

De Clercq, Karen, Liliane Haegeman & Terje Lohndal. 2012. Medial adjunct PPs in English: Implications for the syntax of sentential negation. *Nordic Journal of Linguistics* 35(1), 5–26.

# Medial adjunct PPs in English: Implications for the syntax of sentential negation

Karen De Clercq, Liliane Haegeman & Terje Lohndal

This paper provides evidence that medial adjunct PPs in English are possible. On the basis of corpus data, it is shown that sentence-medial adjunct PPs are not unacceptable and are attested. Our corpus data also reveal a sharp asymmetry between negative and non-negative adjunct PPs. The analysis of the corpus revealed the following pattern: Non-negative adjunct PPs such as *at that time* resist medial position and instead tend to be postverbal; negative adjunct PPs such as *at no time* appear medially rather than postverbally. In the second part of the paper, we broaden the empirical domain and include negative complement PPs in the discussion. It is shown that when it comes to the licensing of question tags, English negative complement PPs, which are postverbal, pattern differently from postverbal negative adjunct PPs. That is, sentences with a postverbal negative adjunct PP pattern with negative sentences in taking a positive question tag, while sentences containing a postverbal negative argument PP pattern with affirmative sentences in taking a negative tag. To account for the observed adjunct–argument asymmetry in the licensing of question tags, we propose that clauses are typed for polarity and we explore the hypothesis that a polarity head in the left periphery of the clause is crucially involved in the licensing of sentential negation.

**Keywords** adjuncts, complements, negation, polarity, prepositions

*Karen de Clercq and Liliane Haegeman, Department of Linguistics, Ghent University, Blandijnberg 2, B-9000 Ghent, Belgium. karen.declercq@ugent.be; liliane.haegeman@ugent.be*

*Terje Lohndal, Department of Modern Foreign Languages, Norwegian University of Science and Technology, Dragvoll, 7491 Trondheim, Norway. terje.lohndal@ntnu.no*

## 1. INTRODUCTION: AIM AND ORGANIZATION OF THE PAPER

The starting point of this paper is a fairly widespread claim in the generative literature to the effect that sentence-medial adjunct PPs are unacceptable. Our paper makes two points. First, at the empirical level, we elaborate on Haegeman (2002), who showed that medial adjunct PPs are possible. We demonstrate on the basis of corpus data that sentence-medial adjunct PPs are not unacceptable and are attested. Our corpus data also reveal a sharp asymmetry between negative and non-negative adjunct PPs, which was noted by De Clercq (2010a, b) but was not thoroughly discussed there. The analysis of the corpus reveals the following pattern: Non-negative adjunct PPs such as *at that time* resist medial position and instead tend to be postverbal; negative adjunct PPs such as *at no time* appear medially rather than postverbally.

The second part of the paper looks at some theoretical implications of our findings for the syntax of negative PPs. We broaden the empirical domain and include negative complement PPs in the discussion. It is shown that when it comes to the licensing of question tags, English negative complement PPs, which are postverbal, pattern differently from postverbal negative adjunct PPs. Put informally, sentences with a postverbal negative adjunct PP pattern with negative sentences in taking a positive question tag, while sentences containing a postverbal negative argument PP pattern with affirmative sentences in taking a negative tag. To account for the observed adjunct–argument asymmetry in the licensing of question tags, we will propose that clauses are typed for polarity and we explore the hypothesis that a polarity head in the left periphery of the clause is crucially involved in the licensing of sentential negation (Laka 1990; Progovac 1993, 1994; Moscati 2006, 2011; De Clercq 2011a, b; McCloskey 2011; and others).

The paper is organized as follows: Section 2 considers the status of non-negative medial adjunct PPs. Section 3 examines the distribution of negative adjunct PPs. Section 4 elaborates our account of the licensing of sentential negation, which relies on a clause-typing mechanism established by a polarity head in the left periphery of the clause. Section 5 is a brief summary of the paper.

## 2. MEDIAL POSITION FOR CIRCUMSTANTIAL PPs IN ENGLISH

When realized by adverbs, English adjuncts are found in three positions: (i) initial (illustrated in (1a) and (2a) below), (ii) medial ((1b), (2b)) and (iii) postverbal ((1c), (2d)). The examples in (1) illustrate the patterns in a sentence with only a lexical verb and in (2) the patterns in a sentence with an auxiliary and a lexical verb. The difference between the patterns in (2b) and (2c) is tangential to the discussion and we will group them under ‘medial position’.

- (1) a. **Recently** he left for London.  
 b. He **recently** left for London.  
 c. He left for London **recently**.
- (2) a. **Recently** he has left for London.  
 b. He **recently** has left for London.  
 c. He has **recently** left for London.  
 d. He has left for London **recently**.

With respect to adjuncts realized by PPs, the literature has generally focused on initial ((3a), (4a)) or postverbal ((3c), (4c)) PPs, with little or no discussion of medial PPs ((3b), (4b)):

- (3) a. **At that time** the actor lived in London.  
 b. The actor **at that time** lived in London.  
 c. The actor lived in London **at that time**.

- (4) a. **At that time** the actor was living in London
- b. The actor was **at that time** living in London.
- c. The actor was living in London **at that time**.

In this section, we discuss these data more carefully on the basis of literature surveys and corpus studies.

**2.1 Medial position adjunct PPs: The literature**

As pointed out by Haegeman (2002), there is a tendency in the generative tradition to consider medial adjunct PPs (such as (3c) and (4c) above) unacceptable in absolute terms, in contrast to medial adverbs. For instance, commenting on (5), Jackendoff (1977:73) says: ‘First let us deal with the differences between AdvPs and PPs in V’. The most salient difference is that AdvPs may appear preverbally as well as postverbally, whereas PPs may only be postverbal’.

