

Integrating Linguistic Dimensions: The Scope of Adverbs

Olivier Bonami

Université Paris-Sorbonne & LLF

Danièle Godard

Laboratoire de Linguistique Formelle (CNRS & U. Paris 7)

Proceedings of the HPSG07 Conference

Stanford Department of Linguistics and CSLI's LinGO Lab

Stefan Müller (Editor)

2007

CSLI Publications

<http://csli-publications.stanford.edu/>

Abstract

Three distinctions seem relevant for the scope properties of adverbs: their function (adjuncts or complements), their prosody (incidental or integrated) and their lexical semantics (parenthetical or non parenthetical). We propose an analysis in which the scope of French adverbs is aligned with their syntactic properties, relying on a view of adjuncts as loci for quantification, a linearization approach to the word order, and an explicit modelling of dialogue.

1 Introduction

Adverbs in general are scopal elements.¹ They contrast with other scopal elements such as quantified NPs in the way their scope properties interact with other linguistic dimensions: syntax, prosody, lexical semantics and pragmatics. Since these properties are not strictly correlated, a formalism which relies on one type of distinction, such as dominance (e.g. Dik (1997), Cinque (1999)), fails to do justice to the complexity of the data. The HPSG architecture, where the different dimensions are both distinguished and articulated in feature structures, offers a chance for stating such interactions.

In previous work, after pulling apart the prosodic properties of adverbs, which interact directly with their syntax and compositional semantics, from their pragmatic properties, which depend crucially on their lexical semantics (Bonami et al., 2004), we proposed HPSG analyses of *parenthetical* adverbs, that is, adverbs which do not contribute directly to the main content of an utterance (Bonami and Godard, in press, a, b). Here we concentrate on modelling the interaction between prosody, syntax and scope, improving on the proposals of Bonami and Godard (2003). We show that a linearization-based approach to adverb placement eases the modelling of the observed syntax-semantics interface constraints. We use a conservative, STORE-based HPSG approach to quantifier scope, in the style of Ginzburg and Sag (2000), but nothing crucial hinges on this choice.

We follow a solid tradition in distinguishing a number of semantic classes (for French, see (Molinier and Levrier (2000), Bonami et al. (2004)): connectives (*donc* ‘therefore’), speech act adverbs (*franchement* ‘frankly’), evaluatives (*malheureusement* ‘unfortunately’), modals (*peut-être*, ‘perhaps’), sentential agentives (*intelligemment* ‘intelligently’ in *Il a intelligemment refusé de répondre* ‘He intelligently declined to answer’), habitual adverbs (*généralement* ‘generally’), domain adverbs (*syntactiquement* ‘syntactically’), frequency adverbs (*souvent* ‘often’), duration adverbs (*longtemps* ‘for a long time’) temporal location adverbs (*récemment* ‘recently’), aspectual adverbs (*déjà* ‘already’), manner adverbs (*intelligemment* ‘intelligently’ in *Il a répondu intelligemment* ‘He answered intelligently’), degree

¹Some adverbs, in particular manner adverbs, are often said to be scopally inert. This lexical semantic property is debatable, and, in any case, does not change the scopal character of the category as a whole; see (Parsons, 1972; Peterson, 1997; Schäfer, 2005).

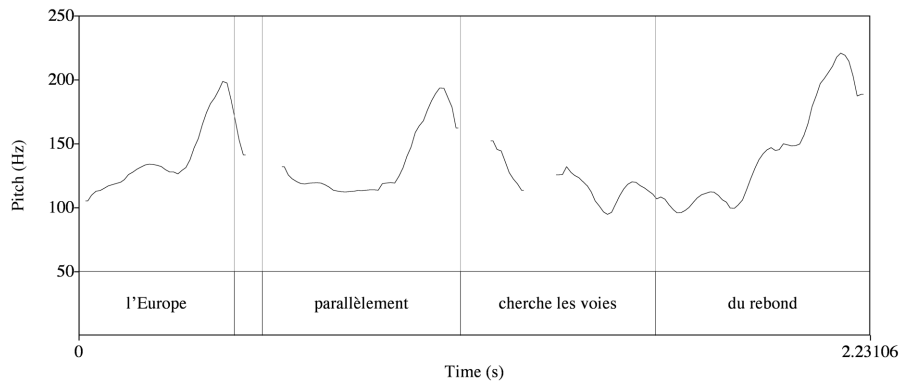


Figure 1: Pitch track of a canonical incidental realization

adverbs (*beaucoup* ‘a lot’, *intensément* ‘intensely’), and associative adverbs (*seulement* ‘only’). We also follow common practice in regrouping the first six classes, which share some properties, under the term ‘sentence adverb’. Our analysis takes into account all classes, except for connectives and associative adverbs, which have special interface properties linked to their relational semantics. It is based on French adverbs, but should apply to other languages; that is, although the details of the behavior are different (for instance, as is well known, the syntax of adverbs is different in French and English), the different dimensions and the types of interactions that are relevant are expected to be similar.

2 What is incidentality?

The distinction between incidental and integrated constituents correlates prosodic properties of realizations of constituents with constraints on their syntactic positions.² In the case of adverbs, it also correlates crucially with scope, as we will see below. Incidental constituents are usually set apart by commas in French orthography, although usage is far from being consistent on this point. For clarity, we explicitly mark incidentality in the examples by adding the symbol ‘↑’ at the boundaries of incidental constituents. ‘(↑)’ signals optional incidentality.

