

Medial position adjunct PPs in English and the encoding of sentential negation

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1. Introduction: aim and organization of the paper

The starting point of this paper is a fairly widespread claim in the formal literature to the effect that sentence-medial PPs are ungrammatical. We first will elaborate on Haegeman (2002), who challenges this claim and we will show on the basis of attested data and corpus data that sentence-medial PPs are grammatical, though perhaps relatively infrequent. We will then proceed to discuss a context in which medial position seems to be preferable to final position, namely that in which a PP containing a negative component takes sentential scope.

In the second part of the paper we examine the distribution of such negative PPs in more detail and we focus on the observation that while non-negative PPs favour final position over medial position, negative PPs favour medial position over final position.

We take these distributional data to provide evidence that there is a canonical medial position dedicated to the encoding of sentential negation and that the negative PPs in medial position directly encode sentential negation. We further show that though the distribution of negative PPs in English is reminiscent of the distribution of negative words in the other Germanic languages, for which we use West Flemish and Norwegian as our examples, the similarity is only partial in that while final position for the negative PP adjuncts is highly degraded in some clause types in English, but remains acceptable in others, it is categorically excluded in the other Germanic languages. This leads us to speculate that whereas the degraded status of the final negative constituent in Germanic is to be attributed to a grammatical factor, the degraded status of PP adjuncts in English should perhaps be attributed to an effect of increased processing cost (cf. Huddleston and Pullum 2002).

The paper is organized as follows: In section 2 we examine the claim in the formal literature according to which medial PPs are ungrammatical in English and we show that this claim is ill founded: though rare, medial position is available for adjunct PPs. In section 3 we show that negative PPs resist final position and prefer medial position. In section 4 we show that the degraded status of sentence-final negative PPs is

not absolute and we examine some of the syntactic factors that facilitate final position. The strong preference in English for mid position for the negative PP to the near exclusion of final positions is reminiscent of the constraints on the distribution of negative constituents in the other Germanic languages discussed in the literature. However, in section 5 we show that while sentence-final negative expressions may give rise to different degrees of acceptability in English, this is not the case for the Germanic languages in which negative constituents with sentential scope must attain medial position. In section 6 we return to sentence-medial PPs in English and examine their position relative to that of the epistemic modal *probably*. While medial non-negative PPs may precede or follow that adverb, medial negative PPs follow the adverb, which is in line with them functioning as expressions of sentential negation. Section 7 concludes the paper and raises points for future research.

2. Medial position for circumstantial PPs in English

Adverbial adjuncts in English basically occupy three positions in the clause: (i) initial position (1a, 2a), (ii) medial position (1b, 2b), (iii) final position (1c, 2d). (1) illustrates the patterns in a sentence with only a lexical verb; (2) illustrates the patterns in a sentence with an auxiliary and a lexical verb:

- (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 has recently left for London.
 c. He has left for London recently.

When it comes to PP adjuncts the focus of most discussions has generally been on PPs that are either initial (3,4a) or final (3,4b), with little or no discussion of medial PPs (3c,4c):

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

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).

See also Cinque (2004: 699-700).

Haumann (2007: 206-207) gives the judgements in (7) (her (247)):

- (7)
- a. *BT will in March begin to market...
 - b. *Everything is at night blurry, especially indoors.
 - c. *He in the morning turned to his wife.
 - d. *The coroner on Monday said that...

2.2. Medial position adjunct PPs are grammatical

The judgements cited in section 2.1., and the authors' claims that all PPs are ruled out in medial positions, do not reflect the empirical data and indeed, various authors have discussed the possibility of PPs occurring in medial position. In the next section we illustrate some such discussions.

2.2.1. Attested data

Like adverbial adjuncts, PP adjuncts may appear in sentence-medial position, and are rather frequently attested in for instance journalistic prose. Relevant examples are provided in (8), from Haegeman (2002), and in (9). The relevant PPs, which are bold faced for ease of retrieval, occur both in sentences with auxiliaries and in those without, and, as shown in (9i, j), they also appear in non-finite clauses:

- (8)
- a. More poignantly, Thompson **in one letter** talks of his relationship with a girl he met in the secure unit. (*Sunday Times*; February 25, 2001, p. 2, col. 5)

- b. 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. (*Guardian*, August 13, 2001, p. 8, col. 4)
 - c. The fact is that this company **between February 1997 and April 1998** failed to carry out any of the most important parts of its duty. (*Guardian*, November 30, 2001, p. 5, col. 7)
 - d. Those organisations **last year in the USA** received 60% of the research grants handed out by pharmaceutical companies. (*Guardian*, September 10, 2001, p. 2, col. 6)
 - e. The strength and charm of his narratives have **in the past** relied to a considerable extent on the first person presence of Lewis himself (*Observer*, July 22, 2001, Review, p. 3, col. 2)
 - f. Mr McCartney said the party would **in the final week** concentrate on bread and butter issues that appeal to its core vote, including child benefit, the working families tax credit, the New Deal and the minimum wage. (*Guardian*, May 31, 2001, p. 5, col. 7)
- (9)
- a. Clare Short **in her diary** tellingly recalls how Blair said in 1994 that ‘he thought I could be a very good minister if I were able to come to terms with questions of expediency that I would have to face. (*Independent on Sunday*, 19.3.6. page 33 col 3)
 - b. More poignantly, Thompson **in one letter** talks of his relationship with a girl he met in the secure unit. (*Sunday Times*; 25.2.01, page 2, col 5)
 - c. Prisons **for a number of years** have suffered from such severe overcrowding that it has prevented the Prison Service and the other agencies of the criminal justice service being able to take the action which is known to be necessary if there is to be a reduction in offending. (*Guardian* 17.3.8 page 16 col 1)
 - d. They added that Mr Blunkett **on Monday** had said he would like to remain home secretary after the election, a point reported in Tuesday’s papers. (*Guardian*, 1.7.4 page 1, col 8)
 - e. Cadbury **in a decade’s time** will be a ghost of itself. (*Observer* 29.11.9, page 24 col 3)

- f. The bankers will threaten to go elsewhere but the rest of us can **with stony faces** respond that we don't need all their services. (*Guardian* 28.8.9 page 23 col 4)
- g. Alan Milburn, the Secretary of State for Health, has only confused the issue by declaring, first, that waiting times will be targeted rather than the numbers waiting, and second, that clinical priority will **in future** decide who gets treated first. (*Independent*, 27.7.1, 3, col 1)
- h. The addition of Tim Burton's *Alice in Wonderland* creates the remarkable statistic that films made by directors who might **in earlier times** have been restricted to the art house circuit took almost \$2bn last year. (*Guardian* 3.1.11, page 20 col 3)
- i. It is fine, keep going, but then we have to **after a day or two** just leave this to the committee. (*Guardian*, 20.8.3, page 4, col 6)
- j. I mean, you can understand people **a year ago** saying, we've got this global financial recession, the government is taking action, but we need to know that these actions are working. (*Observer* 17.2.10 p. 8 col 2)

2.2.2. *The secondary literature*

Not all authors share the view that medial PPs are ungrammatical. For instance, McCawley (1988:201) confirms the general tendency for PPs to resist medial position and provides the judgements in (10):

- (10) 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.

But McCawley also points out:

there actually are some types of [PPs] that are quite normal when placed before a [V']:

- [11] a. John has for many years been a Republican.
- b. John has on many occasions voted for Republicans.

I don't know of any neat way to distinguish between these [PPs] and the ones in [11]. (McCawley 1988:206, note 23).

Ernst (2002: 338) provides the following examples with a temporal adjunct in medial position:

- (12) a. The committee {at this time/now/presently} has already gone over the reports. (his 7.73)

In a later discussion of co-occurring adjuncts he also provides:

- (12) b. George deliberately had at that time gone back to an abstract style of painting. (Ernst 2002: 369: his 7.186)

Concerning such examples, he notes

Pairs with loc-time adjuncts in the Aux Range are sometimes hard to find in English due to weight constraints. On the theory assumed here, placing them in sentence-final position, as in [13], allows adjunction at the same point as in (7.186b).'

[13] George deliberately had gone back to abstract painting at that time.
(Ernst 2002: 504: note 40)

In the more descriptive literature, sentence-medial PPs are also not presented as generally degraded. In their discussion of the distribution of adverbial adjuncts, Quirk et al. (1985) primarily focus on the distribution of adverbs but they do exemplify medial PPs. They provide the data in (14), in which the temporal PP *by then* occupies various positions corresponding to our 'medial position' (Quirk et al 1985: 492):

- (14) a. The book *by then* must have been placed on the shelf
b. The book must *by then* have been placed on the shelf
c. The book must have *by then* been placed on the shelf

- d. The book must have been *by then* placed on the shelf.

They signal the restriction on the weight of the element in medial position:

Only for a heavily special effect would a clause or lengthy prepositional phrase be at M[edial] (and it would then be clearly marked off by commas in writing, or by prosody in speech):

You have, *though you may say it was accidental*, ruined this man's chances of a happy life.