- (5) a. Bill dropped the bananas  $\left\{ \begin{array}{l} \text{quickly} \\ \text{with a crash} \end{array} \right\}$ .
- b. Bill  $\left\{ \begin{array}{l} \text{quickly} \\ \text{*with a crash} \end{array} \right\}$  dropped the bananas.

(Jackendoff 1977:73, ex. (4.40))

This type of judgment is reiterated in the literature, for example in Emonds (1976), who treats medial PPs such as those in (3b) and (4b) as parentheticals, and in Nakajima (1991), Rizzi (1997:301), Frey & Pittner (1998:517), Pittner (1999:175, 2004:272), Cinque (2004:699–700), Haumann (2007), Belletti & Rizzi (2010), and elsewhere. Reproducing the judgment in (5), Cinque (1999:28) writes:

Circumstantial adverbials also differ from AdvPs proper in that they are typically realized (with the partial exception of manner adverbials) in prepositional form (*for three hours, in the kitchen, with great zeal, for your love, in a rude manner, with a bicycle, etc.*) or in bare NP form (*the day after, tomorrow, this way, here etc. . . .*). Furthermore, possibly as a consequence of this, they cannot appear in any of the pre-VP positions open to AdvPs proper (except for the absolute initial position of “adverbs of setting”, a topic-like position).

While we take no issue with the actual judgments of specific examples, the authors’ extrapolation that all medial PPs are ruled out does not correspond to the empirical data.

As a matter of fact, there is no agreement among authors that medial adjunct PPs are unacceptable. For instance, on the basis of the judgments presented below in (6),

McCawley (1998:207) does confirm the general tendency for adjunct PPs to resist medial position, but he also provides the examples in (7) below, with acceptable medial adjunct PPs. He comments: ‘I don’t know of any neat way to distinguish between the P’s in [6] and the ones in [7]’ (McCawley 1998:214, note 25).

- (6) a. John was **carefully**/\***with care** slicing the bagels.  
 b. ??We will **for several hours** be discussing linguistics.  
 c. ??Ed in Atlanta was struck by a truck. (McCawley 1998:207)
- (7) a. John has **for many years** been a Republican.  
 b. John has **on many occasions** voted for Republicans.  
 (McCawley 1998:214, note 25)

Focussing on journalistic prose, Haegeman (2002) shows that medial PPs are regularly attested. The following illustrate a medial adjunct PP in a finite clause without an auxiliary, in (8a), a finite clause with an auxiliary, in (8b), as well as a non-finite clause, in (8c):

- (8) a. Burton moved in with Speke and the collaboration **within two months** produced a 200,000 word book, which sold 5,700 copies in its first year and was translated all over Europe.  
 (*The Guardian*, 13 August 2001, p. 8, col. 4)
- b. The strength and charm of his narratives have **in the past** relied to a considerable extent on the first person presence of Lewis himself  
 (*The Observer*, 22 July 2001, Review, p. 3, col. 2)
- c. It is fine, keep going, but then we have to **after a day or two** just leave this to the committee.  
 (*The Guardian*, 20 August 2003, p. 4, col. 6)

Several authors (Quirk 1985:492, 514, 521; Ernst 2002a:504, 2002b:194; Mittwoch, Huddleston & Collins 2002:780) signal that weight considerations play a part in restricting the availability of non-parenthetical medial PP adjuncts. For a discussion of a definition of weight in determining word order, see e.g. Ernst (2002b:194) and the references cited there.

## 2.2 Medial position adjunct PPs are rare

While the claim that medial PPs are categorically unacceptable is definitely incorrect, medial adjunct PPs are not as frequent as medial adverbs. Quirk et al. (1985) provide an overview of the distribution of a range of adverbial expressions in the various positions in a sample of the *Survey of English Usage* corpus (see their description in Quirk et al. 1985:489). Tables 1 and 2 are based on their Table 8.23 and summarize the percentages of adjunct PPs and adjunct adverbs in initial, medial and postverbal position. While Quirk et al. distinguish a number of medial and postverbal positions,

	% Initial	% Medial	% End	Total number
Spoken	6	1	93	2063
Written	12	3	85	2351
Average	9.5	2.5	88	4456 <sup>a</sup>

<sup>a</sup> The discrepancy between the figures for spoken and written material and the totals are not accounted for in Quirk et al. (1985).

**Table 1. Distribution of PPs in the Survey of English Usage corpus (Quirk et al. 1985:501).**

	% Initial	% Medial	% End	Total number
Spoken	17.5	44.5	38	608
Written	15	50	35	462
Average	16	47	37	1063 <sup>a</sup>

<sup>a</sup> Quirk et al. (1985) do not account for the discrepancy in the totals. Note that we only report on open class adverbs. We don't include in the count closed class adverb such as *then, just*, etc.

**Table 2. Distribution of adverbs in the Survey of English Usage (Quirk et al. 1985:501).**

our tables simplify their Table 8.23 in that we have grouped their distinct medial positions into one position and we have also collapsed their postverbal positions into one. Medial PPs are systematically outnumbered by postverbal PPs, both in writing and in speech. For adverbs, the opposite relation holds: medial adverbs are slightly more frequent than postverbal ones. That medial PPs are rare is also occasionally signalled in pedagogically oriented grammars such as, for instance the Collins COBUILD grammar (Sinclair 1990:283) and Lambotte (1998).