2.1 Incidental vs integrated adverbs: A prosodic property

Existing studies of incidental constituents in French (Fagyal, 2002; Mertens, 2004; Delais-Roussarie, 2005) state that they are prosodically ‘autonomous’, and are set

²Note that incidentality is not a property specific to adverbs, nor to adjuncts. A few examples of incidental constituents are: dislocated phrases, topicalized phrases, vocatives, interpolated clauses, appositions, some realizations of complements (*Il a ↑ à son frère ↑ donné à lire Proust !* ‘He has, to his brother, given Proust to read’).

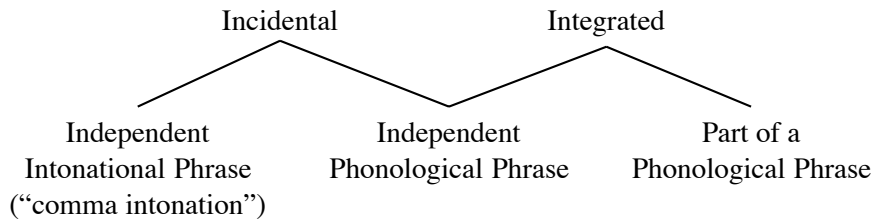


Figure 2: Realizations of incidental and integrated prosody

apart from their environment by a number of factors, illustrated in the typical pitch track in Fig. 1: optional pauses, lengthening of the last syllable preceding the incidental, of the last syllable of the incidental, F_0 modification at the boundaries, register change. However none of these manifestations of incidentality appears to be categorically necessary, as confirmed by an ongoing study by Bonami and Delais-Roussarie on the speech corpus ESTER (Galliano et al., 2006). This suggests that the distinction is phonological rather than phonetic, and, accordingly, that neutralization phenomena make the distinction opaque in certain cases. As Fig. 2 illustrates, in terms of familiar prosodic categories (Selkirk, 1984), we observe three types of realizations, one of which (*Independent Phonological Phrase*) is compatible both with incidental and integrated status.

2.2 Incidentalness and Adverb Classes

Most adverbs can occur with either an incidental or an integrated prosody, as illustrated in (1) with a few examples, although there are some constraints.

- (1) a. Paul a (↑) heureusement (↑) bien répondu. (evaluative)
 ‘Paul has fortunately answered well.’
 b. Paul avait (↑) habituellement (↑) un avis tranché. (habitual)
 ‘Paul had usually a clear-cut advice.’
 c. Paul avait (↑) souvent (↑) un avis tranché. (frequency)
 ‘Paul has often a clear-cut advice.’
 d. Paul a (↑) silencieusement (↑) quitté la pièce. (manner)
 ‘Paul has silently left the room.’

The dual prosodic realizations in (1) show that incidentality is a property of occurrences, not of lexemes *per se*, although some adverb classes (or subclasses) are specified regarding their prosody: degree adverbs are not incidentals, speech act adverbs are always incidentals; light (Abeillé and Godard, 2001) and resultative (Geuder, 2000) manner adverbs cannot be incidentals.

2.3 Incidental adverbs and Position

There are constraints on the prosodic realization of adverbs depending on their position. Consider the following schema, where the potential position for the adverb is noted $-px-$. We distinguish between 4 positions: the adverb can occur initially ($-p1-$), before the verb ($-p2-$), between the auxiliary verb and the past participle ($-p3-$), and after the participle ($-p4-$).³

- (2) $-p1-$ Paul $-p2-$ a $-p3-$ envoyé $-p4-$ ses vœux $-p4-$ à un vieil ami $-p4-$.
'Paul has sent his best wishes to an old friend.'

The generalizations are as follows. First, adverbs are normally incidental in $-p1-$, with a few exceptions that we leave aside for the purposes of this paper.⁴ We illustrate the property with both sentential (3a,b) and non-sentential (3c) adverbs:

- (3) a. Franchement ↑ cela n'en vaut pas la peine.
'Frankly, it is not worth it.'
b. Malheureusement/ Naturellement/ Officiellement/ Habituellement/ Intelligemment ↑ nous allons au cinéma.
'Unfortunately/ Naturally/ Officially/ Usually/ Intelligently we go to the movies.'
c. Récemment/ Souvent/ Lentement ↑ il est allé à l'opéra.
'Recently/ Often/ Slowly he went to the opera.'

Second, adverbs are incidental in $-p2-$ if the verb is finite (4), but integrated if the verb is infinitival (5):

- (4) a. Paul ↑ malheureusement/ naturellement/ officiellement/ habituellement ↑ ne peut pas s'en passer.
'Paul unfortunately/ naturally/ officially/ usually cannot do without it.'
b. Paul ↑ souvent ↑ préfère rester chez lui.
'Paul often prefers to stay home.'
(5) a. Paul se promettait de souvent aller au cinéma.
'Paul promised himself to often go to the movies'
b. Paul disait habituellement aller au cinéma le dimanche.
'Paul pretended to usually go to the movies on Sundays'

Third, adverbs may be either incidental or integrated in $-p3-$ and $-p4-$ (1), with two constraints. Light adverbs do not occur in $-p4-$ (6) (Abeillé and Godard 1997),

³There is no evidence for distinction among positions for constituents after the participle.