She had not, *despite years of anxious endeavour*, succeeded in living down that initial mistake.

(Quirk et al 492-3)

In a later discussion of positions of adjuncts, they point out:

A further indication of the greater mobility of sentence adjuncts is that – in contrast to predication adjuncts- they can usually appear at *M* without giving any impression of radical word-order dislocation (1985: 514):

- [15] She had *for thirty years* lived *in poverty*.
 ?*She had *in poverty* lived *for thirty years*.
 I had *by searching carefully* found the letter *in the kitchen*.
 (?) I had – *in the kitchen*- found the letter *by searching carefully*.

With respect to place adjuncts they also add: 'Speakers sometimes put position adjuncts in *M*' (1985: 521) and give (among others) the following example with a PP:

- (16) The poor had not in this country been left destitute.

2.3. Medial position adjunct PPs are rare

While the claim that PPs are ungrammatical in medial position is definitely incorrect, the intuition that they are not as frequent as adverbs in the same position is correct.

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 (cf. their description p. 489). The tables below are based on their table and summarise the relative distribution in percentages of PPs and of adverbs at initial, medial and final position in the sample. Our table is a simplification of their table 8.23 in that we have collapsed all their medial positions (illustrated in (14) above) into one.

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

	Total PP	Initial	Medial	End
Whole sample	4414	9,5	2,5	88
Spoken	2063	6	1	93
Written	2351	13	3	85

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

	Total AdvP	Initial	Medial	End
Whole sample	1063 ⁴	16	47	47
Spoken	608	17,5	44,5	38
Written	462	16,6	48,5	35

In contrast with adverbs, PPs are clearly seen to be rare in medial position. We point out that the attested examples given in Haegeman (2002) in (8) and those added in (9) above are all from written sources. But, as can be seen from tables 1 and 2, both in writing and in speech sentence-medial PPs are rare in the sample studied by Quirk et al. (1985).

The relative rarity of adjunct PPs in medial position is also pointed out by Huddleston and Pullum (2002: 780) who invoke among other things the heaviness constraint alluded to above:

The choice of position for an adjunct is strongly influenced by (a) its internal form; and (b) its semantic category. Central [our ‘medial’] position disfavors long or heavy adjuncts. Thus (leaving aside the case of prosodically detached interpolations) adjuncts consisting of or containing a subordinate clause do not

occur in central position, and PPs or NPs are for the most part less likely in this position than AdvPs. (Huddleston and Pullum 2002: 780)

Huddleston and Pullum's exemplification of central, i.e. medial, position adjuncts (2002: 779-784) contains no examples of PPs.

That PPs are not very frequent in medial position is also discussed in some pedagogically oriented grammars. For instance, the Collins COBUILD grammar states: 'however, this position is much more common with adverbs than with prepositional phrases' (1990: 283).

A pilot search of some of the corpus material available on line confirmed that sentence-medial PPs are certainly attested both in British and in American varieties of English. For this study we have used the American COCA corpus and the British BNC corpus at <http://corpus.byu.edu/coca/>. For those PPs that occurred very frequently in the corpora (*at some time, at this time, at that time, on many occasions, on those occasions, in this way*), we have based ourselves on a sample of the first 100 entries. Obviously, the tables in no way represent the full and final picture of the distribution of these PPs, nor is our paper intended to offer a statistical analysis of these data, but they suffice to show that medial temporal PPs, though rarer than final temporal PPs, are not excluded. We also observe some interesting variation across the various PPs, but we leave this for future study.⁵

Table 3: Pilot study: distribution of PPs in medial position: COCA-sample⁶

PP	Total	Initial	Medial	Final
<i>At one time</i>	76	27	13	36
<i>At a time</i>	54 ⁷	9	0	45
<i>At some time</i>	100	13	13	74
<i>At this time</i>	97	24	6	67
<i>At that time</i>	100	35	10	54
<i>On many occasions</i>	97	28	5	64
<i>On three occasions</i>	86 ⁸	18	3	63
<i>On those occasions</i>	94	49	3	42
<i>In this way</i>	94	52	3	39

Table 4: Pilot study: distribution of PPs in medial position: BNC-sample⁹

PP	Total	Initial	Medial	Final
<i>At one time</i>	91	36	29	26
<i>At a time</i>	64	16	2	46
<i>At some time</i>	99	12	17	70
<i>At this time</i>	98	24	6	68
<i>At that time</i>	100	27	14	59
<i>On many occasions</i>	97	23	3	72
<i>On three occasions</i>	63 ¹⁰	21	5	35
<i>On those occasions</i>	29 ¹¹	8	1	20
<i>In this way</i>	98	26	2	71

We conclude that while medial PPs are systematically rarer than initial PPs or final PPs – though there are variations to be noted – and while there are no doubt certain

restrictions on which PPs do occur in medial-position, the claim in some of the generative literature that medial PPs are ungrammatical is ill founded.

We will not pursue the fine-grained syntax of such PPs, in this paper nor will we explore why some PPs do tend to resist medial position (*at a time*) more than others (*at one time*), though, of course, this would be of independent interest. Rather we will show that a subset of PP adjuncts are actually degraded or unacceptable in final position and medial position becomes not just a possible but rather a preferred position.

3. Sentential negation and adjunct PPs¹²

3.1. Sentential negation in English

It is well known that in English sentential negation may be expressed in a number of different ways, the most common of which are illustrated in (17):

- (17) 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.

Typically, sentential negation is expressed by means of the particle *not* (or its contracted form *n't*) adjacent to the finite auxiliary. Alternatively, an argument of the verb realized as a negative nominal constituent, such as *no one* in (17b) or (17c) or as a PP containing a negative nominal as in (17d) can express sentential negation. Finally, in (17e) and (17f) a negative adverb (*never*) expresses sentential negation. In (17e) the adverb occupies medial position and in (17f) it occupies an initial position, triggering subject-auxiliary inversion (henceforth SAI) (see Rudanko 1980, Haegeman 2000, Sobin 2003). We won't go into the properties of the negative sentences in (17a-f) here. Crucially for our purposes, in all cases the negative expression has sentential scope and can license the negatively polar *any* within its scope domain.

In this paper we focus on the distribution of negative adjunct PPs with sentential scope. One pattern available for such PPs is illustrated in (18a):

- (18) a. At no time had the police talked to any witnesses.

In (18a) the temporal PP *at no time* occupies an initial position, the negative element *no* contained inside it has sentential scope; witness the fact that it licenses the negative polarity item *any* in the PP complement of the verb. Observe that in order to attain sentential scope the negative PP must trigger SAI:

- (18) b. *At no time the police had talked to any witnesses.

In this respect the negative PP is different from its non-negative counterpart, which does not, and cannot, trigger SAI:

- (19) a. At that time the police had interviewed the witnesses.
 b. *At that time had the police interviewed the witnesses.

Like negative adverbs such as *never* (17e), negative adjunct PPs with sentential scope may also occur in sentence-medial position.

- (18) c. The police had at no time talked to any of the witnesses.

Though we will by and large focus on temporal PPs here, other adjunct PPs in medial position can also express sentential negation:

- (18) d. The FQ at no level forms a constituent with the DP it modifies. (Handout GIST, 13.01.2011)¹³

Again examples such as (18c) and (18d) challenge those statements reported in section 2.1. according to which mid-position PPs are ungrammatical. We will go into these patterns in more detail here.

3.2. *Negative adjunct PPs and the expression of sentential negation*

3.2.1. *An asymmetry (De Clercq 2010a)*

Negative sentences such as the pair in (20a,b) have been discussed extensively in the literature. In (20a), without SAI, the negative quantifier¹⁴ contained in the PP *in no clothes* does not take sentential scope; in (20b), with SAI, the negative PP has sentential scope. For some accounts see among others, Haegeman (2002), Sobin (2003) and Haumann (2007) and the references cited there.

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

In the relevant literature little attention is being paid to sentence-final negative PPs. Haumann (2007:230) points out that when in sentence-final position (21a), the negative PP *in no clothes* cannot take sentential scope. However, this is apparently not a general property of sentence-final negative adjunct PPs: she gives (21b) as grammatical (Haumann 2007: 230). In this example, sentence-final *on no account* encodes sentential negation

- (21) a. Mary looks attractive in no clothes. (Haumann's (129a))
 b. She will go there on no account, not even with John.¹⁵ (Haumann's (130b))

Similarly, Kato (2002) presents (22) as an instance of sentential negation expressed by a sentence-final negative PP:

- (22) He will visit there on no account. (Kato 2002: 67 (14a))

However, the status of final negative adjunct PPs with sentential scope is not so clear. According to the informants questioned by De Clercq (2010a), examples such as (21) and (22) are marginal: they are considered highly marked, and are often judged outright unacceptable. De Clercq (2010a)¹⁶ reports the judgements in (23) and in (24). As (23) shows, *on no account* was considered unacceptable in final position by her informants. The judgments reported for (24) show that while a non-negative PP such as *at that time*

may be medial (24a) or final (24b), most speakers reject the negative analogue in final position (24c) while continuing to accept medial position.