In order to assess the status of medial adjunct PPs in present-day English, we undertook a pilot search of the Corpus of Contemporary American English (henceforth COCA; <http://corpus.byu.edu/coca/>, COCA 2010) and the British National Corpus (henceforth BNC; <http://corpus.byu.edu/bnc/>, BNC 2010) in which we examined the distribution of the following temporal adjunct PPs: *on three occasions, on those occasions, at one time, at a time, at some time, at this time, at that time, on many occasions* and also of the manner adjunct *in this way*. For adjunct PPs occurring at a very high frequency (*at one time, at a time, at some time, at this time, at that time, on many occasions, in this way*), we based our study on a sample of the first 100 entries. We present our results in Tables 3 and 4. Obviously, the numbers in these tables in no way represent the full and final picture of the distribution of adjunct PPs, nor does our paper offer a statistical analysis of such data, but our findings suffice to show (i) that sentence-medial adjunct PPs are certainly attested, and (ii) that, fully in line with the literature, such medial adjunct PPs are outnumbered by postverbal adjunct PPs. In Section 3 we will see, however, that for a well-defined class of PP adjuncts, medial position is not just an option but is actually strongly preferred over postverbal position.

PP	Total	Initial	Medial	Postverbal	Not relevant
<i>on three occasions</i>	86	18	2	63	3
<i>on those occasions</i>	95	49	1	42	3
<i>at one time</i>	100	27	13	36	24
<i>at a time</i>	100	9	0	42	49 <sup>a</sup>
<i>at some time</i>	100	13	13	74	0
<i>at this time</i>	100	24	6	67	3
<i>at that time</i>	100	35	10	54	1
<i>an many occasions</i>	100	28	5	64	3
<i>in this way</i>	100	52	3	39	6

<sup>a</sup> We have discounted occurrences of *at a time* followed by a temporal clause (*at a time when ...*) which are final for weight reasons and for which medial position is unavailable.

**Table 3. Pilot study: distribution of PPs in medial position, COCA sample.**

PP	Total	Initial	Medial	Postverbal	Not relevant
<i>on three occasions</i>	63	21	2	35	5
<i>on those occasions</i>	29	8	0	20	1
<i>at a time</i>	100	16	2	46	36
<i>at one time</i>	100	37	28	24	11
<i>at some time</i>	100	12	17	70	1
<i>at this time</i>	100	24	6	68	2
<i>at that time</i>	100	27	14	59	0
<i>on many occasions</i>	100	23	3	72	2
<i>in this way</i>	100	26	2	70	2

**Table 4. Pilot study: distribution of PPs in medial position, BNC sample.**

### 3. SENTENTIAL NEGATION AND ADJUNCT PPs

#### 3.1 Sentential negation in English

In English, negation can be expressed in a number of different ways, the most common of which are illustrated in (9). For recent analyses and a survey of the literature we refer to Zeijlstra (2004), Christensen (2005, 2008), Moscati (2006, 2011) and Tubau (2008).

- (9) a. The police did **not** talk to any witnesses.  
 b. **No one** talked to the police about any crime.  
 c. The police associated **no one** with any of these crimes.  
 d. The police talked **to no one** about any of these crimes.  
 e. The police **never** talked to any witnesses about the crime.  
 f. **Never** had the police talked to any witnesses.

The canonical marker of negation is the particle *not* (or its contracted form *n't*) adjacent to the finite auxiliary. Alternatively, an argument of the verb is realized as a negative nominal constituent, such as *no one* in (9b) or (9c), or as a PP containing a negative nominal as in (9d), which also conveys negation (but see Section 4 for discussion). Finally, and most relevant for our purposes, in (9e) and (9f) a negative adjunct expresses sentential negation. In (9e) the adverb *never* is medial and in (9f) it is initial, triggering subject–auxiliary inversion (henceforth SAI; see Rudanko 1987; Haegeman 2000; Sobin 2003).

Negative adjuncts with sentential scope can also be realized as PPs. In (10a) the negative quantifier *no* contained inside the initial temporal PP *at no time* has sentential scope, witness the fact that it triggers SAI and licenses the negative polarity item *any* in the complement of the verb.<sup>1,2</sup> The negative PP differs from its non-negative counterpart *at that time*, which does not, and cannot, trigger SAI, as is shown in (11).

- (10) a. **At no time** had the police talked to any witnesses.  
 b. \***At no time** the police had talked to any witnesses.
- (11) a. **At that time** the police had interviewed the witnesses.  
 b. \***At that time** had the police interviewed the witnesses.

Like negative adverbs, negative adjunct PPs with sentential scope can appear in sentence-medial position, as in (12). The availability of the polarity item *any* in (12a) confirms that *at no time* has sentential scope. Though we will mainly focus on temporal PPs like (12a), other medial adjunct PPs can also express sentential negation, see (12b).

- (12) a. The police had **at no time** talked to any of the witnesses.  
 b. The FQ **at no level** forms a constituent with the DP it modifies.  
 (Will Harwood, p.c.)

In relation to the discussion in Section 2 above, the data in (12) obviously also challenge claims according to which medial adjunct PPs are categorically unacceptable. We go into these patterns in more detail here.

### 3.2 Negative adjunct PPs and the expression of sentential negation

Sentences with preposed negative constituents such as the pair in (13a,b) have been discussed extensively (see, among others, Rudanko 1987; Haegeman 2002; Sobin 2003; Radford 2004; Haumann 2007 and the references cited there). In (13a), without SAI, the negative quantifier *no* contained in the PP *in no clothes* encodes constituent negation ('without clothes') and does not take sentential scope; in (13b), with SAI, the PP-internal negative quantifier has sentential scope ('there are no clothes such that ...').

- (13) a. **In no clothes** Mary looks attractive.  
 b. **In no clothes** does Mary look attractive.

Less attention has been paid to the distribution and interpretation of postverbal negative PPs. We briefly consider here some discussions in the literature.

