The syntax of peripheral adverbial clauses[1]

LINDA BADAN

Ghent University

LILIANE HAEGEMAN

Ghent University & University of Geneva

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).

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.*

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

1.1 *The data*

Both English finite *while* clauses[2] and Italian finite *mentre* clauses can encode a number of distinct readings.[3] The relevant patterns are illustrated in English (1) and Italian (2). Subscripts distinguish the readings of the clauses; the distinction between *while*$_{2a}$/*mentre*$_{2a}$ in (1b) and (2b) and *while*$_{2b}$/*mentre*$_{2b}$ 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*$_1$ clause in (1a) is a modifier of the event encoded by the host clause; the adversative *while*$_{2a}$ clause in (1b) encodes a background assumption which provides evidence to enhance the relevance of the host clause proposition; the *while*$_{2b}$ 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*$_{2a}$ and *while*$_{2b}$ must be distinguished.[4]

(1) (a) While$_1$ we were talking about Theresa May, the BBC announced her resignation.

(b) While$_{2a}$ Theresa May may be viewed as a conservative, some of her proposals are innovative.

(c) While$_{2b}$ we are talking about Theresa May, some of her proposals were innovative.

(2) (a) Mentre$_1$ stavamo   parlando   di Bersani, Raiuno
       while   be.IMPF.1PL speak.PROG of Bersani   Raiuno
       ha   annunciato le   sue dimissioni.
       have.PRS.3SG   announce.PTCP the his resignations

(b) Mentre$_{2a}$ 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$_{2b}$ 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.[5] 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$_1$ you get very tired, you will be at a higher risk of back problems.
     (b) If$_{2a}$ I'm no longer going to be allowed to visit my mother, should I encourage her to install Skype?
     (c) If$_{2b}$ you remember, the first cases were reported in Italy only a month ago.
     (d) Schools will reopen if$_1$ and when conditions allow it.

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

699

(4) (a) Se$_1$ 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$_{2a}$ 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 incourage.INF.her to install.INF Skype

   (c) Se$_{2b}$ 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$_1$ 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$_1$*/*mentre$_1$* clauses
- Peripheral Adverbial Clauses (PACs), corresponding to *while$_{2a}$*/*mentre$_{2a}$* clauses
- Non-integrated Adverbial Clauses (Frey's NonICs), corresponding to English *while$_{2b}$* clauses, as well as to English *if$_{2b}$* clauses, and Italian *se$_{2b}$* clauses[6]

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

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[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), 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 $while_1/mentre_1$ in (1a)/(2a) and those introduced by $while_{2a}/mentre_{2a}$ 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 $while_1/mentre_1$ in (1a) and (2a) modify the state of affairs encoded in the matrix domain
- 'peripheral' adverbial clauses like those introduced by $while_{2a,b}$ in (1b)/ (1c) and $mentre_{2a}$ 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 $while_1/mentre_1$ clauses modifying the event expressed by the host clause with $while_{2a}/mentre_{2a}$ 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),

701

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 $while_1$ 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 $while_{2a}$ clause. On the other hand, in the peripheral $while_{2a}$ clause in (5b), futurity is encoded independently, by the modal *will*, and in the peripheral $while_{2a}$ 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 $while_{2a}$ 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 $while_1$ 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) $While_1$ the hospital is handling the Corona-crisis, it will not be possible to make appointments for routine consultations.

(b) $While_{2a}$ 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 $while_{2a}$ 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*₁ 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*₁ 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) Mentre₁ 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.[7]
    appointments for visits of routine

    (b) Mentre₂ₐ 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*₁ clause is in the scope of the epistemic adverb *probably*; in (7b), the peripheral *while*₂ₐ 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*₁ clause though not over the peripheral *while*₂ₐ clause, whose epistemic value is encoded in *probably*.

(7) (a) The thief probably entered the house while₁ we were all in the garden.
    (b) You are probably angry with me while₂ₐ you should be grateful instead.

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

(c) While$_{2a}$ [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$_1$ 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$_1$ 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$_{2a}$ invece   dovresti   ringraziarmi
          while   instead should.2SG   thank.INF.me

The central *mentre$_1$* clause in (8a) is in the scope of *probabilmente* 'probably',
unlike the peripheral *mentre$_{2a}$* clause in (8b).