- (23) a. *?You should move to Paris on no account. (De Clercq 2010a: 234)
 b. You should on no account move to Paris.
 c. On no account should you move to Paris.
- (24) a. The police had at that time interviewed the witnesses.
 b. The police had interviewed the witnesses at that time.
 c. */??The police had talked to the witnesses at no time.
 d. The police had at no time talked to the witnesses.

The generalisation seems to be that even though non-negative PPs in medial position are rarer than such PPs in final or initial position, the corresponding negative PPs with sentential scope are highly marked or even unacceptable in final position and such PPs strongly favour medial position (or initial position). Additional judgements along the same lines reported in De Clercq (2010a) are provided in (25) and (26):

- (25) a. *?She should reveal the secret at no time. (De Clercq 2010a: 234)
 b. *? You should move to Paris on no account.
 c. *They would reveal the problem under no circumstances.
- (26) a. She should at no time reveal the secret. (De Clercq 2010a: 234)
 b. You should on no account move to Paris.
 c. They would under no circumstances reveal the problem.

An alternative pattern to the final position of the negative PP is that in which sentential negation is expressed by the medial canonical marker of sentential negation *n't/ not* and in which the negative polarity item (NPI) *any* replaces the negative quantifier *no* in the final PP. In this variant, the final position of the PP containing the NPI is unmarked. The distributional difference between negative PPs and those containing an NPI may have implications for the debate concerning the syntactic status of NPIs in relation to that of negative words, an issue which we do not go into here.

- (27) a. She should not reveal the secret at any time. (De Clercq 2010b)
 b. You should not move to Paris on any account.

- c. They would not reveal the problem under any circumstances.

3.2.2. Secondary literature

The contrast between medial position and final position of negative PPs highlighted by De Clercq (2010a) is not usually discussed in any detailed way, neither in the formal literature nor in the more descriptive literature or in pedagogical grammars of English. However, some discussions and exemplifications in the traditional descriptive literature bear on the observed asymmetry. In this section we exemplify some such discussions.

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

An examination of the actual sentences from the sample reveals that those sentences that had S[ynthetic] negation in PrepPhrases were to a large extent fairly fixed collocations. Cf. [28], all *be*-sentences with PrepPhrases functioning as adverbials:

- [28] 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.

The remaining *be* sentences, the PrepPhrases function as complements, also have quasi-collocational status. (Tottie 1983: 52)

Observe that in all three examples cited, the negative adjunct PP occurs in medial position and in particular, in spite of its relative weight, the PP *by no stretch of the imagination* still occupies medial position. In the examples given above, the medial negative PP is not set off prosodically. On the contrary, inserting commas in Tottie's (28c), for instance, would mean that the negative PP cannot scope over the clause:

- (28) d. *It is, *by no stretch of the imagination*, a happy choice.

We also speculate that final position would be felt to be degraded for all three examples. As will be shown in the next section, a pilot search in the available corpora confirms that negative PPs with sentential scope are extremely rare sentence-finally both in American and in British English.

In their discussion of negative markers in English, Quirk et al. (1985: 783) systematically compare a positive sentence with its negative alternatives. Highly telling in the light of our discussion is the following set:

- (29) 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: (8))

Observe that while in Quirk et al's positive sentence (29a) the adverb *somehow* is in final position, the parallel PP containing an NPI and the negative PP containing the negative quantifier are located in medial position (29b, 29d). Quirk et al. do not comment on this shift in position.¹⁷

Huddleston and Pullum (2002: chapter 9) include final negative PP adjuncts in their discussion. As an instance of a non-verbal¹⁸ expression of sentential negation they provide (30), their ([5ii]) (2002: 789):

- (30) a. We were friends at no time.

Using the standard tests to detect negativity (cf. Klima 1964, McCawley 1998², Haegeman 2000, De Clercq 2010a), the authors use this example to demonstrate that a sentence-final negative constituent can take sentential scope:

- (30) b. We were friends at no time, not even when we were at school.
 (Huddleston and Pullum 2002: 789: their [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.

They say ‘The tests show clearly that *We were friends at no time* has clausal negation’ (2002: 789). They also give the variant in (30f) with sentential negation expressed by *n’t* in mid position and an NPI in final position:

- (30) f. We weren’t friends at any time.

Yet, sentence-final position of the negative PP *at no time* is not the unmarked pattern. As we will see in section 4, neither the BNC corpus nor COCA display any instances of *at no time* in final position.¹⁹ Other negative adjunct PPs too will be shown to occur extremely rarely in final position.

Huddleston and Pullum (2002) distinguish ‘verbal’ negation from ‘non-verbal’ negation. Simplifying their discussion, ‘verbal negation’ is expressed by medial *n’t* or *not* associated with an auxiliary. (31) reproduces some of their examples.

Negation of a clause is commonly marked on or adjacent to the verb of that clause, and we call that verbal negation. (Huddleston and Pullum 2002: 799)

- (31) a. Kim will not be here later on.
 b. Kim won’t be here later on.
 c. Kim did not wave to us.
 d. Kim didn’t wave to us.
 e. It’s vital that he not be told (Huddleston and Pullum 2002: 803: (10ib))
 f. Not locking the door is unwise. (Huddleston and Pullum 2002: 803: (10iib))

One might reinterpret their discussion to mean that, associated with the verb, there is a clause-medial canonical position for the expression of sentential negation and that *n’t* or *not* spells out exactly that position. We do not take a stand on the exact locus of the encoding of negation here: in the formal literature, this position is identified as NegP or PolP (Kayne 1989, Pollock 1989, Haegeman and Zanuttini 1991, Zeijlstra 2004 *etc*).

Non-verbal sentential negation is 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*). With respect to the distribution of non-verbal expressions of negation,

Huddleston and Pullum (2002: 814) discuss the (weak) contrasts in (32) in which a sentence containing ‘verbal negation’ expressed by *not* in combination with an adjunct PP containing an NPI in final position is felt to be less marked than a sentence containing merely an adjunct containing a negative constituent:

- (32) a. I am not satisfied with the proposal you have put to me in any way.
 b. ? I am satisfied with the proposal you have put to me in no way.
 (Huddleston and Pullum (2002: 814: [24i])
 c. 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.
 d. ?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.
 (Huddleston and Pullum (2002: 814: [24ii])

The authors explicitly do not attribute the degraded status of (32b) and (32d) to the grammar as such. As shown in the extract below, they suggest an account 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. (Huddleston and Pullum 2002: 814)

To complete this point, observe, however, that though the authors themselves do not pursue this, their description of the contrast in (32a-d) allows one to expect that medial position will be preferred for the negative PP: when medial, the PP will be located at or close to the position of the verbal negator. (32b) and (32d) are improved if the negative PP is placed in medial position.

- (32) e. I am in no way satisfied with the proposal you have put to me.
 f. 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.²⁰

The contrast illustrated in (32a-d) is parallel to that observed by De Clercq (2010a): sentence-final negative PPs are more marked than those in medial position. In the next section we will examine to what extent De Clercq's observations and those in Huddleston and Pullum are reflected in the corpora we have been using.

3.3. *The distribution of negative PP adjuncts*

In this section we will consider the distribution of negative PP adjuncts in the corpora of English examined before. Two findings will follow from our analysis.

First, the data will reveal a strong contrast between non-negative PPs, which, though available, were seen to be relatively rare in medial position, and negative PPs, which are comparatively more frequent in medial position. Given this distribution the data offer additional support for Haegeman's claim (2002) that PP adjuncts are not ungrammatical in medial position.

A second point emerges from our research. While the data do not fully support De Clercq's (2010a) view that (some²¹) sentence-final negative adjunct PPs are ungrammatical, it remains true that such PPs are extremely rare and that negative PPs are overwhelmingly found in initial or medial position.

As before, we have used the COCA, the BNC, and we have supplemented these corpora with the ICE-GB corpus. We have examined the distribution of the negative PPs *at no time*, *on no account*, *by no stretch of the imagination*, *on no occasion*, *in no event*, *in no way* and *at no other N*. In the next section we report our findings.

3.3.1. COCA

Table 5 summarizes 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* (cf. (34e,f,g) and *in no way*). We underline here that the figures below merely constitute the results of a pilot study in a relatively restricted sample of data and we hope to do more extensive corpus work in future work.

Because the PP *in no way* is illustrated in Quirk et al (1985) and it is also explicitly discussed in Huddleston and Pullum (2004) we decided to pay specific attention to its distribution. The PP is much more frequently attested than the other PPs we have investigated for which we checked all occurrences. In COCA there are 1337 occurrences of *in no way*. As will be seen presently, there are 501 in BNC. Even then

only 15 instances were final in COCA (and –as we’ll see presently -11 were final in BNC).