Tottie (1983) studies the alternation between S[ynthetic] negation (*he said nothing*) vs. A[nalytic] negation (*he did not say anything*) in American English, using both informants' questionnaires and corpus material. However, her data do not include many relevant examples of PPs. Summarizing her conclusions on the basis of the informants' questionnaires she writes:

An examination of the actual sentences from the sample reveals that those sentences that had S negation in PrepPhrases were to a large extent fairly fixed collocations. Cf. ([14]), all *be*-sentences with PrepPhrases functioning as adverbials:

- ([14]) a. In any case it is **by no means** clear that formally  
 structured organs of participation are what is  
 called for at all. A 35  
 b. Mr Balaguer's troubles are **by no means** over. B 05  
 c. It is **by no stretch of the imagination** a happy choice. B 22  
 (Tottie 1983:52)

Observe that in the three examples in (14), the medial negative adjunct PP is not set off prosodically. Indeed, in spite of its relative weight, even the PP *by no stretch of the imagination* occupies medial position in (14c). Inserting commas in (14c) would entail that the negative PP cannot scope over the clause and would render the sentence unacceptable, as is shown in (14c').

- (14) c'. \*It is, **by no stretch of the imagination**, a happy choice.

In their discussion of negative markers in English, Quirk et al. (1985:783) systematically compare a positive sentence with its negative alternative. Their example set in (15) below is of interest in the light of our discussion. While in the positive (15a) the adverb *somehow* is in postverbal position, the negative adjunct PP is placed medially in (15d). Quirk et al. do not comment on this shift in position.

- (15) a. They'll finish it **somehow**.  
 b. They won't **in any way** finish it.  
 c. They won't finish it at all.  
 d. They will **in no way** finish it. (Quirk et al. 1985:783, ex. (8))

Pullum & Huddleston (2002) distinguish 'verbal' negation, expressed by medial *not* or *n't* associated with an auxiliary, as in (9a) or (15b, c), from 'non-verbal' negation, expressed by means of a negative constituent such as a negative quantifier



(*no, nothing, no one*, etc.) or a negative adverb (*never, no longer, no more*). Relevantly, they provide (16a) as an instance of a non-verbal sentential negation. In this example negation is encoded in a postverbal adjunct PP. Following Klima (1964), McCawley (1998), Horn (1989), Haegeman (2000), De Clercq (2010a), and others, the standard diagnostics to detect negativity (16b–e) show that the postverbal negative constituent in (16a) can take sentential scope.<sup>3</sup>

- (16) a. We were friends **at no time**.  
 (Pullum & Huddleston 2002:788, ex. [5iia])  
 b. We were friends **at no time**, not even when we were at school.  
 (Pullum & Huddleston 2002:789, ex. [10ia])  
 c. We were friends **at no time**, and neither were our brothers.  
 d. We were friends **at no time**, were we?  
 e. **At no time** were we friends.

Along the same lines, Haumann (2007:230) provides (17a), in which postverbal *on no account* negates the sentence and Kato (2002) presents (17b) as an instance of sentential negation expressed by a postverbal negative PP (but see the discussion concerning (22) below):

- (17) a. She will go there **on no account**, not even with John.  
 (Haumann 2007:230, ex. (130b))  
 b. He will visit there **on no account**.  
 (Kato 2002:67, ex. (14a))

However, native speakers often consider sentences with postverbal negative adjunct PPs as less than perfect. And indeed, while they present (16a) without comments, Pullum & Huddleston (2002:814) themselves signal that in fact postverbal negative PPs lead to a lower acceptability. They illustrate this point by means of the (weak) contrasts in (18) and (19): the examples in (18), with a negative adjunct PP in postverbal position, are more marked than the corresponding sentences in (19), which contain a combination of the negative marker *not* with a postverbal adjunct PP containing a negative polarity item (NPI).

- (18) a. ?I am satisfied with the proposal you have put to me **in no way**.  
 (Pullum & Huddleston 2002:814, ex. [24ib])  
 b. ?As far as I can recall, I have purchased food at the drive-through window of a fast-food restaurant **on no street in this city**.  
 (Pullum & Huddleston 2002:814, ex. [24iib])  
 (19) a. I am not satisfied with the proposal you have put to me **in any way**.  
 (Pullum & Huddleston 2002:814, ex. [24ia])  
 b. As far as I can recall, I have not purchased food at the drive-through window of a fast-food restaurant **on any street in this city**.  
 (Pullum & Huddleston 2002:814, ex. [24iia])

As shown in the extract below, the authors account for the above contrasts in terms of processing load, rather than in terms of grammaticality:

In principle, non-verbal negators marking clausal negation can appear in any position in the clause. However, as the position gets further from the beginning of the clause and/or more deeply embedded, the acceptability of the construction decreases, simply because more and more of the clause is available to be misinterpreted as a positive before the negator is finally encountered at a late stage in the processing of the sentence. (Pullum & Huddleston 2002:814)

Though Pullum & Huddleston do not pursue this point, their account of the contrasts between (18) and (19) leads to the correct prediction that medial position will be preferred for the negative adjunct PP: (18a) and (18b) are definitely improved with the negative PP in medial position. Observe that even for the slightly longer PP *on no street in this city* in (20b), considerations of weight do not lead to a degradation.

- (20) a. I am **in no way** satisfied with the proposal you have put to me.  
 b. As far as I can recall, I have **on no street** in this city purchased food at the drive-through window of a fast-food restaurant.<sup>4</sup>

De Clercq (2010a, b) reports the judgments in (21)–(24). The examples in (21) show that while the non-negative PP *at that time* is accepted both in medial (21a) and postverbal (21b) position, its negative analogue remains acceptable in medial position (21c) but postverbal position (21d) is rejected. In contrast with the judgment reported by Kato in (17b) above, postverbal *on no account* in (22b) is also considered unacceptable by De Clercq's informants. The examples in (23) and (24) provide additional judgments along the same lines.