⁴Nonincidental adverbs are found in $-p1-$ in two constructions: the reinforced assertions construction discussed below and the complex clitic inversion construction, which is compatible only with a few adverbs (e.g. *Peut-être Paul viendra-t-il* 'Perhaps Paul will.come-he'. In addition, subject NP inversion disallows realizing an utterance initial adverb as an independent IP (e.g. *alors arriva Paul* 'then arrived Paul'). It remains to be seen whether the adverb is integrated in this case, or whether general prosodic factors disfavor an IP realization.

and sentential adverbs can appear in –p4– only if incidentals (7). This pattern shows that incidentals are *not* outside the realm of syntax, contrary to what is often assumed, since they are sensitive to syntactic position. Note, however, that there is no complementary distribution: sentential adverbs occur either as integrated or incidental in –p3–, and the others occur either as integrated or incidental in –p3– and –p4–.

- (6) a. Paul a mal répondu à la question.
 ‘Paul badly answered the question.’
 b. Paul a répondu à la question *(très) mal.
 ‘Paul answered the question (pretty) badly.’
- (7) a. Paul a répondu *(↑) forcément *(↑) à la question.
 ‘Paul necessarily answered the question.’
 b. Paul a répondu / répondra à la question *(↑) forcément.

We formalize the distinction with the feature *INCID ±*, which is a syntactic HEAD feature, with a prosodic correlate. The reason why we need a HEAD feature (pending a more elaborate conception of phonological properties) is that an incidental expression can be a phrase, such as a modified adverb (*Paul ↑ fort malheureusement ↑ a oublié le cadeau*, lit. ‘Paul, most unfortunately, has forgotten the gift’).

3 Scope, Syntactic Functions and Incidentalness

Adverbs may have four distinct functions: they can be heads of a clause, fillers, adjuncts or complements. We discuss adjunct and complement adverbs below. As heads of a clause, adverbs occur with a clausal complement which they scope over, although a quantifier in the complement may outscope the adverb (see *Probablement que tu as vu un de mes étudiants*, lit. ‘Probably that you have met one of my students’). Non-wh adverb fillers are found in two constructions. First, in adverb topicalization, as illustrated in (8a).⁵ In such cases the adverb receives incidental prosody, and takes its scope at the extraction site—in (8a), the extracted adverb *récemment* scopes below in-situ *sûrement*. Second, in the *reinforced assertion* construction, where a clause initial adverb receives a special prosody, the

⁵Note that clause-initial incidental adverbs may be either adjuncts or fillers. That the two analyses are possible is shown by the adverbs, such as frequency adverbs, that cannot be fillers, but do occur clause initially (i-ii). See Bonami and Godard (2007) for details, and Maekawa (2006) for an analysis of parallel data in English.

- (i) # Fréquemment, je sais qu’il va à Paris
 (intended) ‘I know he frequently goes to Paris.’
- (ii) Fréquemment, il va à Paris
 ‘He frequently goes to Paris.’

rest of the sentence being deaccented. The construction signals that the speaker amends a proposition in the common ground with respect to that part of the proposition which is expressed by the filler.⁶ It occurs only in root clauses, and does not involve the same classes of adverbs as topicalizations. We leave aside the analysis of these constructions, although a standard view of extraction and quantifier scope clearly predicts the correct scopal properties.

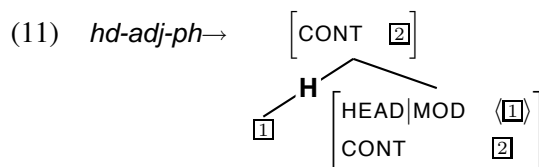
- (8) a. Récemment, je pense qu'il a sûrement été au théâtre.
 'Recently, I think he certainly went to the theater.'
 b. Prudemment, il m'avait promis qu'il parlerait !
 Prudently he promised that he would-talk

3.1 Integrated adjuncts

We start with the case of integrated adjuncts, although it is statistically less prominent, because it is most straightforwardly accounted for. In our analysis, integrated adjunct adverbs are found mostly to the left of infinitival VPs (not of finite VPs). They have scope over an adverb included in the VP (9), but they are not scopally ordered with respect to quantified NPs (10).

- (9) a. Il se souvenait de [longtemps [s'être souvent retiré chez ses parents]]
 (longtemps > souvent, *souvent > longtemps)
 'He remembered having often retired to his parents' house.'
 b. Il se souvenait de [souvent [s'être longtemps retiré chez ses parents]]
 (souvent > longtemps, *longtemps > souvent)
- (10) Il se promettait de [souvent [lire un journal]] (souvent > un, un > souvent)
 'He promised himself to often read a newspaper.'

The data concerning the two adverbs is taken care of by the usual constraint on head-adjunct phrases: the content of the phrase is identified with that of the adjunct, which takes as its argument the content of the head, and the content of the head VP is identified with that of the integrated postverbal adverb (see section 3.2).



The data concerning the quantifier NP shows that the adjoined adverb must be considered as a locus for quantification. Ginzburg and Sag (2000) analyzes only heads as such loci: they inherit the store of their arguments, and either transmit their store to the construction they head, or interpret the scopal elements (some or

⁶See Godard and Marandin (2006) on a syntactically different, but pragmatically similar, construction of Italian.