Table 5: Distribution of negative PPs in COCA

PP	Total	Initial	Medial	Final
<i>At no time</i>	332	308	21	0
<i>On no account</i>	22	11	11	0
<i>By no stretch of the imagination</i>	10	6	4	0
<i>On no occasion</i>	3	2	0	1 ²²
<i>In no event</i>	9	9	0	0
<i>At no other N</i>	31	23	0	2
<i>In no way</i>	1337	174	1096	15

Final occurrences of negative PPs are illustrated in (34). We return to examples such as (34d), (34e) and (34f) with passive and unaccusative predicates in section 4.1.

- (34) 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. (COCA 2001: news, *Washington Post*)
 c. the sight of me in those woods angered him in no way. (COC 1979, Fiction: *Arkansas review*)
 d. The fall also produced a strong smell of methylated spirits - something repeated at no other meteorite fall. (COCA 2006: Mag, astronomy)
 e. For a kind of light and a sweep of possibility that comes at no other time. (COCA 1979, MAG, Skiing)
 f. the success of this unique element, which exists at no other German University (COCA 1990, Acad, Armed Forces)²³.

The extremely low frequency of final position for these negative PPs is striking and it sets them off sharply from non-negative PP adjuncts, which, as shown in Table 3, readily appear in final position.

In Table 6 below, we repeat the relevant figures for medial and final position of non-negative PPs, which were the focus of our discussion, for ease of comparison. We have also examined the position of the corresponding PPs containing an NPI: *at any time*, *under any circumstances*, *on any account* and *on any occasion*. For the first two of these and for *any way*, we have again used a reduced sample of 100 examples. Again our table below is not trying to provide an exhaustive overview of PP positions, but the aim is to highlight the relative frequency of medial and final positions.

Table 6: distribution of non-negative PPs: medial and final position: COCA

PP	Total	Medial	Final
<i>At one time</i>	76	13	36
<i>At a time</i>	54	0	45
<i>At some time</i>	100	13	74
<i>At this time</i>	97	6	67
<i>At that time</i>	100	10	54
<i>On many occasions</i>	97	5	64
<i>On three occasions</i>	86	3	63
<i>On those occasions</i>	94	3	42
<i>In this way</i>	94	3	39
<i>At any time</i>	97	2	86
<i>On any account</i>	8	4	3
<i>By any stretch of the imagination</i>	109	14	79
<i>On any occasion</i>	9	0	7

<i>In any way</i>	100	30	68
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Though additional corpus study would be useful in order to assess nature of the variation in positions, we do not pursue this here, but we take it that the data from COCA summarized above corroborate De Clercq's (2010a) finding that there is a sharp asymmetry between negative and non-negative PPs with respect to the availability of final position.

3.2.2. BNC

The BNC data give us a similar picture as those drawn from COCA, with a sharp asymmetry between negative and non-negative PPs. In Table 7 we provide the figures for the distribution of 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* (cf. 35c,d) and *in no way*. In Table 8 we reproduce the relevant figures from table 4, with the totals for medial and final position and we add the figures for the PPs with NPIs

Table 7: distribution of negative PPs in BNC

PP	Total	Initial (with inversion)	Medial	Final
<i>At no time</i>	126 ²⁴	107	17	0
<i>On no account</i>	83	49	34	0
<i>By no stretch of the imagination</i>	14	9	5	0
<i>On no occasion</i>	3	2/3?	1/0? ²⁵	
<i>In no event</i>	0	0	0	0
<i>At no other N</i>	9	6	0	2
<i>In no way</i>	501	63	433	11

Table 8: distribution of non-negative PPs: medial and final position, BNC

PP	Total	Medial	Final
<i>At one time</i>	91	29	26
<i>At a time</i>	64	2	46
<i>At some time</i>	99	17	70
<i>At this time</i>	98	6	68
<i>At that time</i>	100	14	59
<i>On many occasions</i>	97	3	72
<i>On those occasions</i>	29	1	20
<i>On three occasions</i>	63	5	35
<i>In this way</i>	98	2	71
<i>At any time</i>	97	11	72
<i>On any account</i>	17	12	5
<i>By any stretch of the imagination</i>	21 ²⁶	6	10
<i>On any occasion</i>	9	4	1
<i>In any way</i>	100	45	53

Once again there is a clear contrast between negative and non-negative PPs with respect to their distribution. While final position is not completely excluded, it is rare for negative PPs. A few examples are given in (35).

- (35) a. Does my hon. Friend agree that any extra tax on the self-employed without benefits in return would damage the country's chances of growth, and would help it in no way whatsoever? (BNC HHV, W, *Hansard*, 1992)
- b. " And even if you say something shameful to me I shall blame you in no way at all " (BNC HXSW: ac-humanities- arts)

- c. It showed a flash of strategic prescience that he displayed at no other moment in his military career. (BNC: CLXW: non-ac-humanities-arts)
- d. such as has been available at no other period of British history (BNC EEW9, W- non acad, SocScience)

3.2.3. ICE-GB

In the following tables we produce the results of our queries for the British Component of the International Corpus of English (ICE GB). Though more restricted, the data fully confirm the findings above.

Table 9: distribution of negative PPs in ICE GB

PP	Total	Initial (with inversion)	Medial	Final
<i>At no time</i>	2	2	0	0
<i>On no account</i>	1	1	0	0
<i>By no stretch of the imagination</i>	0	0	0	0
<i>On no occasion</i>	0	0	0	0
<i>In no way</i>	3	0	3	0
<i>At no other N</i>	1	1	0	0

Table 10: distribution of non-negative PPs: ICE GB

PP	Total	Medial	Final
<i>At one time</i>	6	1	4
<i>At a time</i> ²⁷	27	24	0
<i>At some time</i>	7	2	4
<i>At this time</i>	21	4	12
<i>At that time</i>	45	9	28

<i>On many occasions</i>	0	0	0
<i>On three occasions</i>	1	0	1
<i>On those occasions</i>	1	0	1
<i>In this way</i>			
<i>At any time</i>	14 (-2)	2	9
<i>On any account</i>	0		
<i>By any stretch of the imagination</i>	1	1	0
<i>On any occasion</i>	1	0	1
<i>In any way</i>	15	6	9

4. Factors facilitating final position

Though the English corpus material provides relatively few attestations of negative adjunct PPs in final position, final position negative PPs do occur. In this section we consider some factors that facilitate end position.

4.1. Type of predicate

One factor that according to De Clercq facilitates the final negative adjunct PPs is the type of predicate involved. For the speakers consulted who rejected sentence-final negative adjunct PPs with transitive verbs, passive verbs and unaccusative verbs

marginally allow negative adjunct PPs in final position. The following are her examples (De Clercq 2010a: 235):

- (36) a. ?The secret should be revealed under no circumstances.
 b. ?The bomb should explode in no case.

Some of the examples of final negative PPs in our corpus also exemplify passive or unaccusative verbs. We refer the reader to (34d), (34e) and (34f) above²⁸.

De Clercq (2010a) takes the impact of the predicate type to be a grammatical effect. However, the improvement seen in (36) is also in line with Huddleston and Pullum's processing account: by virtue of the absence of complements, the distance between the canonical medial position for encoding sentential negation and the negative PP is reduced.

In this respect also observe that the *by* phrase in passive sentences may contain a negative complement: in this case, though an adjunct, the *by* phrase can occupy final position. This is expected given De Clercq's observation that final position for negative PPs is improved in the passive but again it also follows from Huddleston and Pullum's processing account cited above in that the absence of a complement to the (passive) verb reduces the distance between the medial canonical position for sentential negation and the position of the negative constituent. We examined the distribution of *by* phrases containing *nobody* in both COCA and BNC, and Table 11 summarizes our findings:

Table 11: distribution of *by nobody* in COCA and BNC

COCA	17	0	0	15
BNC	5	0	0	5

- (37) a. Balboa is loved by no one and is feared by all. (COCA 2007, written Southwest Rev).
 b. She'd been survived by no one and had donated her entire estate to the Los Angeles Museum. (COCA 2006: written, fiction: BKjuv, Obsessed)
 c. His conduct is observed and attended to by nobody. (COCA: 1991: written: ACAD, Public Interest)

4.2. *PP adjuncts vs. PP arguments*

De Clercq (2010b) discusses an important asymmetry which we have not touched upon here: while negative PP adjuncts resist final position, this is not the case for negative arguments (38a): negative PP complements (38b) may (and must²⁹) appear in postverbal position:

- (38) a. Mary has read no papers.
 b. Mary has talked to no one.
 c. *Mary has to no one talked.

This asymmetry straightforwardly follows from Huddleston and Pullum's processing account since in such examples there is again less material intervening between the canonical position for encoding sentential negation and the negative complement of the verb. For an alternative syntactic account inspired by Kayne (1998) see De Clercq (2010a).

4.3. *PP adjuncts and adverbial adjuncts*

A further restriction of our paper is that we have concentrated on PP adjuncts, because we wanted to show the asymmetry between non-negative and negative PP adjuncts in medial position. Of course, the question arises whether there are any restrictions on the distribution of negative adverbs. We only provide some preliminary discussion here.