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

(9) (a) The thief entered the house, probably while$_1$ we were all in the garden.
     (b) Il   ladro è   entrato   in casa,
          the thief be.PRS.3SG enter.PTCP in house
          probabilmente mentre$_1$ eravamo   tutti   in   giardino.
          probably   while   be.IMPF.1PL all   in   garden

(10) (a) *You are angry with me, probably while$_{2a}$ you should be grateful
          instead.
     (b) *Sei   arrabbiato con   me,
          be.PRS.2SG angry   with me
          probabilmente mentre$_{2a}$ invece   dovresti   ringraziarmi.
          probably   while   instead should.2SG thank.INF.me

In (9) the epistemic adverb *probably/probabilmente* directly modifies the central
while$_1$/mentre$_1$ clause; in (10), this option is unavailable for a *while$_{2a}$/mentre$_{2a}$*
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$_1$* as a conjunction functioning as an *introduttore temporale* ('tem-
poral subordinating conjunction'). *Mentre$_1$* 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) Mentre₁   giocava   a   golf, Mylord   cadde   a   terra
           while   play.IMPF.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   mentre₁ lavoravano
           the   rice-weeders sing.IMPF.3PL while   work.IMPF.3PL
           nelle risaie.
           In.the paddy-fields
           'The rice-weeders sang while working in the paddy-fields.'

One aspectual restriction on the *mentre₁* clause is that, while the clause modified by a *mentre₁* clause may contain a perfective pattern, the tense inside the *mentre₁* clause itself must be simple (compare (11a) and (12)). See Giusti (2001: 723) for further restrictions.

(12) *Mentre₁ 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 *mentre₁* in (12) does not obtain for peripheral *mentre₂ₐ*: While central *mentre₁* clauses associate with durative aspect, peripheral *mentre₂ₐ* clauses can also encode a punctual event (13a) (Giusti 2001: 730). In addition, *mentre₂ₐ* clauses may contain a perfective form (13b).

(13) (a) Io   partirò   domani,   mentre₂ₐ 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) Mariaᵢ studia   linguistica, mentre₂ₐ suoᵢ 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:

705

> 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 $while_{2a}$ 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[8] (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 $while_{2a}$ ___did his first degree in Cambridge.

(15) (a) John reads *The Guardian* and Mary ___ *The Times*.
      (b) *?John reads *The Guardian* $while_{2a}$ Mary ___ *The Times*.

Besides TAM operators, a range of other sentential operators can scope over the temporal $while_1/mentre_1$ clause and cannot scope over the peripheral $while_{2a}/mentre_{2a}$ 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' sake we point out that, *pace* Velde (2005: 226 ex. (97a)), some English (*al*)*though* causes 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 [∅] 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 *while₁/mentre₁* 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 while₁ you are so angry.

    (b) Nessuno osa   avvicinarsi   mentre₁ 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 while₁ you are all at home together but more likely during the weekend, when you are away.

    (b) I   ladri   entrano   non mentre₁ 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 *while₂ₐ/mentre₂ₐ* clause:

(18) (a) No one made a bid for the painting at the auction last year, while₂ₐ 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, mentre₂ₐ 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) while₂ₐ we will cancel our trip in June.

    (b) Annulleremo il   nostro viaggio a Settembre, (*non) mentre₂ₐ
        cancel.FUT.1PL the our   trip   at September NEG   while
        annulleremo il   nostro viaggio a giugno.
        cancel.FUT.1PL the our   trip   at June

2.1.3 *Focus*

Temporal *while₁/mentre₁* 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).

707

(20) (a) John has a headache even while$_1$ he wears contact lenses.
    (b) Gianni ha   mal di testa perfino mentre$_1$ 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$_1$ you're young that you believe that you can change people.
    (b) È   solo mentre$_1$ 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$_{2a}$*/*mentre$_{2a}$* clauses, as shown in (22) and (23).

(22) (a) *John continues to smoke even while$_{2a}$ his wife can't stand cigarette smoke.
    (b) *Gianni fuma   perfino mentre$_{2a}$ 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$_{2a}$ younger people are much more negligent that older people respect the Corona rules.
    (b) *È   solo mentre$_{2a}$ le persone più   giovani
         be.PRS.3SG only while   the people more young
         sono   molto più   negligenti 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$_{1/2a}$*/*mentre$_{1/2a}$* clauses which are ambiguous between the central temporal reading and the peripheral reading.

(24) (a) Mary left to study abroad while$_{1/2a}$ 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$_{1/2a}$ 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$_1$*/*mentre$_1$* clause can function as a clausal predicate, a pattern unavailable for the peripheral *while$_{2a}$*/*mentre$_{2a}$* clause.