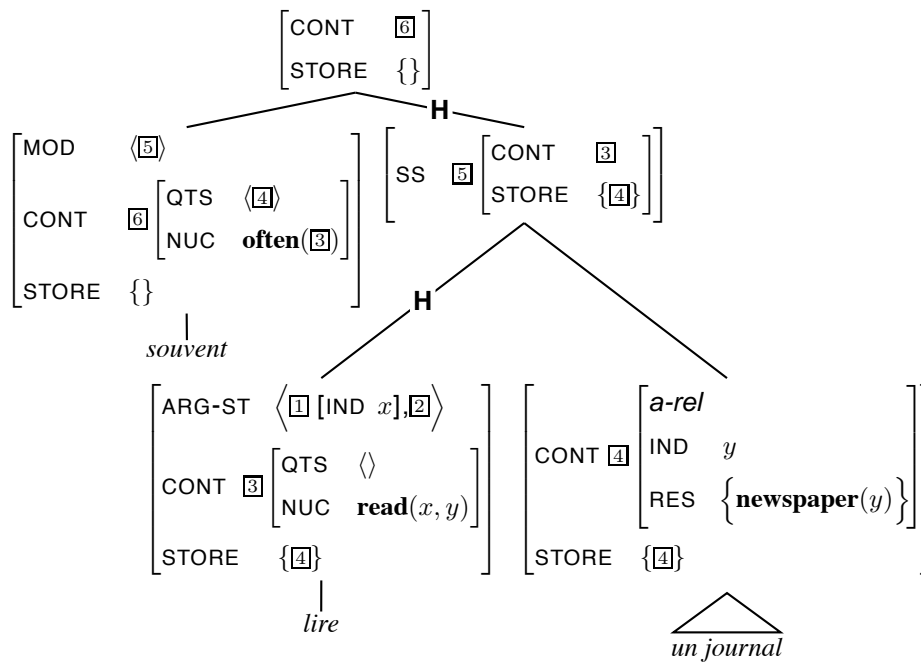


Figure 3: (9a) with narrow scope for *souvent*

all), putting them in the value of their QUANTS. We extend this analysis to adjoined constituents with the following constraint, which says that the store comes not only from arguments, but also from a modified constituent.

- (12) a. *ordinary-lexeme* →
$$\left[\begin{array}{l} \text{HEAD|MOD} \langle \langle [\text{STORE } 0] \rangle \rangle \\ \text{ARG-ST} \langle [\text{STORE } 1], \dots, [\text{STORE } n] \rangle \\ \text{STORE} ((0) \cup 1 \cup \dots \cup n) \setminus S \\ \text{CONT|QUANTS} \text{ order}(S) \end{array} \right]$$
- b. *quantifier-lexeme* →
$$\left[\begin{array}{l} \text{CONT} 1 \\ \text{STORE} \{1\} \end{array} \right]$$

Accordingly, a quantifier such as *un journal* in (9a) can be scoped at the verb, that is put in its QUANTS, in which case the adverb *souvent* has scope over it (see Fig. 4). Alternatively, the quantifier remains in the store of the verb and the VP, and is scoped at the adjunct. In this case, it has scope over the adverb, because it is not part of the content of the VP, which the adverb takes as its argument. (see Fig. 3).