- (21) a. The police had **at that time** interviewed the witnesses.  
 b. The police had interviewed the witnesses **at that time**.  
 c. The police had **at no time** talked to the witnesses.  
 d. ?\*The police had talked to the witnesses **at no time**.
- (22) a. You should **on no account** move to Paris.  
 b. ?\*You should move to Paris **on no account**.
- (23) a. She should **at no time** reveal the secret.  
 b. ?\*She should reveal the secret **at no time**.
- (24) a. They would **under no circumstances** reveal the problem.  
 b. \*They would reveal the problem **under no circumstances**.

A fully acceptable alternative to a sentence with a postverbal negative adjunct PP is one in which sentential negation is expressed by the canonical marker of sentential negation *not/n't* and in which an NPI *any* replaces the negative quantifier *no* in the postverbal PP. The contrast between the perfect (25) and the contrasts in

PP	Total	Initial (SAI)	Medial	Postverbal	Not relevant
<i>at no time</i>	100	96	4	0	0
<i>on no account</i>	21	21	0	0	0
<i>by no stretch of the imagination</i>	10	6	4	0	0
<i>on no occasion</i>	3	2	0	0	1
<i>in no event</i>	9	9	0	0	0
<i>at no other N</i>	34	23	0	3	8
<i>in no way</i>	100	14	84	2	0

SAI = subject–auxiliary inversion

**Table 5. Distribution of negative adjunct PPs, COCA sample.**

acceptability observed for degraded (22b), (23b) and (24b) suggests that it is the negative component of the postverbal PPs that causes the degradation.

- (25) a. She should not reveal the secret **at any time**. (De Clercq 2010b:9)
- b. You should not move to Paris **on any account**.
- c. They would not reveal the problem **under any circumstances**.

### 3.3 The distribution of negative PP adjuncts

In Section 2.2, we saw that as far as non-negative adjunct PPs are concerned, postverbal PPs outnumber medial PPs in the English corpora considered. To assess the distribution of their negative counterparts, we examined the distribution of the negative adjunct PPs *at no time*, *on no account*, *by no stretch of the imagination*, *on no occasion*, *in no event*, *at no other N* and *in no way* (see Quirk et al.’s (20) above). Our pilot study reveals an asymmetry between negative PPs and non-negative PPs. Medial non-negative PPs are less frequently attested than postverbal non-negative PPs. Medial negative PPs are far more frequent than postverbal negative PPs, which are in fact very rare indeed. These findings offer further support for Haegeman’s (2002) claim that medial adjunct PPs are not categorically excluded. On the other hand, while non-negative adjunct PPs are easily available in postverbal position, postverbal negative PPs with sentential scope, while available, are the marked option.

Tables 5 and 6 summarize the results of our searches for the negative PPs *at no time*, *on no account*, *by no stretch of the imagination*, *on no occasion*, *in no event*, *at no other N* (see (26e, f, g)) and *in no way*.

The lower frequency of postverbal negative adjunct PPs sets them off sharply from postverbal non-negative adjunct PPs, which, as shown in Tables 3 and 4, are well-attested. To complete the picture, Tables 7 and 8 provide the relevant figures for medial and postverbal position of the corresponding adjunct PPs containing an NPI: *at any time*, *under any circumstances*, *on any account* and *on any occasion*. For *at*

PP	Total	Initial (SAI)	Medial	Postverbal	Not relevant
<i>at no time</i>	100	86	13	0	1
<i>on no account</i>	84	67	17	0	0
<i>by no stretch of the imagination</i>	14	9	5	0	0
<i>on no occasion</i>	3	2	1	0	0
<i>in no event</i>	0	0	0	0	0
<i>at no other N</i>	9	5	0	3	1
<i>in no way</i>	100	8	90	0	2

SAI = subject–auxiliary inversion

**Table 6. Distribution of negative adjunct PPs, BNC sample.**

PP	Total	Initial	Medial	Postverbal	Not relevant
<i>on any occasion</i>	12	0	0	7	5
<i>on any account</i>	8	0	4	3	1
<i>by any stretch of the imagination</i>	100	4	8	60	28
<i>at any time</i>	100	9	1	86	4
<i>in any way</i>	100	0	30	68	2

**Table 7. Distribution of NPIs: medial and postverbal position, COCA sample.**

PP	Total	Initial	Medial	Postverbal	Not relevant
<i>on any occasion</i>	11	3	4	1	3
<i>on any account</i>	18	0	12	5	1
<i>by any stretch of the imagination</i>	21	0	6	10	5
<i>at any time</i>	100	14	11	71	4
<i>in any way</i>	100	0	45	53	2

**Table 8. Distribution of NPIs: medial and postverbal position, BNC sample.**

*any time* and *in any way*, we have again used a reduced sample of 100 examples. As was the case for the non-negative PPs discussed in Section 2 above, postverbal position is more easily available.

Some of the (rare) postverbal occurrences of negative PPs are illustrated in (26).

- (26) a. I judge you in no way, Eunice. (COCA 2008, Fiction, Harriet Isabella)  
 b. He really likes and appreciates a wide range of people who resemble him in no way whatsoever.<sup>5</sup> (COCA 2001, news, *The Washington Post*)

- c. The fall also produced a strong smell of methylated spirits – something repeated at no other meteorite fall. (COCA 2006, MAG, Astronomy)
- d. For a kind of light and a sweep of possibility that comes at no other time. (COCA 1979, MAG, Skiing)
- e. It showed a flash of strategic prescience that he displayed at no other moment in his military career. (BNC CLXW, non-ac-humanities-arts)
- f. Such as has been available at no other period of British history. (BNC EEW9, W-non acad, SocScience)
- g. The success of this unique element, which exists at no other German University. (COCA 1990, Acad, Armed Forces)

In preparation for the next section we need to add one ingredient to the discussion, which we have not touched upon so far: whereas negative adjunct PPs resist postverbal position, the canonical position of negative complement PPs is postverbal, see (27a). Indeed there is no medial position available for negative complement PPs, as is shown by (27b). However, the postverbal position of the negative complement PP is felt to be a marked option in comparison to encoding negation medially by means of the canonical marker of negation *n't/not*, where the corresponding postverbal PP contains an NPI, as in (27c).