(25) (a) Mary left to study abroad. That was while$_{1/*2a}$ 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$_{1/*2a}$ 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*$_1$/*mentre*$_1$ clause can be in the scope of an interrogative *yes*/*no* operator. This is not possible for peripheral *while*$_{2a}$/*mentre*$_{2a}$ clauses. Examples (26a–d) illustrate root interrogatives, (27) replicates the contrast for embedded interrogatives.

(26) (a) Were they able to protect themselves while$_1$ they were in the desert?

    (b) Sapevano   come ripararsi   dal   sole mentre$_1$
         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$_{2a}$ it probably would be better if he were to confess?

    (d) *Gianni nega   ancora tutto   mentre$_{2a}$ 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$_1$ they were in the desert?

    (b) Sai   se   hanno   potuto
         know.PRS.2SG whether have.PRS.3PL can.PTCP
         ripararsi   dal   sole mentre$_1$ 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$_{2a}$ 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$_{2a}$ 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$_1$*/*mentre$_1$* clauses can function as a reply to a *wh*-question. This is not possible for peripheral *while$_{2a}$*/*mentre$_{2a}$* 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$_1$ I was in the shower.
      (b) Come sei   caduto?
           how   be.PRS.2SG fall.PTCP
           'How did you fall?'
           Mentre$_1$ 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$_{2a}$ 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$_{2a}$ 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.'
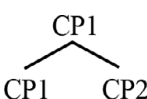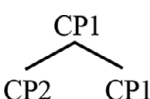
2.2 *A first syntactic analysis*

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 $while_1$/$mentre_1$ clauses are adjoined within the TP domain, either to vP/VP or to TP, as shown in (29)
- peripheral $while_{2a}$/$mentre_{2a}$ 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 $while_1$/$mentre_1$ clauses are adjoined within the TP domain, either to vP/VP or to TP, as shown in (29)
- peripheral $while_{2a}$/$mentre_{2a}$ clauses are extra-sentential, i.e. they are non-integrated 'orphans'[9] which combine with the host clause at the discourse level (30b); the idea was that peripheral $while_{2a}$/$mentre_{2a}$ clauses are assimilated to non-restrictive relative clauses (but see note 18 for some provisos)

(29)

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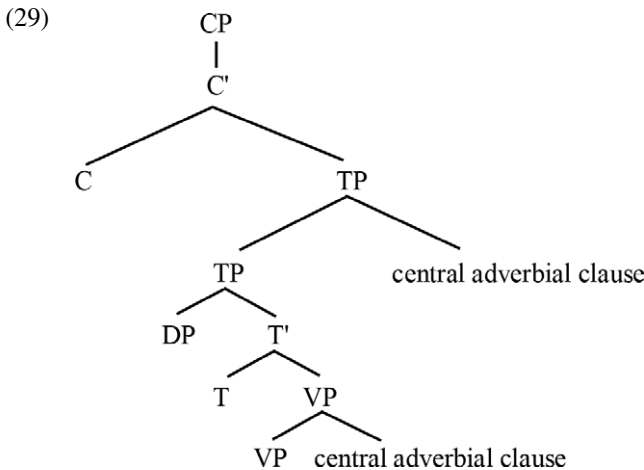
[9] For similar proposals in relation to extra sentential constituents see e.g. Mittwoch (1979), Safir (1986), Fabb (1990), Koster (2000), Shaer & Frey (2004), Cinque (2008), Haegeman et al. (2009), Giorgi (2014), Haegeman & Greco (2018), Greco & Haegeman (2020). See also Section 5.

(30) (a) (i)

```
        CP1              (ii)            CP1
       /   \                            /   \
    CP1    CP2                       CP2    CP1
```

(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 $while_2$/$mentre_{2a}$ clauses and conditional assertions (if_{2a}/se_{2a}) as well as speech event modifiers like those illustrated in (1c) for $while_{2b}$ and the conditional if_{2b}/se_{2b} 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 $while_{2a}$/$mentre_{2a}$ clauses. Speech event modifying $while_{2b}$ 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 $while_1$ clauses while this is unavailable for peripheral $while_{2a}$ clauses. In (31a) *so does James* can be made explicit as in (i), with the $while_1$ 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 $while_{2a}$ clause is not affected by VP anaphora: The string *so has Janet* only has reading (i), in which the $while_{2a}$ 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.[10]

(31) (a) John works most efficiently $while_1$ his children are at school and so does James.
            $While_1$ 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$_{2a}$ 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$_i$ also has a high-powered job in the city, and her$_i$ husband is also unemployed.'