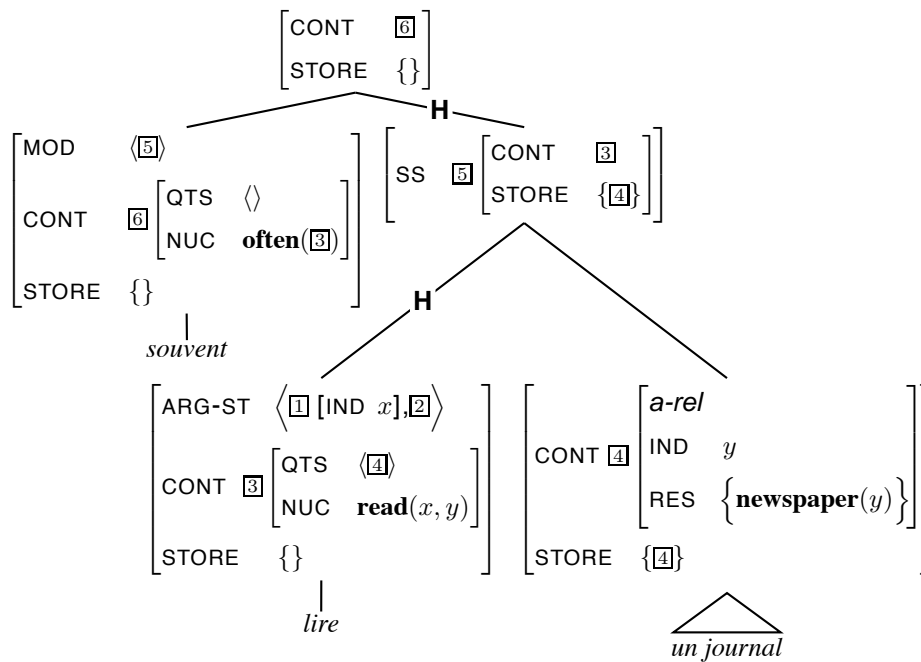


Figure 4: (9a) with wide scope for *souvent*

3.2 Complements

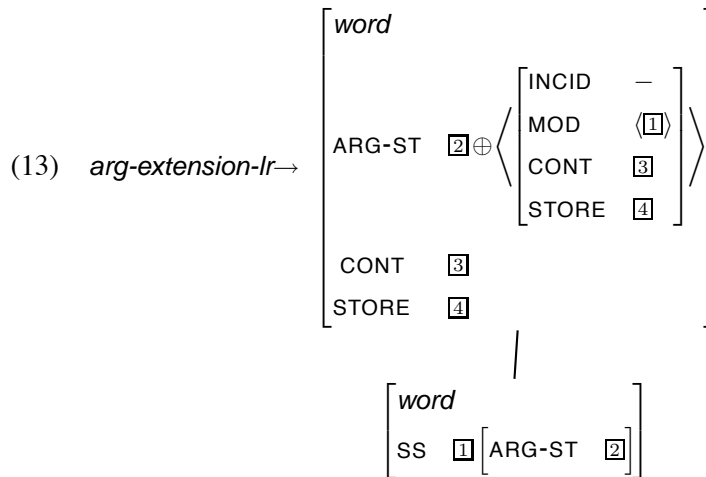
As is largely accepted in HPSG analyses of various languages, we treat integrated post-verbal adverbs or adverbials as complements (e.g. Miller, 1992; Noord and Bouma, 1994; Abeillé and Godard, 1997; Bouma et al., 2001). We adopt such a treatment mainly for coherence with existing HPSG accounts of French grammar, in particular the grammar of pronominal affixation and extraction. Locative adverbials can be pronominal prefixes on the verb like complements (as in *Paul l'y a rencontrée*, P. CL-CL has met, 'Paul has met her there'). Similarly, many adverbs can be extracted. Thus, if we assume that only valents can be extracted or realized as pronominal affixes, adverbs must be valents at least in some of their uses. Since postverbal integrated adverbs have the same distribution as argumental complements, it is natural to analyze them as complements.⁷

The particular analysis we assume here relies on a lexical rule (13), which includes a modifier into the argument structure, and updates the content, to be the same as that of the modifier.⁸ The rule can be applied several times, the iteration being constrained by the lexical semantics of the adverbs. For instance, if a manner

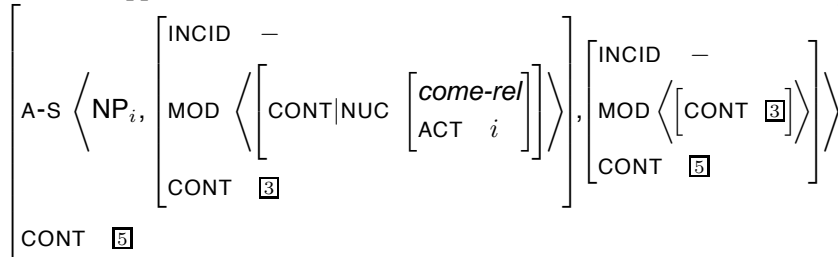
⁷In fact, our analysis is mostly orthogonal to the debate between traceless, adverb-as-complement and trace-based, adverbs-as-adjuncts analyses, since the function of integrated adverbs plays no role in determining their position or their scope.

⁸This lexical rule provides the same effects as the version of Argument Structure Extension in Bonami and Godard (in press, b), without the overhead of an MRS-based semantics.

and a modal adverb are added in the argument structure of the same verb (as in *venir probablement rapidement* 'to probably come rapidly'), the rule must apply first to the manner adverb, since it cannot have scope over the content of a modal adverb. As an illustration, (14) shows the lexical entry obtained by applying the rule twice to the verb *vient* 'comes', which is then used in the analysis of a sentence in Fig.5.



(14) The rule applied twice to the verb *vient* 'comes':



The main fact regarding the scope of postverbal integrated adverbs in French is its correlation with order: an adverb to the left has scope over an adverb to the right. For instance, the lexical semantics of *souvent* 'often' and *longtemps* 'for a long time' are such that either one can take scope over the other. Thus, the adverb on the left has scope in (15a,b). On the other hand, the lexical semantics of *probablement* 'probably' and *silencieusement* 'silently' are such that the second cannot take scope over the first. Hence one ordering only is grammatical.

- (15) a. Paul s'est souvent₁ longtemps₂ retiré chez ses parents. (1 > 2, *2 > 1)
 'Paul often retired to his parents' home for a long time.'
 b. Paul s'est longtemps₂ souvent₁ retiré chez ses parents. (2 > 1, *1 > 2)
 c. Paul a probablement silencieusement quitté la pièce.
 'Paul probably silently left the room.'
 d. *Paul a silencieusement probablement quitté la pièce.

The segregation of scopal material under the features QUANTS and NUCLEUS allows us to model this constraint directly as an order rule. Quantifiers may scope