The adverb *never* is typically found in medial position. We will not deal with this. In Table 12 we provide the results of our searches concerning the distribution of *no longer* in the corpora consulted. Given the high number of examples yielded by our search in COCA (38.306), we have only looked at a pilot sample of 100. For the BNC, we have examined the complete sample of 120 examples, some of the attestations were not relevant for the point at issue and we have excluded them.

Table 12: The distribution of *no longer*

	Total	Initial	Medial	Final
COCA	100	8	87	0
BNC	106	0	104	2 ³⁰

A further investigation of the COCA data confirms that indeed final position is available. (39a-c) are relevant examples, (39d) is an example from the BNC material, (39e) and (39f) are an additional examples, the latter in an appositive³¹:

- (39) a. We have started to lose control of things. New methods have not taken root, the old ones work no longer. (BNC: A 23, Journalistic prose: *Independent* 1983)
- b. We can trust the bitch no longer. (COCA: 2010: Fantasy & Fiction)
- c. And with 46 million people uninsured, the president says action can wait no longer. (COCA: 2009, CNN, Spoken)
- d. I can bear your anxiety no longer. (COCA 2009: fiction)
- e. Thus the conventional wisdom was that, when Brown could finally put off the election **no longer**, Cameron would rise to the challenge and carry off the prize once more. (*Independent* 28.3.2010 page 30 col 2)
- f. He has had a terrible couple of weeks in Scotland, now his chiefdom no longer. (*Guardian*, 20.11.1, page 9, col 2)

At this point we feel that we cannot draw any conclusion from these data. Further research should clarify whether there is an asymmetry between adverbial adjuncts and PP adjuncts, and in particular whether adverbial adjuncts might be more easily compatible with final position.³²

4.4. A processing account

De Clercq (2010a) interprets the observed asymmetry between medial and final position in English as a syntactic/grammatical effect. In medial position, the negative PP is directly associated with the canonical position for encoding sentential negation.

Depending on the particular theoretical implementation of the latter point and the functional structure adopted, this canonical position for encoding sentential negation could be identified as a designated functional projection labeled NegP or PolP, or it might be argued that negative constituents must simply attain a specific sentence-medial scope position by adjunction. We will not here take a position on this choice, which is largely theory internal (see Christensen 2008, De Clercq 2010a). According to De Clercq's analysis, the final position renders the association between the canonical position for the expression of sentential negation and the negative constituent impossible and hence the sentence will be ungrammatical. We refer to her discussion for an account.

In terms of Huddleston and Pullum (2002)'s discussion, the asymmetry between medial and final negative PPs uncovered in the present paper need not be analysed in terms of a grammatical effect. Rather the degraded status of final negative PPs can be seen as being the product of processing constraints, though this may well also be related to the syntactic analysis of sentential negation. Assuming with Kayne (1989), Pollock (1989), Haegeman (1995), among many others, that there is a designated position to encode sentential negation in the English clause, the observed effect on processing could be related to the distance between that position and the position occupied by the negative constituent. Compared to the negative PP in medial position, the sentence-final negative constituent increases the distance between the (abstract) locus of sentential negation and that in which the negative constituent is instantiated. The observed contrast could also be analysed in terms of a violable rule on the position of sentential negation such as the NegFirst rule advocated in Optimality models (see among others De Swart 2010: 120-121 on English) or a violable Neg Criterion (Christensen 2005, 2008; and the references cited there)). Obviously the choice of the analysis depends on the framework adopted.

5. A comparative perspective: Sentential negation in English and Germanic

The strong preference in English for mid position for (some) negative PPs to the near exclusion of final positions is reminiscent of the constraints on the distribution of negative constituents in the other Germanic languages discussed in the literature. In those languages, it has repeatedly been observed that negative constituents pattern differently from their non-negative counterparts and must attain a specific position in

the clause to encode sentential negation. The general assumption in the relevant literature is that the restricted distribution of negative constituents is due to a syntactic/grammatical effect (see, among others, Koch Christensen 1986, 1987, Kayne 1998 (129-131), Svenonius 2002, for Norwegian, Haegeman 1995, 1997, 2000 for West Flemish and Dutch).³³ If this is correct, and if, following Huddleston and Pullum (2002) the restrictions in English observed here are not taken to be due to a grammatical effect but are related to processing constraints, we predict that the factors which play a role in rendering final position acceptable in English should not play a role in the distribution of negative PPs in those languages in which the distribution of negative constituents is regulated by a syntactic constraint. We explore this issue briefly in this section, focusing on Norwegian and West Flemish (WF), two languages for which the syntax of negation has received some attention in the literature. Again, our aim is not to provide a syntactic account of the distribution of negative constituents in these two languages, but rather to put in relief the contrast with English.

5.1. Norwegian

With respect to formal analyses of Norwegian negation, Koch Christensen (1986, 1987) was the first to observe that in certain clause types negative constituents with the negative marker *ingen* ‘no’ have to undergo obligatory leftward movement: the contrast in (40) is based on Koch Christensen and Taraldsen (1989: 72, their (69) and (70)). For a recent survey of Scandinavian languages see also Christensen (2008).

- (40) a. Jens har ??mange/ ingen bøker lest.
 Jens has many/no books read
- b. Jens har lest mange/*ingen bøker.
 Jens has read many/no books

Alternatively, sentential negation can be expressed by means of the negative marker and the indefinite pronoun (41)

- (41) a. Jens har ikke lest noen bøker.
 Jens has not read any books
 ‘Jens hasn’t read any books.’
- b. *Jens har ikke noen bøker lest.

Jens has not any books read

The observed constraint extends to adjunct PPs. Svenonius (2002:126) discusses the contrast in (42): the PP *på ingen måte* ‘in no way’, which contains the negative quantifier *ingen*, must occupy a medial position (35a) and cannot remain in final position (35b).

- (42) a. Han synger på ingen måte visesanger.
 He sings on no way folksongs
 ‘In no sense does he sing folk songs.’ (Svenonius 2002: 126)
- b. *Han synger visesanger på ingen måte.

Consider also our own (43). The non-negative PP *på et visst tidspunkt* (‘at some point’) can remain in final position (43a), or it can occupy a medial position (43b):

- (43) a. Marie innså problemet på et visst tidspunkt.
 Mary realized problem.DEF at a certain time.point
 ‘Mary realized the problemet at a certain time.’
- b. Marie innså på et visst tidspunkt problemet.

However, the negative analogue of this PP, *på ingen tidspunkt* ‘at no time’, which contains the negative quantifier *ingen*, cannot remain in final position (44a), but must be moved to medial position (44b). Its counterpart containing a polarity element *noe*, *på noe tidspunkt* (‘at any time’) can remain in the final position (44c):

- (44) a. *Marie innså problemet på ingen tidspunkt.
 Mary realized problem.DEF at no time.point
- b. Marie innså på ingen tidspunkt problemet.
 Mary realized at no time.point problem.DEF
 ‘Mary didn’t at any point realize the problem.’
- c. Marie innså ikke problemet på noe tidspunkt.
 Mary realized not problem.DEF at no time.point

Negative PP *på ingen måte* ‘in no way’ also cannot occupy final position in Norwegian, as shown in the following examples.

- (45) a. Dette forslaget vil på ingen måte hjelpe ham.
 this suggestion will in no way help him
 ‘This proposal will in no way help him.’
- b. *Dette forslaget vil hjelpe ham på ingen måte.
 this proposal will help him in no way
- c. Vi har på ingen måte dømt ham.
 we have in no way judged him.
- d. *Vi har dømt ham på ingen måte
 we have judged him in no way

5.2. West Flemish

In a series of papers Haegeman (1993, 1997, 2000) discusses in detail how negative constituents in West Flemish, a dialect of Dutch, must undergo leftward movement in order to attain sentential scope. We briefly summarize the main point of the discussion. Non-negative PP-complements in West-Flemish (and also in Dutch) can occur to the left and right of the selecting adjectival head (Haegeman 1997: 117), and they can be extraposed. This is illustrated in (46).

- (46) a. da ze ketent van euren coiffeur was
 that she pleased of her hairdresser was
 ‘that she was pleased with her hairdresser’
- b. da ze van euren coiffeur ketent was
 that she of her hairdresser pleased was
- c. da ze ketent was van euren coiffeur
 that she pleased was of her hairdresser

Negative PP complements of adjectives must move to the left of the adjectival predicate to have sentential scope. (47a) is ungrammatical with the negative PP following the adjective: the negative head *en* is licensed by a clause mate negative constituent with sentential scope. When the negative complement of the adjective, *van niemand* ‘of no

one' remains in the complement position of the adjective, which is as such a licit position as shown by (46a), it apparently is not able to attain sentential scope (see Haegeman 1995, 1997 for discussion). Because there is no sentential constituent with clausal scope, *en* in (47a) is not licensed. In contrast, the negative PP *van niemand* in (47b) has sentential scope and thus licenses *en*.

