

# The syntax of peripheral adverbial clauses<sup>1</sup>

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This paper explores the relation between the interpretations of *while* in English and *mentre* in Italian introducing adverbial clauses. Central *while/mentre* clauses express a temporal/aspectual modification of the proposition in the host clause. Peripheral *while/mentre* clauses make accessible a proposition from the discourse context enhancing the relevance of the host proposition. In one approach, clauses introduced by adversative *while/mentre* are analyzed as ‘less integrated’ with the associated clause than those introduced by temporal *while/mentre*. In another approach, adverbial clauses introduced by adversative *while/mentre* are considered not syntactically integrated with the host clause. This paper re-examines the nature of the syntactic integration of the adverbial clauses with the host clause, revealing a parallelism between the adversative peripheral *while/mentre* clauses and speaker-related sentential adverbs, leading to the conclusion that the non-integration analysis is not appropriate for this type of peripheral clauses and that any analysis must be aligned with that of the relevant non-clausal adverbials, supporting Frey (2018, 2020a, b). We also argue that central adverbial clauses recycled as speech event modifiers must be considered non-integrated. Concretely, we propose that they are integrated in discourse, through a specialized layer FrameP (Haegeman & Greco 2018).

KEYWORDS: adverbial clauses, English, Italian, syntax

## 1. INTRODUCTION: GOALS AND SCOPE

The present paper focusses on the multiple readings that finite adverbial clauses assume in relation to their degree of syntactic and semantic integration with the host clause. Our empirical evidence is mainly from English and Italian, supplemented with Dutch data, because the verb-second (V2) patterns in that language offer additional insight into the syntactic analysis. Our core data consist of adverbial clauses introduced by the English conjunctions *while* and Italian *mentre*.

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Throughout, these clauses are taken as representative of a wider range of finite adverbial clauses.

### 1.1 *The data*

Both English finite *while* clauses<sup>2</sup> and Italian finite *mentre* clauses can encode a number of distinct readings.<sup>3</sup> The relevant patterns are illustrated in English (1) and Italian (2). Subscripts distinguish the readings of the clauses; the distinction between *while*<sub>2a</sub>/*mentre*<sub>2a</sub> in (1b) and (2b) and *while*<sub>2b</sub>/*mentre*<sub>2b</sub> in (1c) and (2c) arises from the fact that in Haegeman's (1984a and subsequent work) work both these uses of the adverbial clauses were viewed as instances of 'peripheral adverbial clauses', a point we reconsider below (see Schönenberger & Haegeman (2021), Haegeman & Schönenberger (2021)).

The temporal *while*<sub>1</sub> clause in (1a) is a modifier of the event encoded by the host clause; the adversative *while*<sub>2a</sub> clause in (1b) encodes a background assumption which provides evidence to enhance the relevance of the host clause proposition; the *while*<sub>2b</sub> clause in (1c) is a temporal adverbial clause which modifies the speech event. The contrast between English (1a) and (1b) is replicated in Italian. *Mentre* clauses do not seem to lend themselves, though, to be used as speech event modifiers (2c), for reasons that are unclear to us and we assume are tangential to the present discussion. The unavailability of the speech event modifier use of a *mentre* clause is perhaps related to specific aspectual restrictions relating to *mentre* (see Section 2.1.1). An acceptable alternative to Italian (2c) would be (2d). Incidentally, the unavailability of the speech event modifier use of *mentre* clause indirectly supports the hypothesis that English *while*<sub>2a</sub> and *while*<sub>2b</sub> must be distinguished.<sup>4</sup>

- (1) (a) While<sub>1</sub> we were talking about Theresa May, the BBC announced her resignation.  
 (b) While<sub>2a</sub> Theresa May may be viewed as a conservative, some of her proposals are innovative.  
 (c) While<sub>2b</sub> we are talking about Theresa May, some of her proposals were innovative.
- (2) (a) Mentre<sub>1</sub> stavamo parlando di Bersani, Raiuno  
 while be.IMP.F.1PL speak.PROG of Bersani Raiuno  
 ha annunciato le sue dimissioni.  
 have.PRS.3SG announce.PTCP the his resignations

[2] For reasons of space, we do not discuss non-finite adverbial clauses, though these would obviously also be of interest. We hope to turn to them in future work.

[3] For an investigation on the semantic change of *while*, see a number of articles by Traugott (1982, 1989, 1995), who mentions *while* as a paradigmatic example of grammaticalization (see Traugott & König 1991, Hopper & Traugott 2003).

[4] We thank an anonymous *JL* referee for bringing the relevance of this point to our attention.

- (b) Mentre<sub>2a</sub> Theresa May potrebbe essere considerata  
 while Theresa May can.COND.3SG be.INF consider.PTCP  
 una conservatrice, alcune delle sue proposte  
 a conservatrice, some of.the her proposals  
 sono innovative.  
 be.PRS.3PL innovative
- (c) \*Mentre<sub>2b</sub> parliamo di Theresa May,  
 while talk.PRS.1PL of Theresa May,  
 alcune delle sue proposte erano innovative.  
 some of.the her proposals were innovative
- (d) Parlando di Theresa May, alcune delle sue proposte  
 speaking of Theresa May some of.the her proposals  
 erano innovative  
 be.IMPF.3PL innovative

There are parallels to be observed between the examples above and other adverbial clauses: we illustrate this with conditional clauses. Conditional clauses introduced by English *if* or by Italian *se* also display various functions. An *if/se* clause can function as an event conditional ((3a), (4a)), as a conditional assertion ((3b), (4b)) (Kearns 2006) or as a speech event modifier ((3c), (4c)). Only event conditionals (sometimes) allow paraphrasing with *if and when* (3d) in English or with *se e quando* (4d) in Italian. Conditional assertions in ((3b), (4b)) echo contextually salient propositions for which they provide a background proposition which enhances the relevance of the host proposition; in such conditionals, *if* can be paraphrased with ‘given that’. This conditional does not chart possibilities, as a regular conditional would do, but echoes a contextual proposition which highlights a fact and which forms the background for the matrix proposition.<sup>5</sup> Importantly, conditional assertions do not have to be strict echoes of actual utterances. ‘They may also be echoes of an internal or mental proposition (thought) such as the interpretation of an experience, perception etc.’ (Declerck & Reed 2001: 83). The *if and when* paraphrase is not available for conditional assertions. Observe that, differently from *mentre* (2c), the Italian conditional conjunction *se* ‘if’ can introduce a speech event modifier (4c).

- (3) (a) If<sub>1</sub> you get very tired, you will be at a higher risk of back problems.  
 (b) If<sub>2a</sub> I’m no longer going to be allowed to visit my mother, should I encourage her to install Skype?  
 (c) If<sub>2b</sub> you remember, the first cases were reported in Italy only a month ago.  
 (d) Schools will reopen if<sub>1</sub> and when conditions allow it.

[5] Thanks to an anonymous *JL* referee for providing insightful comments on this section.

- (4) (a) *Se*<sub>1</sub> *ti stanchi molto, avrai un più alto*  
 if you get.tired.PRS.2SG very have.FUT.2SG a more high  
*rischio di problemi alla schiena.*  
 risk of problems to.the back
- (b) *Se*<sub>2a</sub> *non posso più andare a trovare mia*  
 if NEG can.PRS.1SG no longer go.INF to visit.INF my  
*madre, dovrei incoraggiarla a installare Skype?*  
 mother should.1SG encourage.INF.her to install.INF Skype
- (c) *Se*<sub>2b</sub> *ti ricordi, i primi casi in Italia*  
 if you remember.PRS.2SG the first cases in Italy  
*sono stati segnalati solo un mese fa.*  
 be.PRS.3PL be.PTCP report.PTCP only a month ago
- (d) *Se*<sub>1</sub> *e quando potremo di nuovo viaggiare,*  
 if and when can.FUT.1PL again travel.INF  
*andrò a trovare mio padre.*  
 go.FUT.1SG to visit.INF my father  
 ‘If and when we can travel again, I will go to visit my father’

The patterns illustrated for English *while* and Italian *mentre* can be replicated, for instance, for Dutch *terwijl* or for French *tandis que*. Section 4.2.2 discusses Dutch patterns in which V2 syntax sheds additional light on the syntax of adverbial clauses of the type illustrated in (1b) and (2b).

## 1.2 Goals

Our first goal is to discuss the diagnostics introduced to distinguish the *while/mentre* clauses in (1a) and (2a) from those in (1b) and (2b). We evaluate the diagnostics and, following Frey (2018, 2020a, b), we reassess Haegeman’s (1984a, b, c, 1991, 2012) original binary classification of adverbial clauses in terms of central vs. peripheral adverbial clauses. Haegeman’s binary classification will be replaced by a ternary classification, along that developed by Frey (2016, 2018, 2020a, b; see Heycock 2017), with the following three clause types:

- Central Adverbial Clauses (CACs), corresponding to *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses
- Peripheral Adverbial Clauses (PACs), corresponding to *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses
- Non-integrated Adverbial Clauses (Frey’s NonICs), corresponding to English *while*<sub>2b</sub> clauses, as well as to English *if*<sub>2b</sub> clauses, and Italian *se*<sub>2b</sub> clauses<sup>6</sup>

Drawing from data from both English and Italian, we first focus on PACs introduced by *while*<sub>2a</sub>/*mentre*<sub>2a</sub> and we discuss them as evidence to further confirm Frey’s (2018, 2020a, b) ternary classification, adding support for Frey’s claim that PACs

[6] Though we won’t go into this point here, we assume that Italian (2d) will receive the same syntactic analysis as English (1c).

pattern with high sentential adverbials. In [Section 5](#), we turn to non-integrated finite adverbial clauses and demonstrate that though it is appropriate to set such clauses apart from PACs, the non-integrated clauses identified in our paper do not share all the properties associated with Frey’s NonICs, suggesting that non-integrated clauses are not a homogeneous set. Using the framework of Greco & Haegeman (2020), we will elaborate a tentative, more abstract analysis to allow for some unification of non-integrated finite adverbial clauses.

### 1.3 Organization of the paper

[Section 2](#) presents an inventory of differences between the adverbial clauses introduced by *while*<sub>1</sub>/*mentre*<sub>1</sub> in (1a)/(2a) and those introduced by *while*<sub>2a</sub>/*mentre*<sub>2a</sub> in (1b)/(2b). These differences have often been signalled in the literature as evidence for postulating a difference in structural integration. [Section 3](#) reviews two syntactic analyses that have found relatively wide support in the existing literature in one form or another. [Section 4](#) reassesses the diagnostics from [Section 2](#) as the basis of the syntactic analyses presented in [Section 3](#) and concludes that, in fact, the diagnostics are not fit for purpose. This section replaces the binary typology of adverbial clauses introduced in [Sections 2](#) and [3](#) with a ternary typology, inspired by Frey (2018, 2020a, b). [Section 5](#) focusses on the syntactic and interpretive properties of non-integrated clauses.

## 2. THE EXTERNAL SYNTAX OF ADVERBIAL CLAUSES: DIAGNOSTICS

In a number of papers, Haegeman has argued for a binary classification of adverbial clauses:

- ‘central’ adverbial clauses like those introduced by *while*<sub>1</sub>/*mentre*<sub>1</sub> in (1a) and (2a) modify the state of affairs encoded in the matrix domain
- ‘peripheral’ adverbial clauses like those introduced by *while*<sub>2a,b</sub> in (1b)/(1c) and *mentre*<sub>2a</sub> in (2b) provide contextually accessible background propositions that contribute evidence for the relevance of the host proposition

This section reviews some diagnostics used to substantiate this classification. The discussion compares *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses modifying the event expressed by the host clause with *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses that encode a background assumption. In [Section 4.3](#) speech event modifiers as in (1c) will be argued to constitute a separate class; their syntax is then discussed in [Section 5](#).

