a lower reading in these cases.

These facts can be accounted for on the basis of the above account and Rizzi's (1997) principle that there can only be one focus per sentence. *Reluctantly* can receive a higher reading in (92) and (93) because in these cases it remains in a topicalised position. Any other sentence constituent is therefore eligible for sentential focus. In (94) and (95), on the other hand, the right-displacement of the higher adverb makes it the focus of the sentence. This leaves the sentence with two foci, a clearly ungrammatical outcome according to Rizzi.

6.2. Spanish *-mente* adverbs

As already pointed out, right displacement of adverbs is an optional syntactic operation in English. This allows the adverb to be superficially placed in two different positions, one of them marked for focus, the other a topicalised position. A different constellation of facts is observed in the case of Spanish *-mente* adverbs. These adverbs are like prepositional phrases in requiring right-displacement.¹⁰ At the same time, it follows from the above picture of facts that monoperipheral higher *-mente* adverbs will block right-displacement for semantic reasons (viz they cannot be focused). The combined outcome of this morphosyntactic and semantic constraint on linearisation is that Spanish MHAs will be confined to explicitly topicalised positions in the left periphery. This is born out by the acceptability pattern in (96)-(101).

- (95) * Carmen descuidadamente olvidó las llaves a la vista de todos
Carmen carelessly forgot the keys within everyone's sight
- (96) * Carmen felizmente había depositado las llaves en un lugar seguro.
Carmen happily had left the keys in a safe place
- (97) * Carmen olvidó las llaves a la vista de todos descuidadamente
Carmen forgot the keys within everyone's sight carelessly
- (98) * Carmen había depositado las llaves en un lugar seguro felizmente
Carmen had left the keys in a safe place happily
- (99) Descuidadamente, Carmen olvidó las llaves a la vista de todos
Carelessly, Carmen forgot the keys within everyone's sight
- (100) Felizmente, Carmen había depositado las llaves en un lugar seguro
Happily, Carmen had left the keys in a safe place

On the basis of the above analysis, we expect Spanish higher *-mente* adverbs to pattern with English higher *-ly* adverbs in contexts where their different morphosyntax does not bring about a difference in distribution. One such context is provided by passive constructions. As is well known, Spanish *-mente* adverbs are allowed to freely occur in the left periphery of passive sentences.

- (101) Las preguntas habían sido (cuidadosamente) contestadas (cuidadosamente).

The questions had been (carefully) answered (carefully).

Under the circumstances, the theory put forward above predicts that the semantic constraints posited above will be in force, yielding the distributional pattern identical to the one found in English, i.e. allowing higher readings of *-mente* MHAs when these adverbs occur to the left of the lexical verb and blocking them when they occur in the right periphery. The prediction is born out by facts. Only in

¹⁰ This may be due to *-mente* being like a preposition in morphosyntactically triggering right-displacement. For an antisymmetric comparison of *-ly* and *-mente* along these lines cf. Déchaine and Tremblay (1996) and references therein.

(103) and (104) is it possible to impose a higher (non manner) reading on *descuidadamente* and *felizmente*, respectively.

- (102) Las llaves habían sido descuidadamente olvidadas a la vista de todos
The keys had been carelessly forgotten within everyone's sight.
- (103) Las llaves habían sido felizmente depositadas en un lugar seguro
The keys had been happily left in a safe place
- (104) ?? Las llaves habían sido olvidadas a la vista de todos descuidadamente.
The keys had been forgotten within everyone's sight carelessly.
- (105) ?? Las llaves habían sido depositadas en un lugar seguro felizmente.
The keys had been left in a safe place happily.

7. CONCLUDING REMARKS

This study has argued for the grammatical plausibility of the class of BHAs. I have put forward evidence concerning perceptual reports, focusability and quantifier adverbs that what distinguishes BHAs from the rest of higher adverbs is the fact that they predicate of the event variable. It has also been shown that, once the connections between eventivity and focusability are properly spelt out, the special distribution of BHAs ceases to be a mystery. The biperipheral occurrence of BHAs follows straightforwardly from their eventivity and from the economy of right-displacement. Likewise, it has been shown that the fact that the rest of higher adverbs are not related to the semantic type *event* is the reason for their not being right-displaceable.

Looked at from a theoretical perspective, the proposed semantic theory has the merit of providing a motivated account of facts that remain obscure under current syntactically or modification oriented approaches. Obviously, the possibility exists that the semantic type *event* syntactically correlates with some or other functional projection. This issue is the focus of much current research (Kratzer 1994, Pustejovsky and Tenny 2000). However, even though this turned out to be the case, a strictly syntactic account of the distribution of higher adverbs would still be expected to offer the kind of trivial connection between adverb types and linearisation which the analyses presented above provides.

In a broader theoretical perspective, the work bears out some ideas and proposals in current syntactic and semantic literature. On the one hand, the analysis clearly supports the widespread position that right-peripheral occurrences of adverbs are derived from left-peripheral ones and that, in the absence of morphosyntactic triggers for right-displacement, this movement operation is semantically rather than syntactically constrained. On the other hand, the empirical results of this work support Davidson's claim that events are a fundamental constituent of the semantics of natural language. More specifically, the data and arguments handled above support Herburger's (2000) position that the semantic

import of focus is to arrange the internal structure of the event quantification expressed by the sentence.

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