- (47) a. *da ze ketent van niemand en-was
 that she contented of no one en was
 b. da ze van niemand ketent en-was.
 that she of nobody contented en-was
 ‘that she was pleased with nobody’ (Haegeman 1997: 117-118)

The same constraint applies to non-argument PPs, which can be found in sentence-final position, to the right of the inflected verb, though admittedly (48a) is more natural and (48b) is the marked option because PP extraposition is disfavoured:

- (48) a. k vroagen men of ofda ze doar ip dienen moment an gepeinsd eet.
 I wonder if that she there on that moment on thought has
 ‘I wonder if she though of that at that moment.’
 b. ?k vroagen men of ofda ze doaran gepeinsd eet ip dienen moment.

However, as shown in (49) the contrast is much sharper with the negative PP: here the negative *ip geneenen moment* ‘at no point’ cannot be sentence-final at all and must target a medial position:

- (49) a. k peinzen da ze doar ip geneenen moment an gepeinsd eet.
 I wonder if that she there on no moment on thought has
 ‘I wonder if she did not think of that at any time.’
 b. *k vroagen men of ofda ze doaran gepeinsd eet ip geneenen moment.

As was the case for Norwegian, though, and unlike the patterns discussed for English, the ban on final PPs is categorical in WF:

- (50) a. ken keunen da ip geen een manier goedkeuren.

I *en* can that in no one way good find

‘I cannot in any way accept that.’

- b. *ken keunen da goedkeuren ip geen een manier.³⁴

5.3. A categorical effect

We have seen that while negative PP adjuncts favour medial position over final position in English, the asymmetry is not absolute and final position becomes acceptable in certain contexts. These favouring factors do not seem to be at play in the other Germanic languages.

5.3.1. Complement PPs

In terms of negative complement PPs, English, as illustrated in (38), contrasts with WF: WF complement PPs containing negative quantifiers must move to the left, as already shown in (46). For reasons of space we do not repeat the example.

In Norwegian argument PPs, *ingen* is not available and the pattern with the NPI *noen* is used instead, suggesting again that in Norwegian the categorical ban on ‘negative PPs’ has a grammatical cause. (Koch Christensen (1987: 6, (13), and (13’), in Christensen 2007: 199, (47)). For extensive discussion of PP complements in Scandinavian and a grammatical account, we refer to Christensen (2008).

- (51) a. Jeg har ikke pekt på noen.
 I have not pointed at anyone
 ‘I haven’t pointed at anyone.’
 b. *Jeg har på ingen pekt.
 I have at no.one pointed

5.3.2. Type of predicate

The type of predicate does not play a role in increasing the acceptability of sentence-final negative PPs in WF (52-3) or in Norwegian (54-5). Regardless of whether the verb is passive or unaccusative, a temporal PP must be shifted:

- (52) a. *dan die dingen moegen geweten zyn in geen geval

- that those things may know be in no case
- b. dan die dingen in geen geval meugen geweten zyn
- (53) a. *da die bomme kost ontploffen in geen geval
that that bomb could explode in no case
b. dat die bomme in geen geval kost ontploffen
- (54) a. *Disse tingene har blitt avslørt på ingen tidspunkt.
these things have been revealed at no time.point
b. Disse tingene har på ingen tidspunkt blitt avslørt.
these things have at no time.point been revealed
- (55) a. *Bomben skulle explodere under ingen omstendigheter.
the.bomb should explode under no circumstances
b. Bomben skulle under ingen omstendigheter eksplodere.
the.bomb should under no circumstances explode

5.3.3. The Agent phrase in WF³⁵

In WF, the agent in passive sentences is introduced by the preposition *van* ‘of’. The agent phrase containing negative *niemand* ‘no one’ cannot occupy final position:

- (56) a. *dan die diengen geweten zyn van niemand
that those things known are of no one
b. dan die diengen van niemand geweten zyn
‘that those things are now known by anyone’

5.3.4. Negative adverbs

WF and Norwegian negative adverbs are constrained in exactly the same way as negative PPs. (57) provides the relevant WF examples: the negative adverb *niet meer* cannot occupy a position to the right of the sentence-final verb:

- (57) a. *da Valère doa weunt nie meer

- that Valère there lives no longer
 b. da Valère doa nie meer weunt

However, (57a) is probably independently ruled out because even non-negative adverbs cannot follow the sentence-final verb.

- (57) c. *da Valère doa weunt nog atent.
 that Valère there lives still

Norwegian offers a better contrast. While sentence-final adverbs are possible (58a), the negative adverb *ikke lenger* ‘no longer’ is always found in medial position, and final position is ungrammatical.

- (58) a. Han dro til Paris nylig.
 he left to Paris recently
 ‘He left for Paris recently.’
 b. De gamle metodene vil ikke lenger bli brukt.
 the old methods will no longer be used
 ‘The old methods will no longer be used.’
 c. *De gamle metodene vil bli brukt ikke lenger.
 the old methods will be used no longer
 d. Jeg kan ikke lenger bære dette presset.
 I can no longer bear this pressure
 ‘I can no longer bear this pressure.’
 e. *Jeg kan bære dette presset ikke lenger.
 I can bear this pressure no longer

5.3.5. Similar patterns, different causes?

Though initially it would appear as if Negative PPs in English pattern with their other Germanic counterparts, further scrutiny of the data points towards there being underlying differences. While in WF and Norwegian there is a categorical effect, with negative constituents obligatorily having to occupy a medial position, the status of

English negative constituents in final position has been shown to depend on a number of factors. The distinction might lead to the conclusion that while the effects observe in WF and Norwegian are due to a syntactic/grammatical constraint, the English pattern is related to processing effects. If a syntactic account were to be proposed for the degraded status of certain final negative PPs in English, then this will have to capture the asymmetries listed above.

5.4. Grammar vs. processing

The Norwegian and the WF patterns have been extensively studied and researchers converge on postulating that negative constituents must occupy a medial (or initial) position so as to attain sentential scope. After Koch Christensen (1986, 1987) and Haegeman (1995), others have provided evidence for a similar constraint on the distribution of negative constituents in other Germanic languages (Svenonius 2002; Christensen 2005, 2008; and see the references cited there).

We observe that while both in English and in the other Germanic languages, negative PPs favour medial position, the superficial similarity does not mean that exactly the same conditions govern the distribution of negative PPs. For one thing, the restriction is categorical in the latter languages while it is a very strong tendency in English. In contrast with the discussion of final negative constituents in English in Huddleston and Pullum (2002) referred to above, it appears that the contrasts in the judgments in the Norwegian and West Flemish examples above do not reflect processing effects: a negative constituent in sentence-final position³⁶ is simply unable to attain sentential scope. If the restriction had been due a processing issue in these languages, we would have expected the data to pattern more like the English data with at least some final negative PPs being marginally acceptable. That a grammatical factor is at work emerges very clearly from WF: when a negative PP is in final position, the presence of the negative particle *en* is unacceptable since this has to be licensed by a clause mate negative constituent that occupies the relevant scope position (see Haegeman 1995 for discussion). Thus, although superficially the English data are in line with the data from the other Germanic languages, the observed differences suggest there may be an underlying difference between English and the other Germanic languages: while the final position of negative PPs is ruled out by a grammatical factor in the latter, a processing account might well be appropriate to account for the degraded status of

final negative adjuncts in English. With Kayne (1989), Pollock (1989), Haegeman (1995) and many others, we would adopt the hypothesis that in English the canonical position for expressing sentential negation is medial, clause final location of an expression of sentential negation is not ungrammatical but it leads to increased processing load.

In the next section we explore the asymmetry between negative and non-negative PPs in medial position further.

6. Epistemic modals and sentence-medial PPs

6.1. Interim conclusion

Our discussion has revealed that

- (i) While it may be true that medial position adjunct PPs are not the favoured option in English, the claim in some of the literature that sentence-medial PPs are ungrammatical in English is incorrect.
- (ii) In English sentence-final negative PP adjuncts with sentential scope are rare and are even considered unacceptable by some speakers
- (iii) English medial position negative PP adjuncts have sentential scope. We follow De Clercq (2010a) in assuming their medial position is associated with the locus of the expression of sentential negation.
- (iv) The data discussed here provide support for the hypothesis that there is a privileged locus for encoding sentential negation or for polarity (see among others Kayne 1989, 1998, Pollock 1989, Haegeman and Zanuttini 1996, Haegeman 1995, Christensen 2008, De Clercq 2010a). Medial position negative PPs are directly associated with that position. Sentence-final negative PPs have to be related to the relevant position by some linking mechanism, leading to a marked status.
- (v) On a more speculative note we conclude on the basis of the data examined that while the distribution of negative PPs is regulated by syntactic/grammatical principles in Norwegian and in West Flemish, the distributional constraints in English are weaker and at this point we assume that the restricted distribution of final negative PPs is due to a processing constraint.