### 2.1 Scope phenomena (non-exhaustive)

A range of distinctions between the adverbial clauses in (1a)/(2a) and those in (1b)/(2b) reflects their interaction with the host clause in terms of scope. We review just some of these here. For further discussion see Haegeman & Robinson (1979),

Haegeman (1984a, b, c), Haegeman & Wekker (1984), Haegeman (1991/2009, 2003, 2012, 2019, 2020), Haegeman, Shaer & Frey (2009).

### 2.1.1 *Temporal/modal/aspectual subordination*

The scopal distinction between the central adverbial clauses in (1a)/(2a) and the peripheral adverbial clauses in (1b)/(2b) is reflected in their relation to temporal, aspectual and modal operators (i.e. so-called TAM operators) in the host clause.

#### 2.1.1.1 *Temporal subordination*

Typically, central adverbial clauses display effects of temporal subordination. This is especially clear in English future-oriented adverbial clauses, as widely discussed in the literature (see Palmer 1965, 1974, 1990; Jenkins 1972; Haegeman & Robinson 1979; Haegeman 1984a, b, c; Haegeman & Wekker 1984; Niewint 1986 and references cited). The temporal *while*<sub>1</sub> clause in (5a) contains a present tense form *is*; yet it refers to a future state of affairs: As a result of temporal subordination, the present tense encoded on *is* inherits the futurity reading from the future time modal *will* in the host clause, a phenomenon dubbed ‘*will*-deletion’ (Jenkins 1972). In (5a), encoding futurity by means of the modal *will* in the temporal *while* clause would switch the interpretation to that of a peripheral *while*<sub>2a</sub> clause. On the other hand, in the peripheral *while*<sub>2a</sub> clause in (5b), futurity is encoded independently, by the modal *will*, and in the peripheral *while*<sub>2a</sub> clause in (5c), futurity is encoded by periphrastic *be going to*. Notably, replacing the expressions of futurity in (5b) and in (5c) with present tense forms affects the interpretation: In (5b), a present tense form in the adverbial clause either receives a present time interpretation (‘while it is the case now ...’), as in a peripheral *while*<sub>2a</sub> clause, or it receives a future time reading due to subordination to the future time in the matrix clause (‘will need’) meaning that the clause is turned into a central *while*<sub>1</sub> clause acting as a temporal modifier of the host clause. In (5c), replacing *be going to* with a present tense form shifts the temporality of the peripheral clause to the present.

- (5) (a) While<sub>1</sub> the hospital is handling the Corona-crisis, it will not be possible to make appointments for routine consultations.  
 (b) While<sub>2a</sub> young people usually will be/are able to recover at home, elderly people will need to be hospitalized.  
 (c) I’ve always said that we wouldn’t see real success until Athens. And while<sub>2a</sub> I’m not going to promise/promising gold medals in 2004 or even 2008, I will say that we’re beginning to see the emergence of a generation of swimmers who might make the podium in Athens and will be among the medals in Beijing.

(*The Guardian*, 3.8.2002, page 2, column 4)

There are also restrictions on tense forms in *mentre*<sub>1</sub> clauses. Giusti (2001: 723) says:

Il Tempo della principale è sempre uguale a quello della temporale, tranne nel caso del perfetto (semplice e composto) a cui corrisponde un imperfetto nella temporale.

[The tense of the main clause is always identical to that in the temporal clause, with the exception of the perfect (simple and complex) to which corresponds an imperfect in the temporal clause (our translation).]

Note that in (6), the Italian analogue of (5), the central *mentre*<sub>1</sub> clause (6a) does contain a future tense *gestirà* ‘will handle’. This is because the Italian sequence of tense system differs from the English one in that Italian does not operate the analogue of *will*-deletion in the central clause. A full discussion of language-specific rules of temporal subordination is beyond the scope of this paper. The example (6b) is parallel with (5b).

- (6) (a) *Mentre*<sub>1</sub> l' ospedale gestirà la crisi dovuta al  
 while the hospital handle.FUT.3SG the crisis due to.the  
 Corona virus, non sarà possibile prendere  
 Corona virus NEG be.FUT.3SG possible take.INF  
 appuntamenti per visite di routine.<sup>7</sup>  
 appointments for visits of routine
- (b) *Mentre*<sub>2a</sub> le persone giovani normalmente potranno  
 while the people young normally be able.FUT.3PL  
 guarire a casa, le persone anziane avranno  
 recover.INF at home the people elderly have.FUT.3PL  
 bisogno di essere ricoverate all' ospedale.  
 need of be.INF hospitalize.PRT at.the hospital

#### 2.1.1.2 Modal subordination

In (7a), the central *while*<sub>1</sub> clause is in the scope of the epistemic adverb *probably*; in (7b), the peripheral *while*<sub>2a</sub> clause is not in the scope of the epistemic adverb (see Verstraete 2002: 242–243). The attested (7c) illustrates the two types of adverbial clauses: epistemic *certainly* in the root clause scopes over the central *while*<sub>1</sub> clause though not over the peripheral *while*<sub>2a</sub> clause, whose epistemic value is encoded in *probably*.

- (7) (a) The thief probably entered the house while<sub>1</sub> we were all in the garden.  
 (b) You are probably angry with me while<sub>2a</sub> you should be grateful instead.

[7] A present tense form in the temporal *mentre*<sub>1</sub> clause in (6a) would be marginally acceptable.

- (c) While<sub>2a</sub> [the lawsuit challenging the legitimacy of lethal injections] probably won't stop the use of lethal injection altogether, it will certainly delay its use while<sub>1</sub> the supreme court decides what to do.  
(*The Guardian* G2, 12.12.2003, page 4, column 4)

The effects are reproduced in Italian (8):

- (8) (a) Il ladro probabilmente è entrato in casa  
the thief probably be.PRS.3SG enter.PTCP in house  
mentre<sub>1</sub> eravamo tutti in giardino.  
while be.IMPF.1PL all in garden.  
(b) Probabilmente sei arrabbiato con me  
probably be.PRS.2SG angry with me  
mentre<sub>2a</sub> invece dovresti ringraziarmi  
while instead should.2SG thank.INF.me

The central *mentre*<sub>1</sub> clause in (8a) is in the scope of *probabilmente* 'probably', unlike the peripheral *mentre*<sub>2a</sub> clause in (8b).

The same effect is illustrated in (9) and (10).

- (9) (a) The thief entered the house, probably while<sub>1</sub> we were all in the garden.  
(b) Il ladro è entrato in casa,  
the thief be.PRS.3SG enter.PTCP in house  
probabilmente mentre<sub>1</sub> eravamo tutti in giardino.  
probably while be.IMPF.1PL all in garden  
(10) (a) \*You are angry with me, probably while<sub>2a</sub> you should be grateful  
instead.  
(b) \*Sei arrabbiato con me,  
be.PRS.2SG angry with me  
probabilmente mentre<sub>2a</sub> invece dovresti ringraziarmi.  
probably while instead should.2SG thank.INF.me

In (9) the epistemic adverb *probably/probabilmente* directly modifies the central *while*<sub>1</sub>/*mentre*<sub>1</sub> clause; in (10), this option is unavailable for a *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clause.

### 2.1.1.3 Aspectual subordination

In some cases, the relation between a central adverbial clause and the host clause may entail restrictions on the choice of aspectual forms. Giusti (2001: 721) defines temporal *mentre*<sub>1</sub> as a conjunction functioning as an *introdotto* *temporale* ('temporal subordinating conjunction'). *Mentre*<sub>1</sub> clauses establish a temporal relation between the event they express and the event in the main clause, adding durativity to the simultaneity. In (11a) the main clause encodes an instantaneous event, in (11b) it encodes a continuous event (11b) (Giusti 2001: 723 ex. (10)):

- (11) (a) Mentre<sub>1</sub> giocava a golf, Mylord cadde a terra  
 while play.IMP.F.3SG at golf Mylord fall.PERF.3SG at floor  
 stecchito.  
 stone-dead  
 ‘While he was playing golf, Mylord fell down stone-dead.’
- (b) Le mondine cantavano mentre<sub>1</sub> lavoravano  
 the rice-weeders sing.IMP.F.3PL while work.IMP.F.3PL  
 nelle risaie.  
 In.the paddy-fields  
 ‘The rice-weeders sang while working in the paddy-fields.’

One aspectual restriction on the *mentre*<sub>1</sub> clause is that, while the clause modified by a *mentre*<sub>1</sub> clause may contain a perfective pattern, the tense inside the *mentre*<sub>1</sub> clause itself must be simple (compare (11a) and (12)). See Giusti (2001: 723) for further restrictions.

- (12) \*Mentre<sub>1</sub> ha giocato a golf, Mylord  
 while have.PRS.3SG play.PTCP at golf Mylord  
 è caduto a terra stecchito.  
 be.PRS.3SG fall.PTCP at floor stone-dead  
 ‘While he has played golf, Mylord fell down stone-dead.’  
 (from Giusti 2001: 723 ex. (10))

The aspectual restriction imposed by *mentre*<sub>1</sub> in (12) does not obtain for peripheral *mentre*<sub>2a</sub>: While central *mentre*<sub>1</sub> clauses associate with durative aspect, peripheral *mentre*<sub>2a</sub> clauses can also encode a punctual event (13a) (Giusti 2001: 730). In addition, *mentre*<sub>2a</sub> clauses may contain a perfective form (13b).

- (13) (a) Io partirò domani, mentre<sub>2a</sub> mio marito è  
 I leave.FUT.1SG tomorrow while my husband be.PRS.3SG  
 arrivato ieri.  
 arrive.PTCP yesterday  
 ‘I will leave tomorrow, while my husband arrived yesterday.’
- (b) Maria<sub>i</sub> studia linguistica, mentre<sub>2a</sub> suo<sub>i</sub> padre  
 Maria study.PRS.3SG linguistics while her father  
 avrebbe voluto che studiasse medicina.  
 have.COND.3SG want.PTCP that study.SBJV.3SG medicine  
 ‘Mary studies linguistics, while her father would have wanted her to study medicine.’

(adapted from Giusti 2001: 734 ex. (67))

In line with the literature, we assume that TAM restrictions are syntactically determined. For instance, in the context of his formalization of sequence of tense patterns, Hornstein (1990: 43) writes:

Temporal adjuncts headed by temporal connectives such as *when*, *while*, *after*, *before*, *as*, *until*, and *since* interact with the tense of the matrix clause. ... There are rather specific tense-concord restrictions that obtain between the tense of the matrix clause and the tense of the modifying clause. These restrictions can be largely accounted for structurally in terms of the C[onstraint] on D[erived] T[ense] S[tructures] and the rule that combines these clauses into complex tense structures.

Hornstein's constraints on temporal structures are confined to what we label central adverbial clauses and do not extend to peripheral adverbial clauses. He observes:

There is a secondary conjunctive interpretation that all these connectives (*as*, *while*, *when*) shade into. They get an interpretation similar to *and* in these contexts. *And* is not a temporal connective, and these conjunctive interpretations do not tell against the theory [of temporal subordination and complex tense structures]. (Hornstein 1990: 206 fn. 19)

Importantly, though, peripheral adverbial clauses cannot be fully equated to conjuncts. We illustrate this point briefly for English *while*<sub>2a</sub> clauses, where at least two differences emerge. On the one hand, differently from second conjuncts, peripheral adverbial clauses which follow the associated host clause do not allow subject ellipsis<sup>8</sup> (14a, b). In addition, unlike second conjuncts, peripheral adverbial clauses do not allow gapping (15a, b).