- (27) a. Mary has talked **to no one**.
- b. \*Mary has **to no one** talked.
- c. Mary hasn't/not talked **to anyone**.

#### 4. WAYS OF EXPRESSING SENTENTIAL NEGATION

In this section we outline an account for the asymmetry in the distribution of negative adjunct PPs, and in particular for their strong preference for medial position. Our account explores proposals in De Clercq (2010a, 2011a, b). On one of the two derivations of postverbal adjunct PPs presented below, the processing complexity which Pullum & Huddleston (2002) associate with the postverbal negative adjunct PPs can be argued to have a syntactic basis. In this paper we do not discuss how to account for the distribution of non-negative adjunct PPs.

##### 4.1 Question tags and negative clause-typing

Ever since Klima's (1964), reversal tags or question tags as illustrated in (28) have been used as a diagnostic to determine whether a sentence is affirmative or negative (Horn 1989; McCawley 1998):<sup>6</sup>

- (28) a. John is working on a PhD, isn't he?
- b. John isn't working on a PhD, is he?

Standardly, it is proposed that a negative question tag identifies an affirmative sentence (28a) and that a positive question tag identifies a negative sentence. Let us adopt the tag test as a diagnostic to determine the polarity of the clause, focusing on sentences containing a negative PP. Informally, we will say that clauses are typed for polarity as either negative or positive. Needless to say, clause-typing for polarity ([+/-NEGATIVE]) is orthogonal to clause-typing for interrogative/declarative ([+/-WH]) since the value [+/-NEGATIVE] may combine with the value [+/-WH]. Along these lines, a sentence negated by medial *not/n't* is negative, and so is a sentence which contains medial *never*, e.g. (29a). A sentence containing a medial negative adjunct PP is compatible with a positive question tag, e.g. (29b), and hence is also 'negative' in the intended sense.

- (29) a. Mary has never talked to anyone, has she?  
 b. She had at no point talked to anyone, had she?

As discussed above, postverbal negative adjunct PPs are rare, but to the extent that they are acceptable, such sentences are only compatible with positive tags. The example in (30a) is from Pullum & Huddleston (2002), (30b) is based on Pullum & Huddleston's [24i]. We conclude that postverbal negative adjunct PPs also type the clause as negative.

- (30) a. We were friends at no time, were we?  
 b. As far as I can recall, we have purchased food at the drive-through window of a fast-food restaurant on no street in this city, have we/\*haven't we?  
 (based on Pullum & Huddleston 2002:814, ex. [24ii])

When it comes to sentences containing negative complement PPs though, the pattern of question tags is reversed for our informants. As can be seen in (31), while sentence-medial *not* induces a positive tag, the sentence with the postverbal negative complement PP *to no one* is compatible with a negative tag (see also Horn 1989:185, citing Ross 1973 for a similar example with a negative nominal complement).<sup>7</sup>

- (31) a. Mary has talked to no one, \*has she/hasn't she?  
 b. Mary hasn't/not talked to anyone, has she/\*hasn't she?

We conclude, then, that there is an argument–adjunct asymmetry: while postverbal negative adjunct PPs may be rare, to the extent that they are possible they type the clause as negative. On the other hand, we can see that postverbal negative complements do not type the clause as negative, since they are not compatible with a positive question tag.

### 4.2 Clause-typing and sentential negation

Our hypothesis is that clauses are typed for polarity: they are either positive or negative. Polarity determines the choice of question tag. In line with the cartographic approach (Rizzi 1997; Moscati 2006), we assume that polarity typing is syntactically encoded on a head in the C-domain such as Laka’s (1990) ΣP, or Progovac’s (1993, 1994) PolP. We propose that in the case of negative sentences, this head must establish a local checking relation with a negative constituent. From the distribution of the tags, we conclude that the medial negative marker *not* and the medial adverb *never* are able to license the clause-typing negative head in the C-domain and that postverbal negative PP complements cannot do so.

- (32) a. Mary hasn’t talked **to anyone**, has she?
- b. Mary has never talked **to anyone**, has she?
- c. \*Mary has talked **to no one**, has she?

We interpret the contrast in (32) as deriving from locality conditions on clause-typing. Putting this first at an intuitive level, the negation in (32c) is ‘too far’ from the C-domain to be able to type the clause as negative and hence to license the positive tag. Various implementations can be envisaged to capture these locality restrictions. In terms of Phase theory (Chomsky 2001, 2008), for instance, one might say that being contained within a lower phase (νP), the postverbal negative complement PPs cannot establish the required licensing relation with the relevant head in the C-domain.

To make this proposal more precise, let us propose that the polarity-related head in the C-domain contains an unvalued feature, [POL: \_\_\_], which has to be assigned a value through a local checking relation. In (32a) and (32b), with the medial negative markers *not* and *never*, the feature [POL: \_\_\_] in the C-domain can be valued through an AGREE relation with the interpretable negative feature on *never*.<sup>8</sup> If the C-polarity head is typed as negative, then the clause will be compatible with a positive tag.

In (32c), on the other hand, the negative quantifier *no one* in the VP-internal argument PP is contained in the νP phase and hence it is too low to be able to value the clausal polar head by an AGREE relation. We assume that in the absence of a negatively valued checker, the polarity feature of the clause is typed as positive by default and will hence not be compatible with the positive reversal tag.