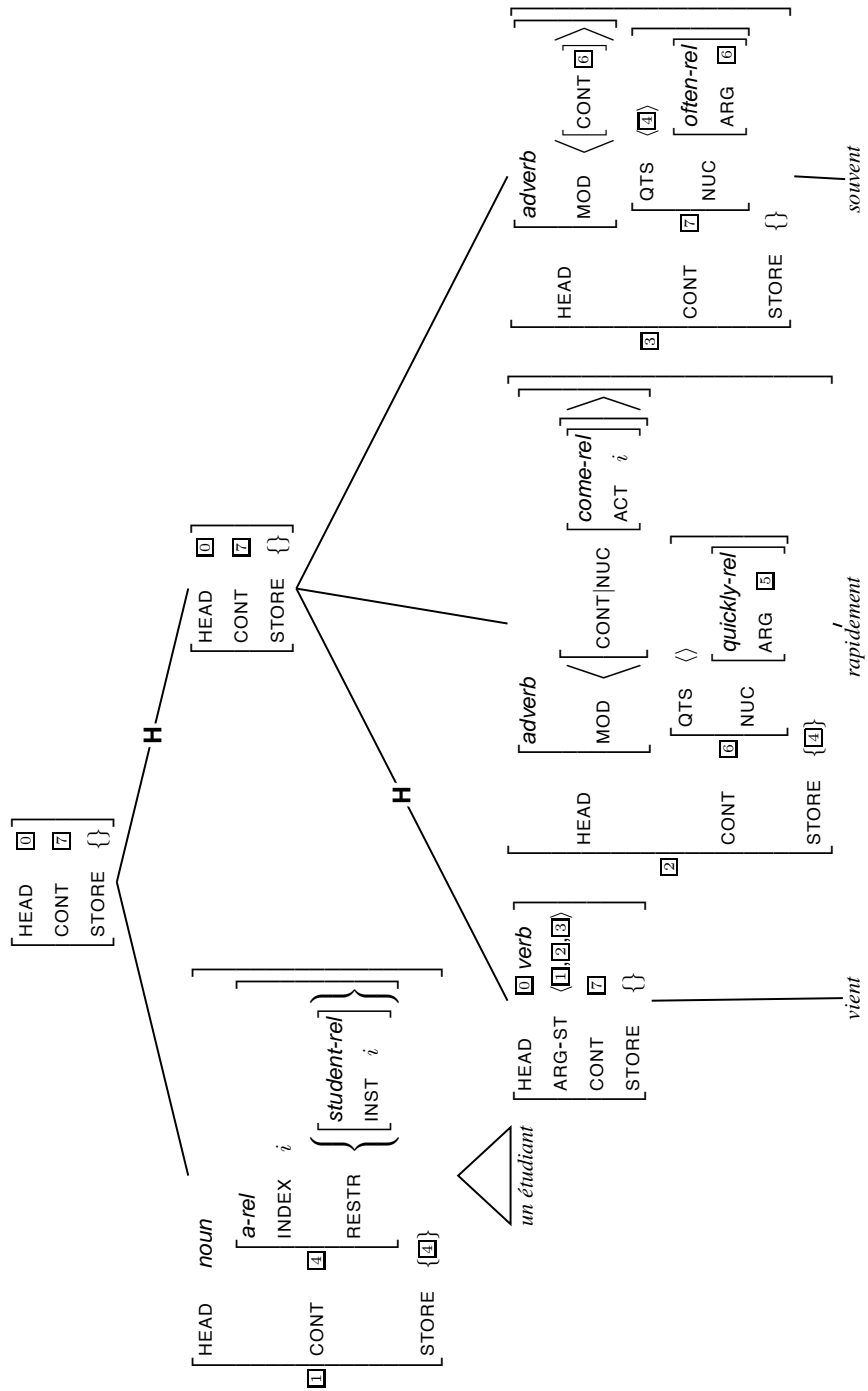


Figure 5: Using the lexical entry in (14)

between two integrated adverbs, but these will show up under QUANTS. Thus within a clause, each integrated adverb takes as its ARG the CONT of the next scopally highest integrated adverb, except the last one which takes as its ARG the lexical CONT of the verb (that is, its CONT before the application of argument structure extension). Thus the following rule takes stock of this situation by telling that an integrated adverb precedes the integrated adverb it modifies if any.

$$(16) \left[\begin{array}{l} \text{MOD} \left\langle \left[\begin{array}{l} \text{HEAD} \boxed{1} \\ \text{CONT} \boxed{2} \end{array} \right] \right\rangle \\ \text{INCID} - \end{array} \right] < \left[\begin{array}{l} \text{MOD} \left\langle \left[\text{HEAD} \boxed{1} \right] \right\rangle \\ \text{INCID} - \\ \text{CONT} \boxed{2} \end{array} \right]$$

3.3 Incidental adverbs

3.3.1 The issue

The distinction between integrated and incidental prosody has a correlate in terms of scope:

- (i) Scope among integrated adverbs follows linear order.
- (ii) Incidental adverbs take scope over integrated adverbs.
- (iii) Scope among incidental adverbs is syntactically unconstrained.

We have already illustrated and discussed point (i). We see that (17) contrast with examples in (15a,b): when there is one incidental and one integrated adverb, the incidental has scope over the integrated one, irrespective of order; when both adverbs are incidental, both scopings are possible, again irrespective of order.

- (17) a. Paul s'est ↑ souvent₁ ↑ longtemps₂ retiré chez ses parents. (1 > 2, *2 > 1)
- b. Paul s'est ↑ longtemps₂ ↑ souvent₁ retiré chez ses parents. (2 > 1, *1 > 2)
- c. Paul s'est longtemps₂ retiré chez ses parents ↑ souvent₁. (1 > 2, *2 > 1)
- d. Paul s'est souvent₁ retiré chez ses parents ↑ longtemps₂. (2 > 1, *1 > 2)
- e. Paul s'est ↑ souvent₁ ↑ retiré chez ses parents ↑ longtemps₂. (1 > 2, 2 > 1)
- f. Paul s'est ↑ longtemps₂ ↑ retiré chez ses parents ↑ souvent₁. (1 > 2, 2 > 1)

The examples in (18) also contrast with parallel examples with integrated adverbs (15c,d). If the modal adverb is incidental and the manner adverb integrated,

the sentence is grammatical, since the scope properties due to the prosodic status of the adverb co-incide with the semantic constraint (the modal has scope over the manner) (see (18a,c)). If the manner adverb is incidental and the modal integrated, the sentence is ungrammatical, irrespective of order, because the manner adverb should have scope over the modal, which violates the semantic constraint (18b,d). If both are incidental, the sentence is grammatical, although only one scoping is possible, because the scope is not syntactically constrained (18e,f).