- (14) (a) John is doing a Ph.D. in Oxford but \_\_\_did his first degree in Cambridge.  
 (b) \*John is doing a Ph.D. in Oxford while<sub>2a</sub> \_\_\_did his first degree in Cambridge.
- (15) (a) John reads *The Guardian* and Mary \_\_\_ *The Times*.  
 (b) \*?John reads *The Guardian* while<sub>2a</sub> Mary \_\_\_ *The Times*.

Besides TAM operators, a range of other sentential operators can scope over the temporal *while*<sub>1</sub>/*mentre*<sub>1</sub> clause and cannot scope over the peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clause. We illustrate some patterns; for additional English and Dutch data see Haegeman (2019, 2020); for Italian see Giusti (2001: 731–738).

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[8] For completeness's sake we point out that, *pace* Velde (2005: 226 ex. (97a)), some English (*al though*) clauses may well be considered as coordinated, as evidenced by subject ellipsis. By anecdotal sampling, Liliane Haegeman gathered some 60 examples from written sources: in all but two, the subject is omitted in an (*al*)*though* clauses following the host clause.

(i) I certainly agree with you, though [Ø] find it difficult to sculpt an irrefutable argument. (*The Observer*, 6.8.2000, Review section: page 4, column 3)

2.1.2 *Sentential negation*

A central *while*<sub>1</sub>/*mentre*<sub>1</sub> clause can be in the scope of a sentential negative operator, as shown in (16) and (17):

- (16) (a) No one would dare to come closer while<sub>1</sub> you are so angry.  
 (b) Nessuno osa avvicinarsi mentre<sub>1</sub> sei  
 no.one dare.PRS.3SG come.closer.INF.3SG while be.PRS.2SG  
 così arrabbiato.  
 so upset  
 ‘Nobody dares to come closer while you are so upset.’
- (17) (a) Thieves enter the house, not while<sub>1</sub> you are all at home together but  
 more likely during the weekend, when you are away.  
 (b) I ladri entrano non mentre<sub>1</sub> siete tutti insieme  
 the thieves enter.PRS.3PL NEG while be.PRS.2PL all together  
 a casa ma più probabilmente durante il  
 at home but more likely during the  
 weekend, quando siete in vacanza.  
 weekend when be.PRS.2PL in holiday  
 ‘Thieves break in certainly not while you are all at home but while  
 you are on holiday.’

A sentential negator cannot scope over a peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clause:

- (18) (a) No one made a bid for the painting at the auction last year, while<sub>2a</sub> it has  
 now been sold for millions of pounds.  
 (b) Nessuno ha fatto un’ offerta per il dipinto  
 no.one have.PRS.3SG do.PTCP a bid for the painting  
 all’ asta l’ anno scorso, mentre<sub>2a</sub> adesso è  
 at.the auction the year past while now be.PRS.3SG  
 stato venduto per milioni di sterline.  
 be.PTCP sell.PTCP for millions of pounds
- (19) (a) We will not cancel our trip in September, (\*not) while<sub>2a</sub> we will cancel  
 our trip in June.  
 (b) Annuleremo il nostro viaggio a Settembre, (\*non) mentre<sub>2a</sub>  
 cancel.FUT.1PL the our trip at September NEG while  
 annuleremo il nostro viaggio a giugno.  
 cancel.FUT.1PL the our trip at June

2.1.3 *Focus*

Temporal *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses can be in the scope of focal operators such as *even/perfino* in (20), and they can constitute the focus of a cleft sentence as shown in (21) (Giusti 2001: 734).

- (20) (a) John has a headache even while<sub>1</sub> he wears contact lenses.  
 (b) Gianni ha mal di testa perfino mentre<sub>1</sub> ha  
 Gianni have.PRS.3SG headache even while have.PRS.3SG  
 le lenti a contatto.  
 the lenses at contact  
 ‘Gianni has headache even while he wears contact lenses.’
- (21) (a) It’s only while<sub>1</sub> you’re young that you believe that you can change  
 people.  
 (b) È solo mentre<sub>1</sub> sei giovane che  
 be.PRS.3SG only while be.PRS.2SG young that  
 credi di poter cambiare la gente.  
 believe.PRS.2SG of can.INF change.INF the people

These options are unavailable for *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses, as shown in (22) and (23).

- (22) (a) \*John continues to smoke even while<sub>2a</sub> his wife can’t stand cigarette  
 smoke.  
 (b) \*Gianni fuma perfino mentre<sub>2a</sub> sua moglie non  
 Gianni smoke.PRS.3SG even while his wife NEG  
 sopporta il fumo.  
 tolerate.PRS.3SG the smoke  
 ‘Gianni smokes even while his wife can’t stand (cigarette) smoke.’  
 (Giusti 2001: 735 ex. (73))
- (23) (a) \*It’s only while<sub>2a</sub> younger people are much more negligent that older  
 people respect the Corona rules.  
 (b) \*È solo mentre<sub>2a</sub> le persone più giovani  
 be.PRS.3SG only while the people more young  
 sono molto più negligenzi che le persone più  
 be.PRS.3PL much more negligent that the people more  
 vecchie rispettano le regole contro il Corona virus.  
 old respect.PRS.3PL the rules against the Corona virus

Example (24) illustrates *while*<sub>1/2a</sub>/*mentre*<sub>1/2a</sub> clauses which are ambiguous between the central temporal reading and the peripheral reading.

- (24) (a) Mary left to study abroad while<sub>1/2a</sub> her brother has remained in the UK.  
 (b) Maria è partita per studiare all’ estero  
 Maria be.PRS.3SG leave.PTCP for study.INF at.the abroad  
 mentre<sub>1/2a</sub> suo fratello è rimasto in Italia.  
 while her brother be.PRS.3SG remain.PTCP in Italy  
 ‘Maria left to study abroad while her brother remained in Italy.’

As shown in (25), the central *while*<sub>1</sub>/*mentre*<sub>1</sub> clause can function as a clausal predicate, a pattern unavailable for the peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clause.

- (25) (a) Mary left to study abroad. That was while<sub>1/\*2a</sub> her brother stayed in the UK.  
 (b) Maria è partita per studiare all' estero.  
 Maria be.PRS.3SG leave.PTCP for study.INF at.the abroad  
 È stato mentre<sub>1/\*2a</sub> suo fratello è  
 be.PRS.3SG be.PTCP while her brother be.PRS.3SG  
 rimasto in Italia.  
 remain.PTCP in Italy  
 'Maria left to study abroad. It was while her brother remained in Italy.'

#### 2.1.4 Interrogative scope

A central *while*<sub>1</sub>/*mentre*<sub>1</sub> clause can be in the scope of an interrogative *yes/no* operator. This is not possible for peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses. Examples (26a–d) illustrate root interrogatives, (27) replicates the contrast for embedded interrogatives.

- (26) (a) Were they able to protect themselves while<sub>1</sub> they were in the desert?  
 (b) Sapevano come ripararsi dal sole mentre<sub>1</sub>  
 know.IMPF.3PL how protect.INF.themselves from.the sun while  
 erano nel deserto?  
 be.IMPF.3PL in.the desert  
 'Do they know how to protect themselves from the sun while they were in the desert?'
- (c) \*Does John continue to deny everything, while<sub>2a</sub> it probably would be better if he were to confess?
- (d) \*Gianni nega ancora tutto mentre<sub>2a</sub> farebbe  
 Gianni deny.PRS.3SG still everything while do.COND.3SG  
 probabilmente meglio a confessare?  
 probably better to confess.INF  
 'Does Gianni still deny everything while it probably would be in his best interest to confess?'
- (27) (a) Do you know if they were able to protect themselves while<sub>1</sub> they were in the desert?  
 (b) Sai se hanno potuto  
 know.PRS.2SG whether have.PRS.3PL can.PTCP  
 ripararsi dal sole mentre<sub>1</sub> erano  
 protect.INF.themselves from.the sun while be.IMPF.3PL  
 nel deserto?  
 in.the desert  
 'Do you know whether they were able to protect themselves while they were in the desert?'

- (c) \*Do you know whether Gianni continues to deny everything, while<sub>2a</sub> it would be better if he were to confess?
- (d) \*Sai se Gianni nega ancora tutto  
 know.PRS.2SG whether Gianni deny.PRS.3SG still everything  
 mentre<sub>2a</sub> farebbe meglio a confessare?  
 while do.COND.3SG better to confess.INF  
 ‘Do you know whether Gianni still denies everything \*while it would be in his best interest to confess?’

The same contrast emerges with *wh*-scope. As shown in (28a) and (28b), central *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses can function as a reply to a *wh*-question. This is not possible for peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses, as shown in (28c) and (28d). This point is also discussed in Giusti (2001: 734–735), whose (71a) and (75a) are repeated as (28b) and (28d).

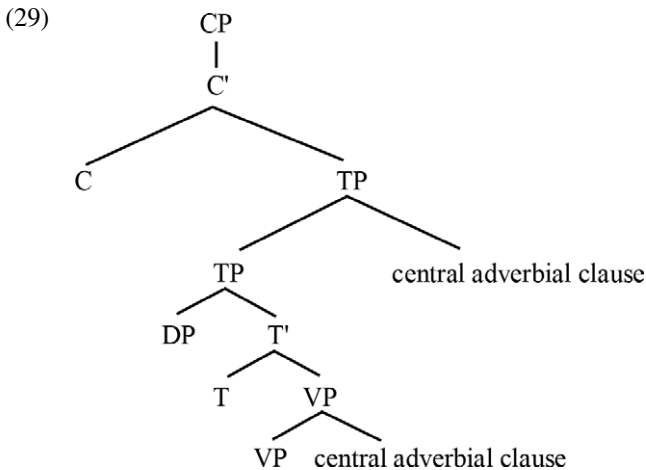
- (28) (a) When did the power cut happen?  
 While<sub>1</sub> I was in the shower.
- (b) Come sei caduto?  
 how be.PRS.2SG fall.PTCP  
 ‘How did you fall?’  
 Mentre<sub>1</sub> mi allenavo alla sbarra.  
 while me exercise.IMPF.1SG at.the bar  
 ‘While I was exercising at the bar.’
- (c) When did the power cut happen?  
 \*While<sub>2a</sub> we had been warned to switch of all non-essential appliances.
- (d) Come sei caduto?  
 how be.PRS.2SG fall.PTCP  
 ‘How did you fall?’  
 \*Mentre<sub>2a</sub> mia madre mi aveva detto di  
 while my mother to.me have.IMPF.3SG say.PTCP of  
 stare attento.  
 stay.INF attentive  
 ‘While my mother had told me to be careful.’

## 2.2 A first syntactic analysis

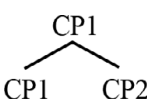
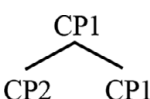
Based on the scope effects discussed in Section 2.1, Haegeman (1984a, b, c, 1991, 2003, 2012, etc.) proposes a distinction between central and peripheral adverbial clauses that is grounded in syntax. Her underlying assumption is that scope relations are conditioned by structure (*pace* Declerck & Reed 2001: 37–38), more specifically by c-command relations as defined in the generative paradigm. Haegeman develops two alternative proposals, one that considers both adverbial clause types

as syntactically integrated, differing only in the level of adjunction and a second one according to which central adverbial clauses belong to sentence-internal syntax (also referred to as the narrow syntax, or sentence-level syntax, as opposed to discourse-syntax), while peripheral adverbial clauses are extra-sentential constituents, that is, outside syntax proper and integrated at the level of discourse-syntax. Here, we summarize these two alternatives schematically.