  (c) While$_{2a}$ 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$_i$ also has a high-powered job in the city, and her$_i$ 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$_1$ 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$_{2a}$ 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$_{2a}$ 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$_i$ also has a prestigious job in the city, and her$_i$ 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*$_{2a}$ 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*$_{2a}$ 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*$_1$/*mentre*$_1$ clauses from peripheral *while*$_{2a}$/*mentre*$_{2a}$ 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$_1$ you were on the phone], John came by to say hi].

  (b) Maria mi ha   detto [che [mentre$_1$ eri
     Mary to.me have.PRS.3SG say.PTCP that while be.IMPF.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$_{2a}$ you arrived on time], John was really late].

  (b) Maria ha   detto [che [mentre$_{2a}$ 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*$_{2a}$/*mentre*$_{2a}$ 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*$_1$/*mentre*$_1$ clauses are embeddable inside central adverbial clauses such as the conditional clauses in (35). As suggested by the bracketing, the *while*$_1$/*mentre*$_1$

clauses are to be viewed as temporal modifiers of the event encoded in the if_1/se_1 clause. In (35a) the temporal $while_1$ 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 $mentre_1$ clause is embedded in the conditional se_1 clause in (35b). Example (36) is an additional illustration of the same pattern.

(35) (a) [If$_1$ I had met him [while$_1$ I was single]], I would definitely have asked him for his phone number.

    (b)
[Se$_1$	l'	avessi	incontrato	[mentre$_1$	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$_1$ John quits university [while$_1$ he is still an undergraduate]].

    (b)
Maria	sarà	molto	contrariata	[se$_1$	Gianni	lascia
Maria	be.FUT.3SG	very	disappointed	if	Gianni	quit.PRS.3SG
l'	università	[mentre$_1$	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 $while_{2a}$/$mentre_{2a}$ clauses cannot be embedded inside central adverbial clauses such as conditional clauses.

(37) (a) His mum will be so disappointed [if$_1$ he quits university [while$_{1/*2a}$ his sister has a Cambridge degree]].

    (b) His mum will be so disappointed [if$_1$ he quits university [despite his sister having a Cambridge degree]].

The *while* clause in (37a) must be read as a central $while_1$ 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.[11] The same effect obtains for Italian (38).

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[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 $while_{2a}$ clause modifies the *if* clause.

(38) Maria sarà   molto contrariata   [se₁ Gianni   lascia   l'
      Maria be.FUT.3SG   very disappointed if Gianni   quit.PRS.3SG the
      università [mentre₁/*₂ₐ 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_1 conditional, is impoverished (for arguments see e.g. Haegeman 2003, 2012; Frey 2018, 2020a, b). The non-embeddability of peripheral $while_{2a}$/$mentre_{2a}$ clauses within central adverbial clauses is correctly predicted by both syntactic analyses of peripheral $while_{2a}$/$mentre_{2a}$ clauses outlined in (30). In both analyses – the high insertion analysis of the peripheral $while_{2a}$/$mentre_{2a}$ clauses (30a) and the orphan hypothesis (30b) – peripheral $while_{2a}$/$mentre_{2a}$ clauses are associated with the (left)[12] 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 adversative $while_{2a}$/$mentre_{2a}$ 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.

(i) There will be some surprised faces if he registers at a Redbrick university $while_{2a}$ 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 or 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.

716

	Diagnostics	Central $while_1/mentre_1$	Peripheral $while_{2a}/mentre_{2a}$
A	Temporal subordination	+	−
B	Modal subordination	+	−
C	Aspectual subordination	+	−
D	In scope of matrix negation	+	−
E	Focus (cleft, *only* + negative inversion)	+	−
F	Interrogative	+	−
G	VPE/VP anaphora (sloppy identity effects)	+	−
H	Embedding in complement clauses	+	+
I	Embedding in central adverbials	+	−

Table 1
Diagnostics 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 $while_{2a}/mentre_{2a}$ 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 $while_{2b}$ temporal clauses (in (1c)) or if_{2b}/se_b conditionals in (3c) and (4c).

3.1 *Problems for an orphan account of peripheral adversative* while$_{2a}$/mentre$_{2a}$ *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 $while_{2a}/mentre_{2a}$ 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$_{2a}$ 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$_{2a}$
   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

717

In the English (39a), for instance, the viewpoint and the propositional content of the *while*$_{2a}$ 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*$_{2a}$ clause the past tense *was* is imposed by the embedding of the *while*$_{2a}$ 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*.[13] 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*$_{2a}$/*mentre*$_{2a}$ 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*$_{2a}$ clause in (40).