- (18)
- a. Paul a ↑ probablement ↑ silencieusement quitté la pièce.
 - b. *Paul a ↑ silencieusement ↑ probablement quitté la pièce.
 - c. Paul a silencieusement quitté la pièce ↑ probablement.
 - d. *Paul a probablement quitté la pièce ↑ silencieusement.
 - e. Paul a ↑ probablement ↑ quitté la pièce ↑ silencieusement.
 - f. Paul a ↑ silencieusement ↑ quitté la pièce ↑ probablement.

It should be clear from this data that the scope of incidental adverbs is indifferent to their linear position. Two types of analysis can be pursued to account for that fact. In one approach, incidental adverbs are analyzed syntactically on a par with integrated adverbs, but they have different properties at the syntax-semantics interface—for instance, in the current setup, their content could be put in STORE. The other approach assumes that incidental adverbs are syntactically special: their linear position does not reflect in a direct way their structural relation to the rest of the sentence. In such an approach, the syntax-semantics interface can be quite straightforward because constituent structure relations are aligned with semantic scope. Both approaches to the scope of incidental adverbs can be pursued, and we do not have any strong argument, empirical or otherwise, against one of these. In this paper we pursue the second approach—we will mention a few advantages of that choice at the end of the section.

3.3.2 Linearization in the French sentence

The free placement of incidental adverbs leads us to reconsider the relation between constituency and order in a general way for French. We adopt a linearization-based approach in the spirit of (Reape, 1994; Kathol, 2000), which can be summarized in the three following points:

- Each word or phrase is associated with an *order domain*, a linearly-ordered list of signs, the value of the feature DOM.
- Order rules apply to domains rather than daughters.
- In French, the domain of a phrase is obtained by shuffling the domain of the head with the signs it combines with.

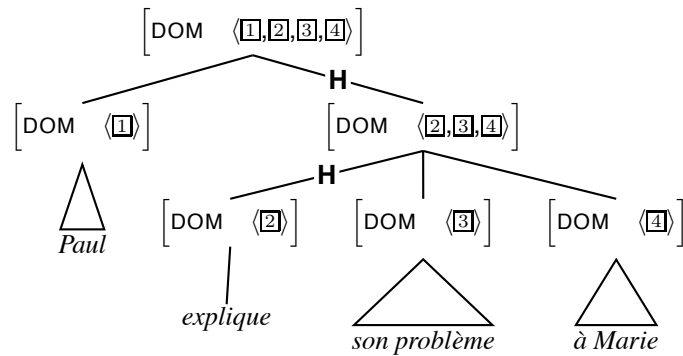
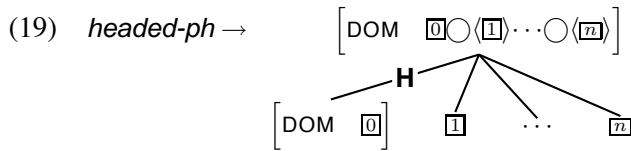


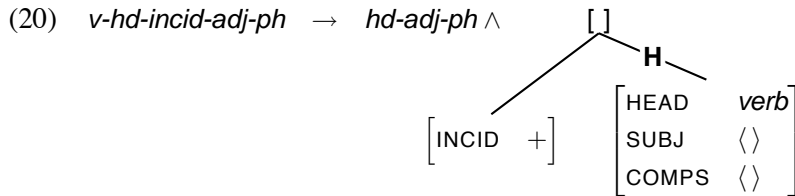
Figure 6: Domains in a simple sentence



Description (19) amounts to assuming that there is no partial compaction in French (it would have to be amended if (Bonami et al., 1999)’s domain-based analysis of subject inversion is to be integrated in the current framework). As a result, a typical finite sentence has in its DOMAIN a flat list consisting of the verb, its valents, and the adjuncts or fillers it has combined with (see Fig. 6). The placement of the integrated constituents (subject NP, and complements including integrated adverbials) with respect to the verb results from constraints on the domain rather than from the existence of a compacted finite VP. This entails that order rules will be needed to position subjects, adjuncts and fillers in the correct place, an issue we will not address here.⁹

3.3.3 Linearization based Analysis of Incidentals

Incidental adverbs are adjoined to the sentence. We propose a construction which inherits from the usual *hd-adj-ph* (11), adding another constraint :



The sentence domain is flattened, as proposed above. There is no constraint on the position of incidental modifier adverbs. Hence, they occur anywhere in this

⁹It is tempting to propose a topological approach to order in the French clause; and such an approach will definitely make sense in the context of a general grammar of incidental constituents (Marandin, 1998). A full discussion is outside the scope of this paper.