- (i) In one approach, the level of adjunction is crucial in distinguishing central adverbial clauses from peripheral adverbial clauses:
  - central *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses are adjoined within the TP domain, either to vP/VP or to TP, as shown in (29)
  - peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses are adjoined to the root CP, as shown in (30a)
- (ii) In the second approach, syntactic integration as such is the distinctive factor:
  - as before, central *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses are adjoined within the TP domain, either to vP/VP or to TP, as shown in (29)
  - peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses are extra-sentential, i.e. they are non-integrated ‘orphans’<sup>9</sup> which combine with the host clause at the discourse level (30b); the idea was that peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses are assimilated to non-restrictive relative clauses (but see note 18 for some provisos)



[9] For similar proposals in relation to extra sentential constituents see e.g. Mittwoch (1979), Safir (1986), Fabb (1990), Koster (2000), Shaer & Frey (2004), Cinque (2008), Haegeman et al. (2009), Giorgi (2014), Haegeman & Greco (2018), Greco & Haegeman (2020). See also Section 5.

- (30) (a) (i)  (ii) 
- (b) [CP2 peripheral adverbial clause] [CP1 host clause]

Both analyses achieve the desired effect that TP-internal constituents c-command central adverbial clauses and do not c-command peripheral adverbial clauses, leading to the scope effects illustrated above. Recall that in Haegeman's original classification, peripheral adverbial clauses comprise both adversative *while*<sub>2</sub>/*mentre*<sub>2a</sub> clauses and conditional assertions (*if*<sub>2a</sub>/*se*<sub>2a</sub>) as well as speech event modifiers like those illustrated in (1c) for *while*<sub>2b</sub> and the conditional *if*<sub>2b</sub>/*se*<sub>2b</sub> clauses in (3c) and (4c). We return to this point in Sections 4.2 and 5.

### 2.3 Further support for the proposal

This section presents two additional differences between central adverbial clauses and peripheral adverbial clauses which follow from the syntactic analyses outlined above. We again concentrate solely on peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses. Speech event modifying *while*<sub>2b</sub> clauses are addressed mainly in Section 5.

#### 2.3.1 VP anaphora and sloppy identity

Both analyses in (29)–(30) lead to the correct prediction that in English VP anaphora can affect central *while*<sub>1</sub> clauses while this is unavailable for peripheral *while*<sub>2a</sub> clauses. In (31a) *so does James* can be made explicit as in (i), with the *while*<sub>1</sub> clause as part of the ellipsis and with *his* being interpreted as coreferential either with *John* ('strict identity') or with *James* ('sloppy identity') as in (ii). Example (31b) shows that a peripheral *while*<sub>2a</sub> clause is not affected by VP anaphora: The string *so has Janet* only has reading (i), in which the *while*<sub>2a</sub> clause is not contained in the ellipsis site. Reading (ii) is unavailable. Crucially, this contrast does not generalise to all anaphora. Example (31c) shows that the peripheral clause can be included in sentential anaphora, i.e. both readings are available here. What is crucially excluded is VP-anaphora, providing evidence that these adverbial clauses are not as low as those affected by VP anaphora.<sup>10</sup>

- (31) (a) John works most efficiently while<sub>1</sub> his children are at school and so does James.  
 While<sub>1</sub> his children are at school, John works most efficiently and so does James.

[10] Thanks to an anonymous *JL* referee for signalling this.

- (i) ‘James also works most efficiently while John’s children are at school.’
- (ii) ‘James also works most efficiently while his (own) children are at school.’
- (b) While<sub>2a</sub> her husband is unemployed, Jane has a high-powered job in the city and so has Janet.
  - (i) ‘Janet also has a high-powered job in the city.’
  - (ii) \*‘Janet<sub>i</sub> also has a high-powered job in the city, and her<sub>i</sub> husband is also unemployed.’
- (c) While<sub>2a</sub> her husband is unemployed, Jane has a high-powered job in the city and this is also true for Janet.
  - (i) ‘Janet also has a high-powered job in the city.’
  - (ii) ‘Janet<sub>i</sub> also has a high-powered job in the city, and her<sub>i</sub> husband is also unemployed.’

The interpretive effects are replicated for Italian:

- (32) (a) Don Totó non ha voluto parlare  
 Don Totó NEG have.PRS.3SG want.PTCP speak.INF  
 mentre<sub>1</sub> ancora aspettava il verdetto finale  
 while still wait.IMPF.3SG the verdict final  
 del suo processo e neanche Don Gaetano.  
 of.the his trial and neither Don Gaetano  
 ‘Don Totó didn’t want to talk while he was still waiting for the final verdict of his trial and neither did Don Gaetano.’  
 (i) ‘Don Gaetano did not want to talk while waiting for the verdict of Don Toto’s trial.’  
 (ii) ‘Don Gaetano also did not want to talk while waiting for the verdict of his own trial.’
- (b) Gianni non ha voluto parlare  
 Gianni NEG have.PRS.3SG want.PTCP speak.INF  
 mentre<sub>2a</sub> avrebbe dovuto dire subito  
 while have.COND.3SG have to.PTCP say.INF immediately  
 la sua opinione e neanche Piero.  
 the his opinion and neither Piero  
 ‘Gianni didn’t want to speak, while he should have expressed his opinion, and neither did Piero.’  
 (i) ‘Piero also did not want to speak.’  
 (ii) \*‘Piero also did not want to speak while he should have expressed his opinion.’
- (c) Mentre<sub>2a</sub> suo marito è disoccupato, Gianna  
 while his husband be.PRS.3SG unemployed Gianna  
 ha una posizione di prestigio in città,  
 have.PRS.3SG a job of prestige in city  
 e questo è vero anche per Lisa.  
 and this be.PRS.3SG true also for Lisa

- (i) ‘Lisa also has a prestigious job in the city.’  
 (ii) ‘Lisa<sub>i</sub> also has a prestigious job in the city, and her<sub>i</sub> husband is also unemployed.’

In (32a), *neanche Don Gaetano* can have a strict identity reading for *suo processo* ‘his trial’ as paraphrased in (i) or a sloppy identity reading as in (ii). In (32b), the anaphoric *neanche Piero* does not comprise the *mentre*<sub>2a</sub> clause (compare (i) and (ii)). Moreover, sentential anaphora with *e questo è vero anche per* ‘and this is true also for’ is also available for *mentre*<sub>2a</sub> clauses, as seen in (32c).

### 2.3.2 Embedding

#### 2.3.2.1 Embedding within complement clauses

Assuming the analysis in (29)–(30a) above, in which the level of integration sets apart central *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses from peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses, we correctly predict that both adverbial clauses are embeddable within complement clauses. See also Frey (2018: 14, 2020a, b), but see Section 3.2.

- (33) (a) Mary told me [that [while<sub>1</sub> you were on the phone], John came by to say hi].  
 (b) Maria mi ha detto [che [mentre<sub>1</sub> eri  
 Mary to.me have.PRS.3SG say.PTCP that while be.IMP.2SG  
 al telefono] Gianni è passato per  
 at.the telephone Gianni be.PRS.3SG pass.PTCP to  
 salutarti].  
 say.hello.INF.to.you  
 ‘Mary said that while you were on the phone Gianni came by to say hello.’
- (34) (a) Mary told me [that [while<sub>2a</sub> you arrived on time], John was really late].  
 (b) Maria ha detto [che [mentre<sub>2a</sub> tu sei  
 Maria have.PRS.3SG say.PTCP that while you be.PRS.2SG  
 arrivato in orario], Gianni è arrivato tardissimo].  
 arrive.PTCP in time Gianni be.PRS.3SG arrive.PTCP very.late  
 ‘Mary said that while you arrived on time, Gianni arrived very late.’

Also, anticipating the discussion in Section 3.1, examples (33) and (34) are problematic for the non-integration analysis of peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses, which, according to this analysis, would be outside the scope of the sentence-internal syntax.

#### 2.3.2.2 Embedding within central adverbial clauses

Central *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses are embeddable inside central adverbial clauses such as the conditional clauses in (35). As suggested by the bracketing, the *while*<sub>1</sub>/*mentre*<sub>1</sub>

clauses are to be viewed as temporal modifiers of the event encoded in the *if*<sub>1</sub>/*se*<sub>1</sub> clause. In (35a) the temporal *while*<sub>1</sub> clause, which is embedded in the (bracketed) central conditional clause, is modally subordinated, with its past perfect tense in *had met* inheriting the irrealis reading from the irrealis modal in the host clause ('would have asked'). The temporal *mentre*<sub>1</sub> clause is embedded in the conditional *se*<sub>1</sub> clause in (35b). Example (36) is an additional illustration of the same pattern.

- (35) (a) [If<sub>1</sub> I had met him [while<sub>1</sub> I was single]], I would definitely have asked him for his phone number.  
 (b) [Se<sub>1</sub> I' avessi incontrato [mentre<sub>1</sub> ero single]]  
 if him have.SBJV.1SG meet.PTCP while be.IMPF.1SG single  
 gli avrei chiesto il numero di telefono.  
 to.him have.COND.1SG ask.PTCP the number of telephone  
 'If I had met him while I was alone, I would have asked him telephone number.'
- (36) (a) Maria will be very disappointed [if<sub>1</sub> John quits university [while<sub>1</sub> he is still an undergraduate]].  
 (b) Maria sarà molto contrariata [se<sub>1</sub> Gianni lascia  
 Maria be.FUT.3SG very disappointed if Gianni quit.PRS.3SG  
 l' università [mentre<sub>1</sub> è solo al primo  
 the university while be.PRS.3SG only at.the first  
 anno di bachelor]].  
 year of bachelor  
 'Maria will be very disappointed if Gianni quits university while he is just at his first year of bachelor.'

In contrast, peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses cannot be embedded inside central adverbial clauses such as conditional clauses.

- (37) (a) His mum will be so disappointed [if<sub>1</sub> he quits university [while<sub>1/\*2a</sub> his sister has a Cambridge degree]].  
 (b) His mum will be so disappointed [if<sub>1</sub> he quits university [despite his sister having a Cambridge degree]].

The *while* clause in (37a) must be read as a central *while*<sub>1</sub> clause: Its present tense can only be interpreted as temporally subordinated, leading to the strange assumption that his sister's Cambridge degree is temporary and that at some future point she will lose her Cambridge degree. A (peripheral) adversative reading of the *while* clause as paraphrased in (37b) is not available.<sup>11</sup> The same effect obtains for Italian (38).

[11] Judgements from 2 British informants for (37) and from 3 Italian informants for (38). In both languages, judgements are subtle also because one has to control for a parenthetical interpretation of the examples. Carlos de Cuba (p.c.) also points that English (i) is not acceptable for him with the low reading in which the adversative *while*<sub>2a</sub> clause modifies the *if* clause.

- (38) Maria sarà molto contrariata [se<sub>1</sub> Gianni lascia l'  
 Maria be.FUT.3SG very disappointed if Gianni quit.PRS.3SG the  
 università [mentre<sub>1/\*2a</sub> sua sorella ha un master  
 university while her sister have.PRS.3SG a master  
 a Cambridge]].  
 at Cambridge  
 'Maria will be very disappointed if Gianni quits university while his sister has  
 a master at Cambridge.'

It has been independently shown that the left periphery of central adverbial clauses, such as the event *if*<sub>1</sub> conditional, is impoverished (for arguments see e.g. Haegeman 2003, 2012; Frey 2018, 2020a, b). The non-embeddability of peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses within central adverbial clauses is correctly predicted by both syntactic analyses of peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses outlined in (30). In both analyses – the high insertion analysis of the peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses (30a) and the orphan hypothesis (30b) – peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses are associated with the (left)<sup>12</sup> periphery of the clause, and this is independently known to be restricted in the case of central adverbial clauses.

## 2.4 Summary

Table 1 summarizes the differences between central adverbial clauses and peripheral adverbial clauses. Recall that our argumentation remains restricted to adverbial *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses, (see Sections 3.1 and 5).