- (33) a. [CP [C POL: NEG] [TP Mary has not<sub>[NEG]</sub> [νP talked to anyone]]]
- b. [CP [C POL: NEG] [TP Mary has never<sub>[NEG]</sub> [νP talked to anyone]]]
- c. [CP [C POL: \_\_\_] [TP Mary has [νP talked to no one<sub>[NEG]</sub>]]]

A final remark is in order here. Though it does not lead to a positive tag, (31a)/(33c) is still felt to be a ‘negative’ sentence due to the presence of the negative DP. For instance, like (32a) and (32b), (32c) will combine with a *neither* tag rather

than with a *so* tag.<sup>9</sup> Klima (1964) considers *neither* tags also to be a diagnostic for negativity (see also (16c) above):

- (34) a. Mary has not talked **to anyone**, and neither/\*so has Jane.  
 b. Mary has never talked **to anyone**, and neither/\*so has Jane.  
 c. Mary has talked **to no one**, and neither/\*so has Jane.

As discussed already by McCawley (1998:604–612), the reversal tag-diagnostic which we used previously and the *neither/so* tag gives different results. It is not clear to us at this point how to capture this in terms of our discussion. De Clercq (2011b) proposes that in examples such as (34c) the negation encoded in *no one* within the complement of V takes scope by virtue of its quantificational properties, in the same way that, for instance, the universal quantifier encoded in *everyone* can scope over the clause in (35). The precise implementation of this proposal would lead us too far and it also depends on the assumptions regarding the syntactic encoding of scope, see De Clercq (2011b) for one proposal. Crucial for us is that, syntactically, the postverbal *vP*-internal argument cannot establish a local checking relation with the polarity feature, which by hypothesis is in the C-domain: polarity checking is different from the operation that determines the scope of the quantifier in (35).

- (35) Mary has talked to everyone.

We tentatively assume that the *neither* tag is sensitive to the scopal/quantificational properties of the negative quantifier in a way that the reversal tags are not.

### 4.3 Clause-typing and adjunct PPs

Let us now return to the distribution of negative adjunct PPs. We have seen that the preferred position for such PPs is medial rather than postverbal. A sentence with a medial negative adjunct PP is compatible with a positive reversal tag, as shown in (36a) below, entailing that the negative PP must be able to type the clause. Pursuing our analysis, we will assume that, like the marker of negation *not* and like the medial negative adverb *never*, the medial negative adjunct PP is in a sufficiently local relation to the C-domain to value the polarity feature. We conclude from this that such PPs must not be contained within the *vP* phase. If they were, then we would not expect them to pattern with medial *not* and *never*. Depending on one's assumptions about functional structure, the negative PP might be *vP*-adjoined, as in (36b), or it might be taken to be the specifier of a medial functional projection, as in (36c), which we label FP.<sup>10</sup>

- (36) a. She had at no point talked to anyone, had she?  
 b. [CP [C POL:NEG] [TP she had [<sub>vP</sub> at no [<sub>NEG</sub>] time [<sub>vP</sub> talked to anyone]]]]  
 c. [CP [C POL:NEG] [TP she had [<sub>FP</sub> at no [<sub>NEG</sub>] time [<sub>vP</sub> talked to anyone]]]]



Postverbal negative adjunct PPs are marginal, but to the extent that they are available they were shown to be compatible with positive tags, see (16d) above, suggesting that they too type the clause. The analysis of such examples depends on one's general assumptions about the syntax of postverbal PPs (see Cinque 2004 and Belletti & Rizzi 2010 for overview of some options). If right adjunction is admitted in the theory (see Ernst 2002a, b), *at no time* in (37a) might be right-adjoined to  $\nu P$ . Hierarchically speaking, though postverbal, the PP in (37b) is outside  $\nu P$  and remains within the local checking domain of the polarity head in C. Given that, in terms of hierarchical relations, the relation between C and the postverbal adjunct in (37b) is identical to that between C and the medial adjunct PP in (35b, c), this approach does not offer any insight into the perceived degradation of negative adjunct PPs in postverbal position.

- (37) a. She had talked to them at no time, had she?
- b. [<sub>CP</sub> [<sub>C</sub> POL:NEG] [<sub>TP</sub> she had [ <sub>$\nu P$</sub>  [ <sub>$\nu P$</sub>  talked to them] at no<sub>[NEG]</sub> time]]]

On an anti-symmetric/cartographic view in which right adjunction is not available (Cinque 2004), one might propose that the negative PP occupies the specifier position of a functional projection, FP (as in (37b')), and that its postverbal position is derived by leftward movement of the  $\nu P$  to a higher position. The movement could arguably be triggered by the need for the negative PP to receive focal stress (see Jayaseelan 2008, 2010).

- (37) b'. [<sub>CP</sub> [<sub>C</sub> POL:NEG] [<sub>TP</sub> she had  
[[ <sub>$\nu P$</sub>  talked to them] [<sub>FP</sub> at no<sub>[NEG]</sub> time [ <sub>$\nu P$</sub>  ~~talked to them~~]]]]]

Assuming that the projection hosting the PP and the projection hosting the fronted  $\nu P$  do not themselves constitute phases, the polarity head in C can continue to establish a local checking relation with the postverbal negative PP in (37c). On a more speculative note, we add here that the representation in (37b') may contribute to explaining the observation that the postverbal position of the negative PP in (37a) is degraded: the fronting of the  $\nu P$  to a position c-commanding the negative PP might be argued to create a weak intervention effect for the relation between C and the negative PP.

A correct prediction of our account is that a negative DP in the canonical subject position always types the clause as negative: (38a) is only compatible with a positive tag. This is so because the negative feature on *no one* is in a local relation with the polarity feature in C:

- (38) a. No one talked to the police about any crime, did they?
- b. [<sub>CP</sub> [<sub>C</sub> POL:NEG] [<sub>TP</sub> no one<sub>[NEG]</sub> [ <sub>$\nu P$</sub>  talked to the police about any crime]]]

The proposal developed here, elaborating on De Clercq's work, also has further implications for the representation of clause structure and in particular for the

demarcation of phases. Passive sentences with a postverbal negative *by* phrase take a negative question tag (39).