In this section we return to the initial focus of our paper: the medial position of PPs, focusing now on negative PPs. We will discuss the interaction of epistemic modal adverbs with markers of sentential negation. We will see that while non-negative medial PP adjuncts have a relatively free distribution with respect to epistemic modals, negative medial PPs must follow such modals. This distribution is exactly what we expect of medial negative PPs encoding sentential negation in that their distribution is observed to be analogous to that of the marker of sentential negation.

6.2. English

In sections 1 and 2 we have revealed a contrast between negative and non-negative PPs in English: while the latter are compatible with initial, medial and final position, the former strongly resist final position. In this section we turn to adjunct PPs in medial position and will reveal a further asymmetry between non-negative and negative PPs in medial position.

6.2.1 Epistemic modals and non-negative adjuncts in medial position.

Like adjunct PPs, modal adverbs may occupy diverse positions in English:

- (59) a. John has probably done that already.
 b. Probably John has done that already.
 c. John has done that already, probably.

We observe that though *probably* may be found initially, medially and finally, the latter position is somewhat marked and the adverb is set off from the remainder of the clause by comma intonation, suggesting it is a different prosodic unit, and possibly a separate utterance from the preceding clause (cf. discussion in Buysschaert 1982: 107). No such intonational break is required for sentence-final *recently* in (60a) or for *quickly* in (60b).

- (60) a. John had done the job recently.
 b. John has done the job quickly.

We now focus on the position of epistemic *probably* in relation to that of sentence-medial PPs. As seen in (61) and (62) *probably* may precede or follow a medial temporal PP:

- (61) a. John had at that time probably finished half the course.
 b. John would in those circumstances probably resign from his job.
- (62) a. John had probably at that time finished half the course.
 b. John would probably in those circumstances resign from his job.

The COCA and the BNC corpora do not provide any relevant examples but a Google search reveals that both the orders *probably* PP and PP *-probably* are attested. The following are a few examples:

- (63) a. And they are pointing out, for instance, that he would probably in those circumstances also be facing an Iraq War Inquiry at home.
 (http://news.bbc.co.uk/2/hi/programmes/andrew_marr_show/8324790.stm, 'The Andrew Marr Show' 2.10.2010)
- b. For the rehabilitation professional working with clients with severe mental illness in a psychosocial setting, this book may not be as helpful— but the challenges and strategies in those circumstances probably require another book.
 (<http://psychservices.psychiatryonline.org/cgi/content/full/51/7/943>)
- (64) a. This was probably at that time the only road to Milborne Stileham which then formed part of Bere Regis parish.
 (<http://www.bereregis.org/VillageRoads.htm>)
- b. The existing parish church was built about 1140 AD and at that time probably served only a few residents of a small number of local farms.
 (<http://www.bentleyvillage.com/binstedhistory.htm>)

6.2.2. Epistemic modals and negative adjuncts in medial position.

It is well known that the expression of sentential negation interacts with modality. More specifically, it has been observed in the literature that speaker oriented adverbs like the

epistemic modal *probably* cannot be in the scope of sentential negation. We refer to Quirk et al. (1985: 494), who provide the contrasts in (65):

- (65) a. They can *probably* find their way here
 b. (?) They *probably* can find their way here.
 c. *They can't *probably* find their way here.
 d. They *probably* can't find their way here.

The same point is illustrated by our own (66):

- (66) a. John has probably never done that.
 b. *John has never probably done that.
 c. *Never has John probably done that.

For some recent discussion in formal frameworks see, among others, Frey and Pittner (1998: 517), Pittner (1999: 175), Pittner (2004: 272), Cinque (1999), Nilsen (2003, 2004), Ernst (2002, 2009), for complications see also Ernst (2009).

If the negative PP in medial position encodes sentential negation, we expect that there will be constraints on its co-occurrence with epistemic *probably*. This prediction is borne out: in the same way that *probably* can precede but not follow *never*, it can precede but not follow medial negative PPs with sentential scope. The asymmetry observed here is completely expected: since the medial PP expresses sentential negation, it cannot scope over the epistemic modal.

- (67) a. He had probably at no time travelled on his own.
 b. *He had at no time probably travelled on his own.
 (68) a. These proposals would probably in no circumstances have been accepted.
 b. *These proposals would in no circumstances probably have been accepted.

The following attested examples illustrate the licit order:

- (69) a. The number of persons in the water probably at no time exceeded 100, and most of these were saved.
(<http://www.riverboatdaves.com/wheeling/scioto1.html>)
- b. There was probably at no time a majority of economists, who were recognized as such by their peers, favorable to socialism (or, for that matter, to protection).
(<http://aetds.hnuc.edu.cn/uploadfile/20080316211019875.pdf>)
- c. The final band probably at no time have ever needed introducing. This is especially true in the last eight or so days, when they've seemingly played every gig in town. Here tonight exclusively for your entertainment pleasure, Dick Dynamite and the Doppelgangers.
(<http://www.auteurhouse.com/blog/2010/07/17/auteur-house-3-12-year-anniversary-party-band-intros/>)

6.3. Norwegian

For completeness's sake we show in this section that in Norwegian too, medial negative PPs must follow the adverb of epistemic modality.

6.3.1. Non-negative PPs in medial position

Non-negative temporal PPs can shift to medial position in Norwegian. If they do, they may either precede or follow the modal adverb *sannsynligvis* 'probably'. This is illustrated in (70) and in (71), the former with an indefinite nominal constituent in the PP and the latter with a definite one.

- (70) a. Marie innså sannsynligvis på et visst tidspunkt problemet.
Mary realized probably at a certain time.point problem.DEF
'Mary realized probably the problem at a certain point.'
- b. Marie innså på et visst tidspunkt sannsynligvis problemet.
- (71) a. Marie innså sannsynligvis på det tidspunktet problemet.
Mary realized probably at that time.point problem.DEF
'Mary realized probably the problem at that point.'
- b. Marie innså på det tidspunktet sannsynligvis problemet.
Mary realized at that time.point probably problem.DEF

‘Mary realized probably the problem at that point.’

6.3.2. Negative PPs in medial position

Like nominal negative constituents, Norwegian, negative PPs undergo NEG shift. In keeping with the literature, we postulate that negative PPs with sentential scope need to occupy a medial position in order to attain sentential scope. If this is so we predict that once again they will have to follow epistemic modals such as *sannsynligvis* ‘probably’: this prediction is borne out:

- (72) a. Marie innså sannsynligvis på ingen tidspunkt problemet.
 Marie realized probably at no time.point problem.DEF
 ‘Mary didn’t realize the problem at any point.’
- b. * Marie innså på ingen tidspunkt sannsynligvis problemet.

7. Summary of the paper

In the discussion above we have first shown that any claims that PP adjuncts are categorically incompatible with medial position in English are ill founded. Rather, some PPs do occur in medial position and negative PPs favour medial position to the near-exclusion of final position. Pursuing the latter point, we have taken this asymmetry in the distribution of negative and non-negative adjunct PPs as evidence that sentential negation is syntactically encoded in sentence-medial position and that the medial negative PP encodes sentential negation. The relative distribution of PPs and the epistemic adverb probably confirms that the medial PP is parallel to other expressions of sentential negation such as not and the adverb never in that it can follow but not precede probably.

The data which we have discussed in this paper offer only a small piece of a much larger research issue. In particular, while we have conclusively shown that sentence-medial PPs are grammatical in English, and that moreover negative PPs favour medial position, the question does arise what are the factors that are at the basis for the relative rareness of non-negative PPs in medial position. Clearly, there are weight factors involved, but closer scrutiny of the data should reveal perhaps other factors.³⁷

Further questions arise with respect to the distribution of the negative PPs. Though the corpus data do confirm De Clercq’s initial finding that sentence-final PPs

are highly degraded, we speculate that the constraint on final position is not categorical and is related to processing constraints.

It would be interesting to examine the distribution of negative PPs also in languages of the Romance group, which operate a different system for the expression of sentential negation, in that they rely systematically on the spell out of a sentence-medial negative head. The Italian examples in (73) were judged acceptable by a native speaker³⁸ and a Google search yielded some instances of sentence-final PPs containing negative words (74). Potentially this might reveal a contrast between Germanic languages and Romance languages which, if confirmed, is obviously worth further study.