## 3. THE SYNTACTIC TYPOLOGY

Based on the scope effects reviewed in Section 2.1, Haegeman (1984a, b, c, 1991, 2003, 2012, etc.) argues for a syntactic distinction between the central and peripheral adverbial clauses and puts forward two alternative proposals. In the first, both adverbial clause types are syntactically integrated, differing only in the level of adjunction; in the second, central adverbial clauses belong to sentence-internal syntax, while peripheral adverbial clauses are sentence-external constituents and are integrated at the level of discourse-syntax.

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(i) There will be some surprised faces if he registers at a Redbrick university *while*<sub>2a</sub> his father went to Cambridge.

[12] The adverbial clauses surface either to the left or to the right of the matrix clause. When they follow the matrix clause occupying what would be a right periphery (as in (37) and (38)) one may either postulate some form of right adjunction or alternatively, in a Kaynean antisymmetric perspective (Kayne 1994), one may postulate that the adverbial clause moves to the left-periphery and that the matrix proposition moves by so called remnant movement to a higher left peripheral layer. We won't pursue this issue here, which is part of the more general question of how to derive constituents in the right periphery.

Diagnosics	Central <i>while</i> <sub>1</sub> / <i>mentre</i> <sub>1</sub>	Peripheral <i>while</i> <sub>2a</sub> / <i>mentre</i> <sub>2a</sub>
A Temporal subordination	+	–
B Modal subordination	+	–
C Aspectual subordination	+	–
D In scope of matrix negation	+	–
E Focus (cleft, <i>only</i> + negative inversion)	+	–
F Interrogative	+	–
G VPE/VP anaphora (sloppy identity effects)	+	–
H Embedding in complement clauses	+	+
I Embedding in central adverbials	+	–

Table 1

Diagnosics to set apart central and peripheral *while/mentre* clauses.

Haegeman crucially views the two analyses in (30) as alternatives: All peripheral clauses are analysed either in terms of different degrees of embedding or in terms of (non-)integration. However, it has become clear over time that both analytic options must be available simultaneously in the grammar, albeit for distinct data (see also Frey 2016, 2018, 2020a, b, to whose work this section is heavily indebted). We show first that the analysis of peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses as either orphan constituents or as CP-adjoined is untenable. Section 5 demonstrates how an updated version of the orphan account can capture the properties of speech event modifiers such as *while*<sub>2b</sub> temporal clauses (in (1c)) or *if*<sub>2b</sub>/*se*<sub>b</sub> conditionals in (3c) and (4c).

### 3.1 Problems for an orphan account of peripheral adversative *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses.

#### 3.1.1 Embedding

As shown by Haegeman et al. (2009) and Frey (2016, 2018, 2020a, b), a non-integration (orphan) hypothesis for adversative *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses is challenged by the fact that these adversative clauses can be embedded, with sequence of tense effects and pronominal binding as the reflex of their syntactic integration. Consider (39).

- (39) (a) The ethicist declared [that [while<sub>2a</sub> it was not immoral to take pride in one's accomplishments], it was not morally praiseworthy either.
- (b) L' esperto di etica ha dichiarato [che [mentre<sub>2a</sub> the expert of ethics have.PRS.3SG declare.PTCP that while non era immorale essere orgogliosi dei propri NEG be.IMPF.3SG immoral be.INF proud of.the own risultati, non era neanche moralmente lodevole. results NEG be.IMPF.3SG neither morally praiseworthy

In the English (39a), for instance, the viewpoint and the propositional content of the *while*<sub>2a</sub> clause are attributed to the subject of the matrix clause *the ethicist*, and not to the speaker, who may well disagree with this. In addition, in the *while*<sub>2a</sub> clause the past tense *was* is imposed by the embedding of the *while*<sub>2a</sub> clause under a past tense matrix verb (*declared*): the ethicist would have made the statement *It is not immoral to take pride in one's accomplishments*.<sup>13</sup> These properties are replicated for Italian in (39b). It is difficult to envisage how a non-integration account could naturally capture these scope effects.

### 3.1.2 *Comparative evidence: Verb second*

As shown by e.g. Reis (1997) and Frey (2016, 2018, 2020a, b), a non-integration (orphan) hypothesis for adversative *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses is also contradicted by the fact that in V2 languages the analogues of these adverbial clauses can and must constitute the prefield constituent of a V2 clause, standardly considered 'a position of full integration' (Frey 2018: 13). This is illustrated by the Dutch *terwijl*<sub>2a</sub> clause in (40).

- (40) Terwijl<sub>2a</sub> Jan in Amsterdam gepromoveerd is in 1980  
 while Jan in Amsterdam promote.PTCP be.PRS.3SG in 1980  
 zal zijn dochter/\*zijn dochter zal nu in Utrecht gaan  
 will his daughter/his daughter will now in Utrecht go.INF  
 studeren.  
 study.INF  
 'While Jan got his degree in Amsterdam in 1980, his daughter is now going to study in Utrecht.'

The example also shows that the Dutch *terwijl*<sub>2a</sub> clause cannot function as an extra-sentential constituent in the V3 pattern (see Haegeman & Greco 2018, Greco & Haegeman 2020), that is, it cannot constitute a non-integrated orphan.

### 3.2 *Problems for the CP/ForceP adjunction account of peripheral adversative terwijl*<sub>2a</sub> *clause*

The syntactic analysis of the *while*<sub>2a</sub> clause in terms of CP/ForceP-adjunction (Haegeman 2003, Coniglio 2011, Frey 2016) in (30a) is further challenged by the word order patterns illustrated in (39) and (40). First, in the embedded environment (39) the complementizer *that* linearly precedes the adverbial clause. If the *while*<sub>2a</sub> clause were genuinely CP-adjoined, it ought to precede the complementizer. Second, in the V2 pattern in (40) ForceP/CP-adjunction should entail that the adverbial clause can precede a full-fledged V2 clause, contrary to fact.

[13] We thank an anonymous *JL* referee for providing this example.

## 4. A REAPPRAISAL OF THE DIAGNOSTICS

4.1 *The diagnostics*

Section 2 has shown that peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses differ from central adverbial *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses in a number of ways. Based on these differences, Haegeman (1991, 2003) developed two alternative analyses: according to one analysis, peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses are structurally less integrated with the host clause (30a); according to the alternative, they are not syntactically integrated (30b) and link up with the host clause at the level of discourse. On closer inspection, the diagnostics Haegeman advances to support her conclusions and the corresponding syntactic analyses are not quite fit for purpose and fail to provide conclusive evidence for either of the two analyses advanced. Indeed, the diagnostics used in Section 2 for setting apart peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses also systematically single out epistemic adverbs, exemplified below by the epistemic modal adverb *probably/probabilmente*. Such adverbs are standardly taken to be part of the clausal domain (Frey 2020a: 34; also e.g. Cinque 1999; Ernst 2001, 2002, 2007, 2009), witness the fact that in English they follow the canonical subject position (41a). Epistemic adverbs

- are outside the scope of the temporal operator, see (41);
  - are outside the scope of negation, see (42);
  - cannot be focused or cleft, see (43);
  - cannot be *wh*-questioned, see (44);
  - do not undergo VP Ellipsis (VPE), see (45);
  - do not embed in central adverbial clauses, see (46).
- (41) (a) John probably arrived after the party.  
 (b) Gianni probabilmente è arrivato dopo il party.  
 Gianni probably be.PRS.3SG arrive.PTCP after the party  
 = ‘It is probable (now) that John/Gianni arrived after the party.’  
 ≠ ‘It was probable in the past that John/Gianni arrived after the party.’
- (42) (a) John probably did not arrive after the party.  
 (b) Gianni probabilmente non è arrivato dopo il party.  
 Gianni probably NEG be.PRS.3SG arrive.PTCP after the party  
 = ‘I consider it probable that John did not arrive after the party.’  
 ≠ ‘It is not probable that John arrived after the party.’
- (43) (a) John (\*even) probably had arrived after the party.  
 (b) John arrived after the party. \*It/that was probably.  
 (c) Gianni (\*perfino) probabilmente è arrivato dopo il party.  
 Gianni even probably be.PRS.3SG arrive.PTCP after the party.  
 party  
 ‘Gianni (\*even) probably had arrived after the party.’

- (d) Gianni è arrivato dopo il party.  
 Gianni be.PRS.3SG arrive.PTCP after the party  
 \*È stato probabilmente.  
 be.PRS.3SG be.PTCP probably  
 ‘Gianni arrived after the party. \*It was probably.’
- (44) (a) A: How did John leave? B: \*Probably.  
 (b) A: Come è arrivato Gianni? B: \*Probabilmente.  
 how be.PRS.3SG arrive.PTCP Gianni probably
- (45) (a) John had probably gone home, and his wife had too.  
 (hard to get ‘probably’ reading for the VPE, p.c. Andrew Radford)  
 (b) Gianni era probabilmente tornato a casa,  
 Gianni be.IMPF.3SG probably go.back.PTCP at home  
 e anche sua moglie (e anche sua moglie era  
 and also his wife and also his wife be.IMPF.3SG  
 tornata a casa (\*probabilmente)).  
 go.back.PTCP at home probably  
 ‘Gianni had probably gone back home, and his wife had too (and also  
 his wife had gone home (probably)).’
- (46) (a) \*If they luckily/fortunately arrive on time, we will be saved.  
 (Ernst 2007: 1027; Nilsen 2004)  
 (see also Palmer 1990: 121, 182;  
 Declerck & Depraetere 1995: 278; Frey 2018: 19)  
 (b) \*Se fortunatamente arrivano in tempo, saremo salvi.  
 if fortunately arrive.PRS.3PL in time be.FUT.1PL saved  
 \*‘If they luckily arrived on time, we will be saved.’

As shown by (47), the unacceptable patterns in (41)–(46) are not due to the categorial status of the *-ly/-mente* adverbs. The patterns are acceptable for temporal adverbs such as English *recently* (see Li, Shields & Lin 2012: 232) or Italian *recentemente* ‘recently’.

- (47) (a) John recently arrived in Belgium.  
 (b) John did not arrive in Belgium recently; in fact, he arrived two years ago.  
 (c) John has only recently arrived in Belgium.  
 (d) It is only RECENTLY that John arrived in Belgium.  
 John arrived in Belgium. This was recently.  
 (e) A: When did John arrive in Belgium? B: Very recently.  
 (g) John recently arrived in Belgium, and his wife did too.  
 (h) When John recently arrived in Belgium, he suddenly discovered new possibilities.  
 (i) Gianni è recentemente arrivato in Belgio.  
 Gianni be.PRS.3SG recently arrive.PTCP in Belgium  
 ‘Gianni recently arrived in Belgium.’

- (j) Gianni non è arrivato in Belgio recentemente;  
 Gianni NEG be.PRS.3SG arrive.PTCP in Belgium recently  
 invece, è arrivato due anni fa.  
 instead be.PRS.3SG arrive.PTCP two years ago  
 ‘Gianni did not arrive in Belgium recently; in fact, he arrived two years ago.’
- (k) Gianni è arrivato in Belgio solo recentemente.  
 Gianni be.PRS.3SG arrive.PTCP in Belgium only recently  
 ‘John has arrived in Belgium only recently.’
- (l) È solo RECENTEMENTE che Gianni è arrivato  
 be.PRS.3SG only recently that Gianni be.PRS.3SG arrive.PTCP  
 in Belgio.  
 in Belgium  
 ‘It is only RECENTLY that Gianni arrived in Belgium.’
- (m) Gianni è arrivato in Belgio.  
 Gianni be.PRS.3SG arrive.PTCP in Belgium  
 È stato recentemente.  
 be.PRS.3SG be.PTCP recently  
 ‘Gianni arrived in Belgium. This was recently.’
- (n) A: Quando è arrivato in Belgio?  
 when be.PRS.3SG arrive.PTCP in Belgium  
 B: Molto recentemente.  
 very recently  
 ‘A: When did John arrive in Belgium? B: Very recently.’
- (o) Gianni recentemente è arrivato in Belgio, e  
 Gianni recently be.PRS.3SG arrive.PTCP in Belgium and  
 anche sua moglie.  
 also his wife  
 ‘Gianni recently arrived in Belgium, and his wife did too.’
- (p) Quando Gianni è arrivato in Belgio recentemente,  
 when Gianni be.PRS.3SG arrive.PTCP in Belgium recently  
 ha scoperto nuove opportunità.  
 have.PRS.3SG discover.PTCP new opportunities  
 ‘When John recently arrived in Belgium, he suddenly discovered new possibilities.’