(40) Terwijl$_{2a}$ 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*$_{2a}$ 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$_{2a}$ *clause*

The syntactic analysis of the *while*$_{2a}$ 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*$_{2a}$ 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.

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[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*$_{2a}$/*mentre*$_{2a}$ clauses differ from central adverbial *while*$_1$/*mentre*$_1$ clauses in a number of ways. Based on these differences, Haegeman (1991, 2003) developed two alternative analyses: according to one analysis, peripheral *while*$_{2a}$/*mentre*$_{2a}$ 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*$_{2a}$/*mentre*$_{2a}$ 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
        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 *while₁*/*mentre₁* clauses and temporal adverbs such as *recently*/*recentemente*, on the one hand, and between peripheral *while₂ₐ*/*mentre₂ₐ* 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)

721

Diagnostics	Temporal *while₁*/ *mentre₁*	Temporal adverbs *recently*, *recentemente*	Adversative *while₂ₐ*/ *mentre₂ₐ*	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, *only* + 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).[14]

(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 *while₂ₐ*/*mentre₂ₐ* clauses and epistemic adverbs we can conclude the following:

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[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 $while_{2a}$/$mentre_{2a}$ clauses, the diagnostics do not show that peripheral $while_{2a}$/$mentre_{2a}$ clauses are not integrated with the host clause.

(ii)   The diagnostics only show that, like epistemic adverbs, peripheral $while_{2a}$/$mentre_{2a}$ 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 $while_1$/$mentre_1$ 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) $While_1$ we were talking about Theresa May, the BBC announced her resignation.

       (b) $While_{2a}$ Theresa May may be viewed as a conservative, some of her proposals are innovative.

       (c) $While_{2b}$ 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 $while_1$ clause in (49a) modifies the event encoded in the host clause; the peripheral adversative $while_{2a}$ 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 $while_{2a}$ clause and the speech event modifying $while_{2b}$ clause where considered as peripheral adverbial clauses. It turns out, though, that the $while_{2b}$ clause in (49c) is actually a temporal *while* clause recycled[15] as a temporal modifier of the speech event. Similarly, in (3c), an event conditional is recycled as a conditional on the speech event.[16] As mentioned in Section 1, Italian temporal $mentre_1$

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[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*[1] 'if' can be recycled as a speech event conditional, as shown in (4b, c), repeated here in (50).

(50)   (a)   Se[2a]   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   incourage.INF.her   to   install.INF   Skype
        (b)   Se[2b]   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*[2b] clause in (49c) are unembeddable. Consider (51).

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

[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 *while₁*) or it is 'recycled' as a temporal modifier of the speech event (our *while₂ᵦ*). 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 (*while₁*); an interpretation as a 'recycled' temporal modifier of the speech event (*while₂ᵦ*) is unavailable.

4.2.2 *V2 patterns*

Speech event modifying adverbial clauses like Dutch *terwijl₂ᵦ* clauses cannot constitute the first constituent of a V2 clause, as shown in (52).

(52) Terwijl₂ᵦ 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.[17]
      for   the import of   drugs

Instead, the speech event modifying *terwijl₂ᵦ* 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.

725

	Diagnostics	Temporal $while_1$	Adversative $while_{2a}$	Speech event modifier $while_{2b}$
A	Temporal subordination	+	−	−
B	Modal subordination	+	−	−
C	Aspectual subordination	+	−	−
D	In scope of matrix negation and matrix interrogative	+	−	−
E	Focus (cleft, *only* + 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 $while_{2a}$ clauses and speech event modifying $while_{2b}$ clauses must be differentiated.

Frey (2016, 2018, 2020a, b) develops a ternary classification in terms of (i) CAC as in (1a)/(49a), (ii) PAC$_{2a}$ as in (1b)/(49b) and (iii) NonIC$_{2b}$ 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 $while_{2b}$ clauses are distinct from $while_{2a}$, clauses, which provide a contextually salient proposition that interacts with the main clause proposition. We turn to the syntax of $while_{2b}$ clauses in Section 5.[18] From now on we reserve the term PAC for the $while_{2a}$/$mentre_{2a}$

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[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 adversative *while₂ₐ/mentre₂ₐ* clauses and epistemic adverbs, as postulated by Frey (2018, 2020a, b).