(39) The book was adapted **by no one**, wasn't it?

In terms of our account this entails that, as is the case for postverbal arguments, the negative component *no one* cannot value the polarity feature in the C-domain. This implies that, unlike postverbal adjuncts, the *by* phrase must be contained within a phase. We do not pursue this issue here as it hinges, among other things, on the analysis of passives (see Collins 2005 for a relevant analysis).

## 5. CONCLUSION

This paper first challenges the empirical claim often made in the generative literature that medial adjunct PPs are ungrammatical in English. On the basis of a corpus study we show that (i) medial non-negative adjunct PPs are attested both in American and in British English, though with low frequency, and (ii) that medial negative adjunct PPs strongly outnumber postverbal negative adjunct PPs. We conclude that any empirical generalizations to the effect that medial adjunct PPs are always unacceptable are ill-founded.

In the second part of the paper we explore the syntax of sentential negation. The distribution of question tags reveals that among negative PPs, postverbal argument PPs pattern differently from postverbal adjunct PPs. We account for this argument–adjunct asymmetry in terms of a clause-typing account of sentential polarity, which crucially postulates a licensing relation between a polarity head in the C-domain and a constituent which encodes negation, and we pursue some of the consequences of this account.

## ACKNOWLEDGEMENTS

Karen De Clercq and Liliane Haegeman's research is part of the FWO project 2009-Odyseus-Haegeman-G091409. We thank Rachel Nye, Geoff Pullum and Barbara Ürögdi for help with English judgments. Part of this material was presented at the LAGB 2011 meeting in Manchester. We thank David Adger, Doug Arnold, Joan Maling and Gary Thoms for their comments. We thank three anonymous reviewers from the *Nordic Journal of Linguistics*, Rachel Nye and Neil Smith for comments on an earlier version of this paper. Needless to say all the usual disclaimers hold.

## NOTES

1. The use of the term 'negative quantifier' to refer to *no* is a simplification. We do not wish to commit ourselves here to its exact nature. See Haegeman & Lohndal (2010) for discussion of the nature of such negative items.

2. An anonymous reviewer claims that (10b) is acceptable as an example of constituent negation. We disagree, if *at no time* is intended to encode constituent negation and hence lacks sentential scope the example will be ungrammatical because the negative polarity item *any* in the complement of the verb is not licensed. Our informants judge (10b) as unacceptable.
3. There is some speaker variation in the acceptance rate of (16a) and also with respect to (18) and (30) below, but overall our informants' judgements follow the tendencies reported in Pullum & Huddleston (2002).
4. Thanks to Geoff Pullum for generous help with these data.
5. Neil Smith (p.c) and Barbara Ürögdi (p.c) point out that focal stress makes postverbal PPs more acceptable. For discussion of focal stress see also the discussion of text example (36) in Section 4.
6. On the use of question tags see also the discussion in Horn (1989:184–189). Observe that there are two kind of tags: (i) question tags or reversal tags (McCawley 1988) and (ii) reduplicative tags or same-way tags (Swan 2005). Question tags reverse the polarity of the matrix clause and usually check for information. Reduplicative tags reduplicate the polarity of the matrix clause and signal the speaker's conclusion by inference, or his sarcastic suspicion (Quirk et al. 1985:812). Reduplicative tags are only possible with affirmative sentences. Sentences with reduplicative tags can typically be preceded by *oh* or *so* (Quirk et al. 1985:810–813). It is important to keep the tags apart. In the literature, confusing these tags has led to the wrong conclusions about which polarity certain quantifiers give rise to (De Clercq 2011b, footnote 2). In our paper, we only consider question tags.
7. An anonymous reviewer points out that neither the positive or the negative tag is in fact fully grammatical with the 'negative' argument PP. This may well be true but the fact is that our informants consistently prefer the negative tag over the positive one. Nevertheless, speaker variation should indeed be taken into account. Experimental research would be useful to get a clearer picture on speakers' preferences for certain tags. Crucial for the present analysis is the fact (i) that there is a clear distinction between negative PP-adjunctions that always give rise to positive question tags and negative PP-complements that preferentially lead to negative question tags, and (ii) that negative question tags are for many speakers definitely an option with negative objects (not only PP-objects) unlike with negative subjects, as also reported in McCawley (1998:507):
 

(i) Fred talked to no one, didn't he? (McCawley 1998:507)
8. We leave open the possibility that TP also contains a polarity-related projection such as NegP or PolP. See Haegeman & Zanuttini (1991, 1996), Haegeman (1995), Smith & Cormack (1998), Christensen (2005, 2008), Moscati (2006, 2011), Tubau (2008) and Haegeman & Lohndal (2010) for discussion of the representation of sentential negation
9. Thanks to an anonymous reviewer for bringing this point to our attention.
10. We label this projection FP, leaving it intentionally open what its specific nature is. One option is to identify FP with NegP, bearing in mind that NegP contributes to, but is not the sole expression of, sentential negation, which is encoded at the CP level (see also note 8 above). One might also label the projection PolP and assume then that the negative PP will determine a negative value for the Pol head.

One important question that remains to be clarified before the identity of FP can be established is whether there is a unique position in the English middlefield that hosts negative PPs and negatively quantified adverbs (*never*) or whether more than one such projection should be envisaged (see Zanuttini 1997 on Italian and Cinque (1999: Chapter 4) for the hypothesis that each adverbial projection may be associated with a negative

layer). Relevant for this issue is the fact that middlefield constituents that encode negation do not all pattern alike. For instance, though both *not* and *never* occur in the middlefield, the former requires *do*-insertion and the latter does not. Similar contrasts are observed for French where *pas* 'not' patterns differently from *plus* 'no more', as shown in Belletti (1990). For negative constituents in Italian see especially Zanuttini (1997).

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