Table 2 summarizes the parallelisms between central *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses and temporal adverbs such as *recently*/*recentemente*, on the one hand, and between peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses and epistemic adverbs such as *probably*/*probabilmente*, on the other. The table also demonstrates the differences between the two clause types and between the two types of adverbs.

Even if epistemic adverbs such as *probably*/*probabilmente* may well be argued to be interpreted higher than their surface position, their linear position shows them as part of the sentence-internal syntax (see Cinque’s 1999; Ernst 2001, 2007, 2009)

Diagnostics		Temporal <i>while</i> <sub>1</sub> / <i>mentre</i> <sub>1</sub>	Temporal adverbs <i>recently</i> , <i>recentemente</i>	Adversative <i>while</i> <sub>2a</sub> / <i>mentre</i> <sub>2a</sub>	Epistemic adverbs
A	Temporal subordination	+	+	–	–
B	Modal subordination	+	+	–	–
C	Aspectual subordination	+	not available	–	not available
D	In scope of matrix negation and matrix interrogative	+	+	–	–
E	Focus (cleft, <i>only</i> + negative inversion)	+	+	–	–
F	VPE/VP anaphora (sloppy identity effects)	+	+	–	–
G	Embedding in complement clauses	+	+	+	–
H	Embedding in central adverbials	+	+	–	–
I	Prefield constituent in V2	+	+	+	+

Table 2

Adverbial modifiers: Clauses and non-clausal.

and, hence, they must be integrated in the clausal structure. The evidence for their syntactic integration has already been mentioned: Epistemic adverbs can typically follow the subject position in English (41a). Furthermore, epistemic adverbs constitute the prefield constituent in V2 clauses in Dutch (see Frey 2020a: 34 ex. (93) for the same argument from German) and cannot give rise to the V3 patterns typically associated with extra-sentential constituents, such as, for instance, *eerlijk gezegd* ‘honestly’ illustrated in (48c).<sup>14</sup>

- (48) (a) Waarschijnlijk komt hij morgen terug.  
probably come.PRS.3SG he tomorrow back  
‘Probably he comes back tomorrow.’
- (b) \*Waarschijnlijk hij komt morgen terug.  
probably he come.PRS.3SG tomorrow back  
‘Probably he comes back tomorrow.’
- (c) Eerlijk gezegd hij komt morgen terug.  
honestly say.PTCP he return.PRS.3SG tomorrow back  
‘Honestly he comes back tomorrow.’

From the parallelisms between *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses and epistemic adverbs we can conclude the following:

[14] An anonymous *JL* referee also accepts the regular V2 pattern in (48c). For Liliane Haegeman, however, that order is unacceptable.

- (i) W.r.t. syntax/degree of integration of the adversative *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses, the diagnostics do not show that peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses are not integrated with the host clause.
- (ii) The diagnostics only show that, like epistemic adverbs, peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses must be somewhere ‘higher’ in the clausal structure and outside the relevant scope domains.
- (iii) Independently, the distribution of epistemic adverbs such as *probably/probabilmente* shows that these adverbs must at some point be part of the clausal domain. Like several other constituents, they may, of course, move to the left peripheral CP domain.
- (iv) Table 2 also shows that in terms of the diagnostics, central adverbial clauses introduced by *while*<sub>1</sub>/*mentre*<sub>1</sub> pattern with regular TP-related adverbs.

#### 4.2 *Speech act modifiers are different*

In Section 2, we identified three uses of English *while* clauses: the relevant examples in (1) are repeated for convenience in (49).

- (49) (a) While<sub>1</sub> we were talking about Theresa May, the BBC announced her resignation.
- (b) While<sub>2a</sub> Theresa May may be viewed as a conservative, some of her proposals are innovative.
- (c) While<sub>2b</sub> we are talking about Theresa May, some of her proposals were innovative.

So far, we have been focusing exclusively on the contrast between (49a) and (49b). The central temporal *while*<sub>1</sub> clause in (49a) modifies the event encoded in the host clause; the peripheral adversative *while*<sub>2a</sub> clause in (49b) provides a background assumption enhancing the relevance of the proposition encoded in the host clause. Example (49c) contains a temporal *while* clause, but this is now not used as a temporal modifier of the event encoded in the host clause, i.e. the timing of the BBC’s announcement, but rather it modifies the speech event time (see Haegeman & Schönenberger to appear). Recall that the subscripts ‘2a’ and ‘2b’ in (1) are intended to reflect Haegeman’s earlier analysis, in which both the *while*<sub>2a</sub> clause and the speech event modifying *while*<sub>2b</sub> clause were considered as peripheral adverbial clauses. It turns out, though, that the *while*<sub>2b</sub> clause in (49c) is actually a temporal *while* clause recycled<sup>15</sup> as a temporal modifier of the speech event. Similarly, in (3c), an event conditional is recycled as a conditional on the speech event.<sup>16</sup> As mentioned in Section 1, Italian temporal *mentre*<sub>1</sub>

[15] The term ‘recycling’ as used in this paper is merely intended as description and it does not imply any specific grammatical operation.

[16] The possibility of ‘recycling’ integrated adverbial clauses as non-integrated ones is explicitly acknowledged by Frey (2020a: 8): who says:

clauses cannot be recycled as speech event modifiers, but this is specific to *mentre* clauses: an event conditional clause introduced by *se*<sub>1</sub> ‘if’ can be recycled as a speech event conditional, as shown in (4b, c), repeated here in (50).

- (50) (a) *Se*<sub>2a</sub> non posso più andare a trovare mia  
 if NEG can.PRS.1SG no.longer go.INF to visit.INF my  
 madre, dovrei incoraggiarla a installare Skype?  
 mother should.COND.1SG encourage.INF.her to install.INF Skype  
 (b) *Se*<sub>2b</sub> ti ricordi, i primi casi in Italia  
 if you remember.PRS.2SG the first cases in Italy  
 sono stati segnalati solo un mese fa.  
 are.PRS.3PL be.PTCP report.PTCP only a month ago

Frey (2016, 2018, 2020a, b) shows convincingly that Haegeman’s binary classification is inadequate, regardless of the specific analysis adopted. We reproduce two arguments here, both drawn from Frey’s discussion. See also Haegeman & Schönenberger (to appear).

#### 4.2.1 *Embedding*

Speech event modifying adverbial clauses like the *while*<sub>2b</sub> clause in (49c) are unembeddable. Consider (51).

- (51) (a) *While*<sub>1/2b</sub> we are talking about Theresa May, five cabinet ministers will be voting with the opposition.  
 (b) The secretary of state will announce [that [*while*<sub>1/\*2b</sub> they are talking about Theresa May], five cabinet ministers will be voting with the opposition].

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[D]ifferent types of clauses which usually appear as PACs can also appear as NonICs if they are separated by a pause from the host clause and carry their own sentence contour. Appearing as NonICs, these particular clauses can host a strong root phenomenon, cf. [i].

- (i) (a) Ich komme nicht \ –  
 I come NEG  
 [/selbst wenn du mich auf Knien bittest, Mann].  
 /even if you me on knees beg man  
 ‘I’m not coming even if you beg me on your knees, man.’  
 (b) Du solltest Maria um Hilfe bitten \  
 you should Maria for help ask \  
 [/da du es allein nicht schaffst, nicht wahr?]  
 /since you it alone NEG manage NEG true  
 ‘You should ask Maria for help because you cannot do it alone, can you?’

The particular German examples illustrating PACs recycled as speech act modifiers display root phenomena (i.e. the particles *Mann* in (ia) and *nicht wahr* in (ib)). As will be discussed in more detail in Section 5, English CACs recycled as non-integrated speech event modifiers continue to resist strong root phenomena.

In (51a), the (temporal) *while* clause modifies either the time of the event encoded in the main clause (our *while*<sub>1</sub>) or it is ‘recycled’ as a temporal modifier of the speech event (our *while*<sub>2b</sub>). In the former reading, the present tense *are* in the *while* clause is temporally subordinated to that in the matrix clause, that is, it has a future interpretation. In the second reading, present tense *are* refers to speech time. The embedded *while* clause in (51b) must be interpreted as modifying the time of the event encoded in the (bracketed) clause it modifies (*while*<sub>1</sub>); an interpretation as a ‘recycled’ temporal modifier of the speech event (*while*<sub>2b</sub>) is unavailable.

#### 4.2.2 V2 patterns

Speech event modifying adverbial clauses like Dutch *terwijl*<sub>2b</sub> clauses cannot constitute the first constituent of a V2 clause, as shown in (52).

- (52) Terwijl<sub>2b</sub> we het over Bart De Wever hebben,  
 while we it about Bart De Weber have.PRS.3PL  
 ik hoor/ \*hoor ik dat Antwerpen berucht is  
 I hear.PRS.1SG/hear.PRS.1SG I that Antwerp famous be.PRS.3SG  
 voor de invoer van drugs.<sup>17</sup>  
 for the import of drugs

Instead, the speech event modifying *terwijl*<sub>2b</sub> clause is an extra-sentential constituent which combines with a full-fledged V2 root clause, leading to a licit V3 order.

#### 4.3 A ternary classification of adverbial clauses

Table 3 summarizes the properties of English *while* clauses: Haegeman’s original binary classification was essentially in line with properties A–F and H, but taking

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[17] The example (i) is acceptable: the *terwijl*-clause is a temporal modifier of the root clause:

- (i) Terwijl we het over Bart De Wever hadden,  
 while we it about Bart De Weber have-PAST.3PL  
 hoorde ik dat Antwerpen beruchtis  
 hear-PAST.1SG I that Antwerp famousbe.PRS.3SG  
 voor de invoer van drugs.  
 for the import of drugs

Interestingly, *terwijl* can also be used as a sentence-external discourse particle, in which case it combines with a V2 root clause, as shown in (ii):

- (ii) Terwijl, dat komt best veel voor.  
 while that happen-PRS.3SG best very PREP  
 ‘Meanwhile, that actually happens quite often.’

Though of interest, and reminiscent of the use of *though* as a particle in English, we have nothing to add on this phenomenon. We thank an anonymous *JL* referee for bringing this example to our attention.

Diagnostics		Temporal <i>while</i> <sub>1</sub>	Adversative <i>while</i> <sub>2a</sub>	Speech event modifier <i>while</i> <sub>2b</sub>
A	Temporal subordination	+	–	–
B	Modal subordination	+	–	–
C	Aspectual subordination	+	–	–
D	In scope of matrix negation and matrix interrogative	+	–	–
E	Focus (cleft, <i>only</i> + negative inversion)	+	–	–
F	VPE/VP anaphora (sloppy identity effects)	+	–	–
G	Embedding in complement clauses	+	+	–
H	Embedding in central adverbial clauses	+	–	–
I	First constituent in V2	+	+	–

*Table 3*  
Three types of adverbial clauses.

into consideration properties G and I – pointed out in Frey (2016, 2018, 2020a, b), we conclude that adversative *while*<sub>2a</sub> clauses and speech event modifying *while*<sub>2b</sub> clauses must be differentiated.