- (73) a Non devi parlarne a Luigi in nessun caso.
non must-2sg talk-of it to Luigi in no case
 ‘On no account should you mention this to Luigi.’
- b Non avevo pensato a questa possibilità in nessun momento.
non have-past-1sg think-part to this possibility in no moment
 ‘At no time did I consider this possibility.’
- (74) a Non riesco ad installare prestashop in nessun modo su Aruba
non succeed-1SG to install *prestashop* in no way on Aruba
 (<http://www.aicel.it/forum/showthread.php?t=28655>)
- b non riesco a rootare il mio magic in nessun modo !
 Non succeed-1sg to root the my magic in no way
<http://www.androidiani.com/forum/problemi-con-htc-magic/16922-non-riesco-rootare-il-mio-magic-nessun-modo.html>

Further research has to confirm that this difference is genuine, i.e., that Italian PPs containing *nessuno* ‘no’ do not at first sight appear to resist the final position to the same degree as their English counterparts. If substantiated, the difference between the Italian data and the English data might follow from the fact that Italian deploys a medial negative head *non* which spells out the locus of sentential negation. Observe that this contrast, if confirmed, does not shed any light on the question whether the exclusion of final negative PPs in English has a grammatical source or is due to processing constraints. In terms of a syntactic account the contrast between Italian and English can

be interpreted to mean that negative quantifiers words such as *nessuno* differ from their English counterparts, a point also confirmed by the fact that Italian has negative concord (see Zanuttini 1997). In terms of Huddleston and Pullum's processing account, the fact that *non* spells out sentential negation on the verb will mean that no problems arise with respect to the marking of sentential negation in the designated slot regardless of the position of *nessuno*. We intend to return to some of these issues in future work.

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² As the following attested examples show medial position is not restricted to a closed class of adverbs (such as the modal, aspectual and temporal adverbs discussed in Cinque 1999):

(i) In the time it takes to skim the bestseller list, you can wirelessly download an entire book. (advert Amazone *Kindle*, *Guardian* 4.12.2010 p. 7)

(ii) All the woodwork in the house is darkly painted. (*Observer* 12.12. 2010 p. 6 col 1)

We don't pursue this point, which is outside the scope of our paper.

³ Rizzi sets of the PP by means of commas, which ought in fact to facilitate its insertion (see also Buysschaert 1982:106).

4 We only report on open class adverbs. We don't include in the count closed class adverb such as
then, just etc.

5 Interestingly, for instance, *at one time* is more frequent in medial position than in final position
in BNC. One might think this is due to the presence of the numeral *one* but observe that final
position *on three occasions* vastly outnumbers medial position, so relating the mid position of *on*
one occasion to the presence of a numeral is probably not on the right track.

6 Among the first 100 entries of COCA there were many instances of the relevant PPs in which the
PP was not associated with the intended interpretation or which were unclear or not relevant for
various reasons. We did not include these in our counts.

7 The low occurrence of *at a time* in mid-position is probably to be accounted for by the fact that
this PP often comes with a modifying *when* clause. Considerations of weight then lead to its
being put in end position

8 This is the total number of occurrences for COCA.

9 Among the first 100 entries of BNC there were many instances of the relevant PPs in which the
PP was not associated with the intended interpretation or which were unclear or not relevant for
various reasons. We did not include these in our counts.

10 This is the total number of occurrences for BNC

11 This is the total number of occurrences for BNC.

12 Note that this section is restricted to a discussion of adjunct PPs with sentential scope. As we
will have occasion to discuss in section 4.2 complement PPs may take sentential scope in final
position:

(i) Mary talked to no one.

For discussion of the data and an account see De Clercq (2010b). For an early discussion of the
argument adjunct asymmetry in terms of a formal analysis see Ota (1981).

13 Thanks to Will Harwood for the data.

14 We use the term 'negative quantifier' to refer to *no* as a simplification and we do not wish to
commit ourselves here to its exact nature. See Haegeman and Lohndal (2010) for discussion of
the nature of such negative items in West Flemish.

15 However, we suspect that Haumann's example is improved thanks to the presence of the
reinforcing negative PP *not even with John*, which induces a sentence-final focus. See Puskas
(2000), among others, for the interaction of negation and focus. We leave this issue aside for the
moment and hope to return to it in future work. See also note 23.

16 De Clercq (2010 a) consulted 11 native speakers, all from the British isles. The judgements were
later confirmed separately by two American speakers.

17 This is all the more remarkable because in our corpus study the PP *in no way* was actually
instantiated in final position, though this is the marked pattern. We refer to tables 3 and 4 for
information on its frequency.

18 See below for 'non verbal' negation as opposed to 'verbal' negation.

- 19 On a very anecdotal level, a Google search of the string *were friends at no time* yielded exactly one relevant hit, namely a citation of Huddleston and Pullum's very own example (<http://languagelog.ldc.upenn.edu/nll/?p=2689>)
- We suspect that the example could be marginally acceptable with focal intonation on *at no time*, but the intuition that focal marking plays a role in facilitating final position must be subject to future research.
- 20 Thanks to Geoff Pullum for generous help with these data.
- 21 See section 4 for clarification.
- 22 The following example has *on no occasion* in final position. However, note that the example is made up of a list of what look like verbless clauses. Moreover, in parallel with *for no reason*, *on no occasion* does not seem to take sentential scope, meaning something like 'for no particular occasion'.
- As if it was the only thing Khang owed me: one life. Yes. A cup of coffee every morning, a glass of wine every evening, a glass of water in my bed at midnight, a bouquet sent to my office or house for no reason **on no occasion**, a card painted red and blue, with printed words next to Khang's small, refined handwriting, a style of handwriting people once used to write down Trinh Cong Son's songs in the old days. A phone call, in the morning and at noon. (COCA 2000 Fic: literary rev)
- 23 Barbara Ürögdi (p.c.) suggests that final position of negative PPs adjuncts in English might be favoured by focus as in (i), which she finds 'pretty good, maybe ?'
- (i) ? I talked to her at no other occasion and I never sent her an email.
- Recall that we found that PPs of the type *at no other N* are more easily final: 2 out of 31 in COCA, and 2 out of 9 instances in BNC are final.
- 24 Two examples are not relevant for our counts.
- 25 The following example shifts from mid position not initial position, so depending on how one counts it, *on no occasion* is either medial or initial.
- that this other manager has not at no occ on no occasion has that car been used for company use. (BNC: JNS, consult).
- 26 One example has the PP *not by any stretch of the imagination* in initial position and there are 4 instances of ellipsis.
- 27 This excludes expressions such as *three at a time*
- 28 Note that (34a-c) from COCA and (35a-c) from BNC, repeated here as (i) and (ii) respectively, contain a transitive verb:
- (i) 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. (COCA 2001: news, *Washington Post*)
- c. the sight of me in those woods angered him in no way. (COC 1979, Fiction: *Arkansas review*)
- d. you can lose yourself in these surroundings as at no other place in Ravello. (COCA 2001, Mag, TownCountry)

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- (ii) a. Does my hon. Friend agree that any extra tax on the self-employed without benefits in return would damage the country's chances of growth, and would help it in no way whatsoever? (BNC HHV, W, *Hansard*, 1992)
- b. " And even if you say something shameful to me I shall blame you in no way at all ") (BNC HXSW: ac-humanities- arts)
- c. It showed a flash of strategic prescience that he displayed at no other moment in his military career. (BNC: CLXW: non-ac-humanities-arts)

29 Observe, though, that (i) are the more colloquial alternatives to (38):

- (i) a. Mary has not read any papers.
b. Mary has not talked to any one.

30 (i) from the BNC displays negative concord. We suspect that such examples may pattern differently and perhaps it should not be included in the count. However, this must be subject to future research.

- (i) He couldn't work no longer. (BNC K 65 S Interview, oral history)

31 For discussion of the pattern in (39f), and in particular arguments that these appositive patterns are clausal see O'Connor 2008.

32 Interestingly the contrast between end position and medial position for *no longer* is sometimes picked up on school grammars. For instance, Lambotte (1998: 85) provides the following usage guidelines:

- (1) not... any more= informal
- (2) not... any longer= slightly more formal – common but less frequent than (1).
- (3) no longer (before the verb) = formal – common
- (4) no longer (after the verb) = formal – uncommon
- (5) no more (after the verb) = very formal - the least common

Concerning (i) he says it is 'somewhat literary because of the late negative, and no longer used' (1998: 86)

- (i) He works no longer

However, he also provides the attested (ii) (1998: 86):

- (ii) Boris Yeltsin declared he could work with the Congres no longer. (BBC)

Though obviously of interest, a detailed study of the distribution of *no longer* in present day usage, and a comparison with early stages of the language is beyond the scope of the current paper.

33 Different types of analyses could be proposed: some see the observed shift of negative constituents in terms of specific requirements on the syntax of negation (Haegeman 1995, 1997, 2000), others relate the effects to quantifier raising (Déprez 1997, 2000).

34 Note in passing that in WF a PP in final position can be focused:

- (i) a. Weknen boek goa-j gebruiken?
Which book go you use
'Which book are you going to use?'
- b. Kgoan den dienen gebruiken van Valère.

I go the that use of Valère

‘I’ll use Valère’s.’

This suggests that focusing is not the reason for the leftward shift of the negative constituents in WF.

35 We do not consider the Norwegian data here as a by phrase containing *ingen* is degraded both in final and medial position. Thanks to Kirsti Koch Christensen for help on this.

36 Where for Flemish ‘sentence-final’ is taken to mean to the right of the sentence-final position of the verb.

37 For some discussion see De Clercq, Haegeman and Lohndal (in prep), who explore proposals in Belletti and Rizzi (to appear).

38 Thanks to Adriana Belletti for these examples.