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

(54)   ActP > ComP[19] > 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))[20]

(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

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[19] 'The commitment phrase (ComP) encodes the commitment of a committer to a judgment' (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: $MoodP_{speech\ act}$, $MoodP_{evaluative}$, $MoodP_{evidential}$ and $ModP_{epistemic}$ (i).

$MoodP_{speechact} > MoodP_{evaluative} > MoodP_{evidential} > ModP_{epistemic} > TP(Past) > TP(Future) > MoodP_{irrealis} > ModP_{alethic} > AspP_{habitual} > AspP_{repetitive} > AspP_{frequentative} > ModP_{volitional} > AspP_{celerative} > TP(Anterior) > AspP_{terminative} > AspP_{continuative} > AspP_{retrospective} > AspP_{proximative} > AspP_{durative} > AspP_{generic}/_{progressive} > AspP_{prospective} > ModP_{obligation} > ModP_{permission/ability} > AspP_{completive} > VoiceP > AspP_{celerative} > AspP_{repetitive} > AspP_{frequentative}$ (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 $MoodP_{evidential}$. See also Schönenberger & Haegeman (2021). For an overview of the syntax of adverbs see also Delfitto & Fiorin (2017).

727

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 φ expresses the degree of the judge's confidence in the truth of φ' (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.[21]
- 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 φ encodes that a judge selects an accessible/salient proposition A as the discourse context in which the host proposition φ 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[22], peripheral adverbial clauses must forcibly move to the clausal periphery.[23] One option would be to relate this to a weight effect;[24] 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).

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[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.

729

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 the conditional conjunction se_{2b} '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$_{2b}$ 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 decisione 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$_{2b}$ we are talking about John, do you remember his talk about Expressionism?

(b) *While$_{2b}$ we are talking about John, aren't we, do you remember his talk about Expressionism?

(c) *While$_{2b}$ 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$_1$ Robbie we were talking about, his sister called me to say he was in hospital.

(b) While$_{2b}$ we're talking about Robbie, postings on the Popbitch website have speculated about his future collaborators.

(c) *While$_{2b}$ Robbie we're talking about, postings on the Popbitch website have speculated about his future collaborators.

(59) (a) *I can contact you later if$_1$ more details you are interested in.

(b) The most stable letters are 'm' and 'n', if$_{2b}$ you're interested in this information.

(c) *The most stable letters are 'm' and 'n', if$_{2b}$ in this information you're interested.

(d) *Posso   contattarti   più   tardi se$_1$ 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$_{2b}$
     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$_{2b}$
     the   letters   more   stable   be.PRS.3PL m   and   n   if
     a   queste   informazioni sei   interessato.
     to   these   information   be.PRS.2SG interested

731

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:

(60)

```
              FrameP
             /      \
        Adj-XP      Frame'
                   /      \
               Frame       CP
                          /   \
                       Spec     C
```

732
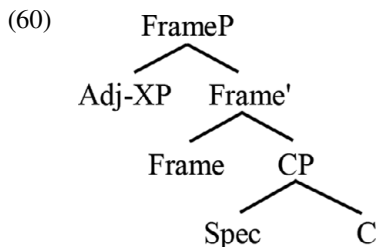
Importantly, Haegeman & Greco's FrameP in (60) is not a further extension of Rizzi's (1997) left periphery. The proposal echoes similar proposals in the literature. Haegeman & Greco (2018: 36) write:

> 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 $while_2$/$mentre_2$ clauses classified as peripheral. In one approach, the difference between central and peripheral $while_{2a}$/$mentre_{2a}$ clauses is viewed as one of the 'degree of embedding', with central adverbial clauses introduced by temporal $while_1$/$mentre_1$ being more integrated with the associated host clause than adversative peripheral $while_{2a}$/$mentre_{2a}$ adverbial clauses (Haegeman 1991, 2009). In another approach, $while_{2a}$/$mentre_{2a}$ 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 $while_{2a}$/$mentre_{2a}$ clauses from central temporal $while_1$/$mentre_1$ 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 $while_{2a}$/$mentre_{2a}$ 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 $while_2$/$mentre_2$ 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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737

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Authors' addresses: *(Badan)*
Department of Translation, Interpreting, and Communication,
Ghent University, Groot-Brittanniëlaan 45, 9000 Gent, Belgium
Linda.Badan@UGent.be

(Haegeman)
Department of Linguistics, Ghent University & University of Geneva,
Blandijnberg 2, 9000 Gent, Belgium
Liliane.Haegeman@UGent.be