Frey (2016, 2018, 2020a, b) develops a ternary classification in terms of (i) CAC as in (1a)/(49a), (ii) PAC<sub>2a</sub> as in (1b)/(49b) and (iii) NonIC<sub>2b</sub> as in (1c)/(49c).

(53) *The typology of adverbial clauses (Frey 2018)*

- (i) CAC – examples (1a)/(2a) – modifies the matrix event: lower syntactic attachment.
- (ii) PAC – examples (1b)/(2b) – modifies the matrix proposition: higher syntactic attachment.
- (iii) NonIC – example (1c) – modifies the speech event: outside sentence-internal syntax.

From this classification, we retain that speech act modifying *while*<sub>2b</sub> clauses are distinct from *while*<sub>2a</sub> clauses, which provide a contextually salient proposition that interacts with the main clause proposition. We turn to the syntax of *while*<sub>2b</sub> clauses in Section 5.<sup>18</sup> From now on we reserve the term PAC for the *while*<sub>2a</sub>/*mentre*<sub>2a</sub>

[18] Haegeman & Schönenberger (2021) and Haegeman et al. (2021) challenge the implication suggested by (53) that the basic classification is ternary, and reintroduce a binary classification. Their conclusion ties in with views on non-restrictive relative clauses. While Haegeman (1991, 2009) assumes that all non-restrictive relatives are non-integrated orphans, Cinque (2008, 2019) shows that there are two types, one of which is syntactically integrated, the other non-integrated. What will from now on be labelled PAC would parallel Cinque's integrated non-restrictive relative clauses and non-integrated adverbial clauses parallel his non-integrated relative clauses. More research is needed to assess to what extent integrated PACs and integrated non-restrictive relatives can be assimilated in terms of the merger with the associated domain, i.e. the clause and the nominal domain respectively.

clauses, which provide a background assumption as evidence for relevance of the proposition encoded in the host clause.

#### 4.4 Epistemic adverbials and PACs

This section offers additional support for the parallelism between peripheral adverbial *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses and epistemic adverbs, as postulated by Frey (2018, 2020a, b).

Frey adopts Krifka's (2017, to appear) hierarchy in (54):

(54) ActP > Comp<sup>19</sup> > JP > TP

For our purposes, the main properties of the relevant projections identified by Frey (2018, 2020b) are the following:

(i) 'The TP represents a proposition.'

(Frey 2020b: 17 ex. (46i))

(ii) 'The judgement phrase (JP) encodes the private assessment of a proposition by a judge.'

(Frey 2020b: 17 ex. (46ii))<sup>20</sup>

(iii) 'The speech act phrase (ActP) encodes a speech act performed by a speaker.'

(Frey 2020b: 18 ex. (46iv))

As discussed in Section 4.1, Frey (2018, 2020a, b) unifies PACs and subjective epistemic adverbials as both encoding not-at-issue expressions: in other words, like epistemic adverbs, PACs are not part of the propositional content that is being communicated. In terms of their syntax, Frey proposes that PACs modify JP, which

[19] 'The commitment phrase (ComP) encodes the commitment of a committer to a judgement' (Frey 2020b: 17 ex. (46iii)).

[20] Krifka's (2017) projection JP, as adopted in Frey (2018, 2020a, b), could be viewed as a 'telescoped' variant of Cinque's (1999) topmost four modal projections: MoodP<sub>speech act</sub> > MoodP<sub>evaluative</sub> > MoodP<sub>evidential</sub> and ModP<sub>epistemic</sub> (i).

MoodP<sub>speech act</sub> > MoodP<sub>evaluative</sub> > MoodP<sub>evidential</sub> > ModP<sub>epistemic</sub> > TP(Past) > TP(Future) > MoodP<sub>irrealis</sub> > ModP<sub>alethic</sub> > AspP<sub>habitual</sub> > AspP<sub>repetitive</sub> > AspP<sub>frequentative</sub> > ModP<sub>volitional</sub> > AspP<sub>celerative</sub> > TP(Anterior) > AspP<sub>terminative</sub> > AspP<sub>continuative</sub> > AspP<sub>retrospective</sub> > AspP<sub>proximative</sub> > AspP<sub>durative</sub> > AspP<sub>generic/progressive</sub> > AspP<sub>prospective</sub> > ModP<sub>obligation</sub> > ModP<sub>permission/ability</sub> > AspP<sub>completive</sub> > VoiceP > AspP<sub>celerative</sub> > AspP<sub>repetitive</sub> > AspP<sub>frequentative</sub> (Cinque 2004: 133 ex. (3))

If, in line with Endo & Haegeman (2019), adverbial clauses are adjoined to the matching dedicated adverbial functional projections in the Cinque (1999) hierarchy, the question arises which of these projections might be targeted by PACs. See Charvanel (2020) on French *puisque* 'since' rationale clauses as an exponent of MoodP<sub>evidential</sub>. See also Schönenberger & Haegeman (2021). For an overview of the syntax of adverbs see also Delfitto & Fiorin (2017).

is external to the proposition (i.e. TP); JP also hosts subjective epistemic adverbs. The parallelisms observed between epistemic adverbs and PACs in [Section 4.1](#) and summarized in [Table 2](#) would thus be syntactically encoded if the two were assigned the same syntactic position. Frey's (2020a) subjective modals, which including epistemic adverbs, are characterized as follows: 'Subjective modals, being not-at-issue, are external to the proposition which is communicated by the clause in which they occur' (Frey 2020a: 10).

Among the functions related to JP listed in Frey (2018: 24) are the following: 'A subjective modal operating on a proposition  $\phi$  expresses the degree of the judge's confidence in the truth of  $\phi$ ' (Frey 2020a: 12 ex. (32i)). Frey's analysis for subjective modals makes the following correct predictions:

- In complement clauses, Frey's (2018, 2020a) subjective epistemic modals will follow the complementizer.
- The incompatibility of epistemic adverbs with CACs follows on the assumption that CACs have a deficient left periphery. For the sake of the present discussion, we follow Frey (2018, 2020a) and assume that CACs are structurally truncated.<sup>21</sup>
- Subjective epistemic modals function as the initial constituent in a V2 configuration when they move to a left-peripheral specifier position.

Following Frey's insights as confirmed by the parallelisms listed in [Table 2](#), we assume that in terms of Krifka's approach, 'A PAC is base-generated in a position adjoined to the JP of its host' (Frey 2020a: 22 ex, (59)). This leads to the following correct predictions:

- PACs can be embedded in a complement clause; in which case they will follow the complementizer.
- The incompatibility of PACs with CACs follows on the assumption that CACs have a truncated left periphery as in Frey (2018, 2020a). See also footnote 20 for discussion.
- PACs can figure as the initial constituent in a V2 configuration, moving to a left-peripheral specifier.

As a tentative interpretive characterization, we propose that a PAC A in a clause S denoting the proposition  $\phi$  encodes that a judge selects an accessible/salient proposition A as the discourse context in which the host proposition  $\phi$  is maximally relevant. The kind of relevance relation will then be determined by the choice of subordinator.

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[21] Haegeman (2010, 2012) argues that truncation effects can be captured in terms of locality restrictions on movement. One argument against postulating that the left periphery of CACs completely truncated (Frey 2018) is that they allow clitic left dislocation in Romance. In Haegeman's approach, apparently reduced structure in embedded domains is reinterpreted as a byproduct of locality conditions on movement. We refer to Haegeman's work for discussion.

A problem for the analysis proposed here is that while epistemic adverbs may surface clause-medially in what would be their JP position<sup>22</sup>, peripheral adverbial clauses must forcibly move to the clausal periphery.<sup>23</sup> One option would be to relate this to a weight effect;<sup>24</sup> alternatively, peripheral adverbial clauses host a discourse-related feature which forces them to attain the appropriate left-peripheral position.

## 5. NON-INTEGRATED CLAUSES ARE NOT HOMOGENEOUS

### 5.1 *Non-integrated adverbial clauses: External and internal syntax*

This section examines whether the properties associated with Frey's own NonICs (2018, 2020a, b) extend to the speech event modifying clauses identified as non-integrated here. Because our classification is based on different empirical data, we refrain from using Frey's abbreviation 'NonIC' to designate our own non-integrated speech event modifying adverbial clauses. Though we believe that our diagnostics are faithful to the spirit of Frey's proposal, the clause types we identify as non-integrated turn out not to share all the properties Frey (2018, 2020a, b) attributes to his NonICs. Frey associates the following distributional and interpretive properties with NonICs (Frey 2018, 2020a, b).

- (i) Like CACs, PACs can be placed in the prefield of a German V2 clause, a position of full integration. The prefield position is unavailable for NonICs (Frey 2018: 13, 2020a: 30, 2020b: 10–11). This property carries over to our speech event modifying adverbial clauses.
- (ii) Embedding together with the host clause is available for CACs and for PACs. Embedding is unavailable for NonICs (Frey 2018: 14, 2020a: 30, 2020b: 11). Our speech event modifying adverbial clauses also fails to embed.
- (iii) A NonIC encodes an independent speech act (Frey 2018: 16, 2020a: 30, 2020b: 4). To be precise, a NonIC contributes a subsidiary speech act relative to the speech act performed by the host clause (Frey 2020a: 30), with implications for both internal and external syntax. As for internal syntax, constituting itself a speech act, a NonIC must be projected to the level of ActP (Frey 2018: 27, 2020a: 30, 2020b: 21). As for external syntax, constituting a speech act subsidiary to another speech act implies that a NonIC will have to be hosted by a speech act, i.e. a constituent projected to the level of ActP (Frey 2020a: 30, (79)). By hypothesis, the NonIC is adjoined to the host ActP (Frey 2020b: 26 ex. (71)).

Properties (i) and (ii) above follow: being ActP-adjoined, a NonIC cannot constitute the first constituent of a V2 configuration, which would be the specifier of ActP (i), and a NonIC cannot embed (ii).

[22] We assume that the subject which precedes the adverbial is in a high subject position (see Haegeman 2002).

[23] We thank an anonymous *JL* referee for signalling this problem.

[24] Several authors (Quirk et al. 1972: 492, 514, 521; Ernst 2001: 504, 2002: 194; Mittwoch, Huddleston & Collins 2002: 780) discuss how weight considerations constrain the availability of (non-parenthetical) medial adjuncts.

Frey associates the following additional properties with NonICs (we refer to his papers for evidence from German):

- (iv) PACs can be coordinated; NonICs cannot be coordinated (Frey 2018: 17, 2020a: 30, 2020b: 26).
- (v) Both PACs and NonICs allow weak R[oot] P[henomena]’ such as modal particles and sentential adverbials (Frey 2018: 27, 2020b: 27).

Strong RP such as tags, interjections and hanging topics (Frey 2018: 10) are licensed by ActP-adjunction (Frey 2018: 52, 2020a: 31 ex (39)), entailing that strong RP depend on the presence of an ActP. Consequently, PACs, projecting only to JP, cannot host strong RP. A NonIC, which projects to ActP, may host strong RP (Frey 2018: 27, 2020a, b).

While properties (iv)–(v) undeniably characterize the specific German NonICs discussed by Frey (2018, 2020a, b), to whom the reader is referred for discussion, they do not extend to our non-integrated adverbial clauses, i.e. clause types which properties (i) and (ii) single out as non-integrated.

As for property (iv), Frey’s (2018, 2020a, b) own NonICs cannot coordinate. In contrast, the recycled event modifying CACs we identified as non-integrated can coordinate (thanks to Andrew Radford, p.c., for judgements). The Italian conditional conjunction *se<sub>2b</sub>* ‘if’ (3c) can introduce a speech event modifying conditional clause; such clauses can be coordinated as in (56).

- (55) (a) Before we start, and while you are all setting up your laptops, next week’s class will be cancelled because Monday is a public holiday.
- (b) While I may be prejudiced in this area and while I actually do not have systematic evidence to support this, students nowadays seem to spend more time on Facebook than on reading.

- (56) *Se<sub>2b</sub> ti ricordi la discussione di ieri e*  
 if you remember.PRS.2SG the discussion of yesterday and  
*se hai letto il giornale, la decisione sull’*  
 if have.PRS.2SG read.PTCP the newspaper the decision on.the  
*uso di AstraZeneca è rimandata alla settimana*  
 use of AstraZeneca be.PRS.3SG postpone.PTCP at.the week  
*prossima.*  
 next

‘If you remember and if you read the newspaper, the decision about the use of AstraZeneca has been postponed to the next week.’

As for property (v), English tags and hanging topics are strong RP and hence only available when the containing clause projects to ActP (Frey 2018: 10). Consider (57). By Frey’s diagnostics (non-embeddability, unavailability as the first constituent in V2), the speech event modifying adverbial clause is non-integrated. However, in spite of non-integration, neither tags nor hanging topics are available in the

speech event modifying temporal *while*-clause, as shown by (57b) and (57c) respectively.

- (57) (a) While<sub>2b</sub> we are talking about John, do you remember his talk about Expressionism?  
 (b) \*While<sub>2b</sub> we are talking about John, aren't we, do you remember his talk about Expressionism?  
 (c) \*While<sub>2b</sub> John, we are talking about him, do you remember his talk about Expressionism?

Like CACs modifying the event encoded in the host clause, temporal and conditional clauses recycled as speech event modifiers remain incompatible with argument fronting, a strong RP (Haegeman 2012: 182 ex. (74)). The relevant English patterns are shown in (58) for a speech event related temporal *while*-clause and in (59) for a speech event related conditional (see (59a–c)). The a-examples show that argument fronting is ungrammatical in regular CACs, the b-examples illustrate a central adverbial clause recycled as speech event modifier and the c-examples show that in the latter context argument fronting continues to be ungrammatical. Corresponding Italian examples are given in (59d–f).

- (58) (a) \*While<sub>1</sub> Robbie we were talking about, his sister called me to say he was in hospital.  
 (b) While<sub>2b</sub> we're talking about Robbie, postings on the Popbitch website have speculated about his future collaborators.  
 (c) \*While<sub>2b</sub> Robbie we're talking about, postings on the Popbitch website have speculated about his future collaborators.
- (59) (a) \*I can contact you later if<sub>1</sub> more details you are interested in.  
 (b) The most stable letters are 'm' and 'n', if<sub>2b</sub> you're interested in this information.  
 (c) \*The most stable letters are 'm' and 'n', if<sub>2b</sub> in this information you're interested.  
 (d) \*Posso contattarti più tardi se<sub>1</sub> a più  
 can.PRS.1SG contact.INF.you more late if at more  
 dettagli sei interessato.  
 details be.PRS.2SG interested.  
 (e) Le lettere più stabili sono 'm' e 'n' se<sub>2b</sub>  
 the letters more stable be.PRS.3PL m and n if  
 sei interessato a queste informazioni.  
 be.PRS.2SG interested to these information  
 (f) \*Le lettere più stabili sono 'm' e 'n' se<sub>2b</sub>  
 the letters more stable be.PRS.3PL m and n if  
 a queste informazioni sei interessato.  
 to these information be.PRS.2SG interested

The above data lead to the conclusion that CACs recycled as speech event modifiers retain their internal syntactic properties and do not acquire properties unique to speech acts. CACs recycled as speech event modifiers were identified as non-integrated but if these recycled CACs belonged to Frey's class of NonICs, one would expect them to pattern uniformly and to display the internal syntax of NonICs, allowing strong RP.

Frey himself does not discuss the internal syntax of CACs recycled as speech event modifiers. A short note in Frey (2018: 16), reproduced below, merely illustrates the pattern by means of causal clauses (Frey 2018: 16 note 13).

Different adverbial clauses which usually occur as CACs or PACs may appear as NonICs in front of or following a V2-clause. This is also prosodically marked. (Frey 2018: 16)

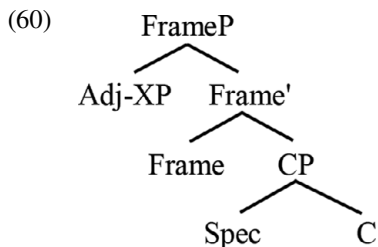
Our findings so far lead us to the conclusion that non-integrated clauses are not homogeneous: In spite of the external syntactic property of non-integration, CACs recycled as speech act modifiers differ from Frey's NonICs.

Following up on the distinction between Frey's NonICs and our CACs recycled as speech event modifiers in terms of internal syntax, one may then wonder in what way our recycled CACs themselves encode a (subsidiary) speech act, as per the hypothesis formulated by Frey (2018, 2020a, b) for NonICs. The next section addresses this point.

## 5.2 Unifying non-integrated clauses

### 5.2.1 Background: Discourse-syntax and FrameP

Focusing on a specific set of West Flemish V3 patterns, Haegeman & Greco (2018) (also in Greco & Haegeman 2020) elaborate a general framework for patterns in which an initial adjunct combines with a full-fledged V2 clause at a level beyond the sentence-internal syntax. They propose that at the discourse level, the combination of the adjunct and the full-fledged V2 clause yields a discourse unit which they label FrameP:



Importantly, Haegeman & Greco's FrameP in (60) is not a further extension of Rizzi's (1997) left periphery. The proposal echoes similar proposals in the literature. Haegeman & Greco (2018: 36) write:

Our FrameP [in (60)] is like several earlier proposals in the literature, including, among others, Emonds's (2004) DiscourseP, Cinque's (2008: 118-9) HP (also adopted in Giorgi 2014; Frascarelli 2016), Koster's (2000) P, de Vries (2009) and Griffiths & de Vries's (2013) ParP. (Haegeman & Greco 2018: 36)

Haegeman & Greco's (2018) and Greco & Haegeman's (2020) approach may be considered an update of Haegeman's (1991) orphan analysis of adverbial clauses.

The interpretation of FrameP is explicitized in Greco & Haegeman (2020).

Extending the concept FrameP and its interpretive properties proposed in Greco & Haegeman (2020) can be a fruitful way for unifying non-integrated clauses at a more abstract level. For Greco & Haegeman (2020) the introduction of a FrameP allows the accommodation of an additional speech act whose role is to establish a novel topic by introducing a discourse referent *X* denoted in their examples by the initial adjunct constituent. Among other things, the discourse referent *X* introduced via SpecFrameP may be a speech event modifier, that is, an independent referent related to the main assertion as in (61).

- (61) Oa-j t'myn vroagt, dienen winkel goa nog  
 if-you it.me ask.PRS.2SG that shop go.PRS.1SG PART  
 meugen sluten.  
 may.INF close.INF  
 'If you ask me, that shop will have to close down.'

The associated root V2 clause constitutes a separate speech act. FrameP thus consists of two speech acts: the illocutionary speech act of assertion, question, etc. contributed by the host clause ('CP' in (60), 'ForceP' in an articulated CP) and the secondary speech act of frame setting (Jacobs 1984, Endriss 2009, Ebert, Ebert & Hinterwimmer 2014). The speech act associated with FrameP is 'secondary' because it is parasitic on the speech act associated with the host clause. SpecFrameP encodes an entity (or a set of entities) in the discourse with respect to which the proposition expressed by the associated (V2) root clause (=CP) is interpreted as relevant.

We now partly reconcile Haegeman & Greco's proposal with Frey's hypothesis that a NonIC encodes a subsidiary speech act. Following Greco & Haegeman (2020), a CAC recycled as a speech event modifier does not itself constitute a speech act, but the recycled CAC is part of the speech act encoded by FrameP. In other words, neither a 'regular' sentence-internal CAC in a V2 pattern nor a recycled CAC in SpecFrameP in the V3 pattern constitutes a speech act and hence their internal syntax does not differ. For more discussion of non-integrated clauses see also Haegeman, Lander & Schönenberger (2021).

## 6. SUMMARY

The focus of the paper is the observation that adverbial clauses display various readings: An adverbial clause may modify the proposition encoded in the host clause; it may also serve to bring to the fore a contextually salient proposition which serves as a background for the processing of the host clause proposition; or it may function as a modifier of the speech event itself. Haegeman's early work (1984a, b, c) labelled the former type of adverbial clause as a 'central adverbial clause' and grouped the latter two as 'peripheral adverbial clauses'. In this contribution, we inventorize systematic differences between the first two types of clauses, and we show that the observed differences between these adverbial clauses are replicated with a striking parallelism in the domain of non-clausal adverbial modifiers.

On the basis of these findings we first reexamine two syntactic analyses elaborated in the literature to set adverbial clauses apart, focusing mainly on the treatment of *while*<sub>2</sub>/*mentre*<sub>2</sub> clauses classified as peripheral. In one approach, the difference between central and peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses is viewed as one of the 'degree of embedding', with central adverbial clauses introduced by temporal *while*<sub>1</sub>/*mentre*<sub>1</sub> being more integrated with the associated host clause than adversative peripheral *while*<sub>2a</sub>/*mentre*<sub>2a</sub> adverbial clauses (Haegeman 1991, 2009). In another approach, *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses are assimilated to non-restrictive relative clauses and it is proposed that these adverbial clauses are orphans, that is, they are not syntactically integrated with the host clause but instead they are combined with the associated clause at the level of the discourse.

We first show that the empirical data challenge the syntactic analyses presented. Crucially, the diagnostics that set apart peripheral adversative/concessive *while*<sub>2a</sub>/*mentre*<sub>2a</sub> clauses from central temporal *while*<sub>1</sub>/*mentre*<sub>1</sub> clauses also systematically set apart non-clausal epistemic adverbials, such as *probably/probabilmente* from non-clausal event/proposition modifying adverbials, such as *recently/recentemente*, as also pointed out in the traditional descriptive literature (Quirk et al. 1972, Renzi, Salvi & Cardinaletti 2001). Given the systematic parallelisms of the adversative *while*<sub>2a</sub>/*mentre*<sub>2a</sub> adverbial clauses with epistemic adverbs, any syntactic analysis of clausal adverbials must be aligned with that of the relevant non-clausal adverbials and a non-integration analysis is not appropriate for the relevant *while*<sub>2</sub>/*mentre*<sub>2</sub> adverbial clauses.

Our conclusions offer new empirical support for the hypotheses elaborated in Frey (2018, 2020a, b), who, adopting the classification and cartography of adverbials in Krifka (2017, to appear), aligns the peripheral causal adverbial clauses in German with epistemic adverbs.

In the final part of the paper we turn to the cases in which a CAC is not used as a modifier of the proposition encoded in the host clause but rather is recycled as a modifier of the overarching speech event. These adverbial clauses are shown to be syntactically non-integrated and thus might be expected to pattern with the non-integrated clauses labelled NonIC by Frey (2018, 2020a, b). However, while setting the event modifying adverbial clauses apart from PACs is definitely on the right

track, we show that the non-integrated speech event modifying clauses do not pattern fully with the NonICs identified by Frey's own work. Specifically, there is no evidence that recycled CACs are themselves speech acts and would have the internal syntax associated with speech acts. We explore Haegeman & Greco's (2018) concept FrameP and the interpretive properties associated with it (Greco & Haegeman 2020) to unify non-integrated adverbial clauses at a more abstract level. We propose that, while CACs recycled as speech event modifiers are not themselves speech acts, they are integrated at the layer FrameP and thus participate in the subsidiary speech act encoded by FrameP.

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