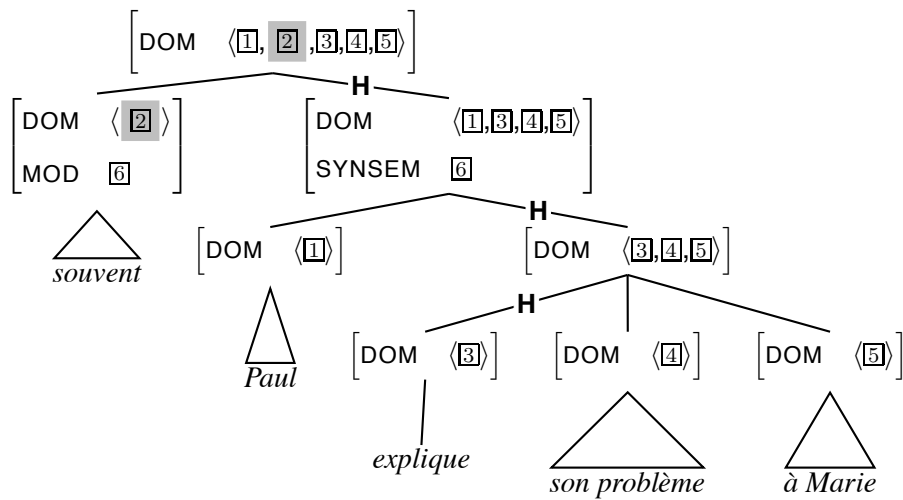


Figure 7: The phrase-structure position of an incidental adverb

domain. An example is given in Fig. 7. The tree corresponds to the constituency, and the nodes are annotated with the feature DOM which indicates how the signs are ordered. Here the incidental adverb *souvent* is adjoined to the sentence node, but this tree representation corresponds to the sentential expression where it occurs between the subject and the finite verb.

The proposed approach to incidental adverbs amounts to stating that the scopal properties of those adverb occurrences are aligned with their syntactic positions, but that this has no consequence on linear order. Thus when two incidental adverbs occur in a sentence, it is their scope relation, and not their linear position, which is reflected by the constituent structure. This is in sharp contrast with our approach to the scope of integrated adverbs, where there is no structural contrast between two adverbs, and their relative scope is determined by a linear order rule. This use of different analytic devices directly reflects the difference in observed scope properties.

At the beginning of this section we discussed the fact that incidental adjunct scope could be approached either by relaxing the syntax-semantics interface or the constituent structure-linear order relation. We can now justify our choice briefly. One advantage of the current approach is that it allows for more streamlined syntactic rules for French: if we were to generate incidental adverbs on a par with integrated adverbs, we would need a number of arbitrary limitations on the prosodic realizations associated with various syntactic positions; in the current setup, nothing specific has to be said either for incidentals (they linearize freely) or integrated complements (they linearize just like other complements). Only in the case of integrated adjuncts do we need some explicit constraint. Second, if incidental adverbs were put in STORE, we would expect them to be able to scope out of their clauses, as quantifiers do. Although of course appropriate restrictions on STORE

values could be proposed, our analysis avoids such stipulations, as clause boundedness follows from independent constraints on linearization: as nonheads, embedded clauses are compacted, and thus there is no way for an incidental adverb to scope outside its clause.

4 Parentheticals and scope

It is largely accepted that parenthetical material is not part of the main content (Jayez and Rossari, 2004; Potts, 2005): it corresponds to a commitment of the speaker, but is not part of the content that is taken into account by the speech act. Four classes of adverbs are parenthetical: speech act adverbs, connectives, evaluatives, sentential agentives (Bonami et al. (2004)). While parentheticality has often been confused with the prosodic property of incidentality (under the name of 'comma intonation'), it should be clear by now that these are two orthogonal distinctions. Going back to (1), we see that most adverbs can have both prosodic realizations, independent of parentheticality or other lexical distinctions.

We illustrate the pragmatic status of parentheticals with evaluative adverbs, which have been the focus of our work on the subject (Bonami and Godard, in press, a, b). The evaluative adverb in (21a) contrasts with the modal in (21b) in not participating in the truth conditions for the sentence. (22) makes it clear that the evaluative is not part of the assertion, since it cannot be refuted by normal means (such as 'it is false').

- (21) a. Si Paul part en vacances, nous ne le saurons malheureusement pas.
 'If Paul goes away on vacation, we will unfortunately not know it'
 \Leftrightarrow Si Paul part en vacances, nous ne le saurons pas.
 'If Paul goes away on vacation, we will not know it.'
- b. Si Paul part en vacances, nous ne le saurons probablement pas.
 'If Paul goes away on vacation, we will probably not know it'
 $\not\Leftrightarrow$ Si Paul part en vacances, nous ne le saurons pas.
 'If Paul goes away on vacation, we will not know it.'
- (22) A: Paul a malheureusement perdu l'élection.
 'Paul unfortunately lost the election.'
*B*₁: # C'est faux, je trouve que c'est une très bonne nouvelle.
 'That's not true, I think it is very good news'.
*B*₂: C'est vrai, mais moi, je trouve que c'est une très bonne nouvelle !
 'Yes, but I personally think it is great news!'

What is of direct interest for us here is that, in spite of not being part of the main content, parenthetical adverbs may enter into scope interaction with the rest of the sentence. As shown in (Bonami and Godard, in press, a), the information contributed by an evaluative has a conditional structure (23), where ' \forall^* ' denotes a universal closure operator binding all free variables in its scope. The relevance of

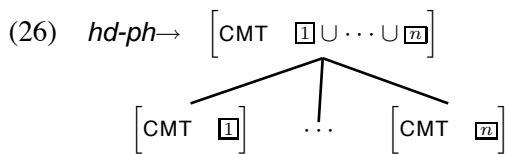
the quantifier is made visible by the occurrence of an evaluative in an interrogative sentence, where it binds variables corresponding to *wh*- elements.

- (23) Lexical decomposition content of the evaluative adverb
 $\lambda p.\forall^*[p \rightarrow \mathbf{adjective}(p)]$
- (24) a. Qui est curieusement arrivé à l’heure ?
 ‘Who arrived on time, oddly’
 b. *questions*: $\lambda x.[\mathbf{arrive-on-time}(x)]$
 c. *comments*: $\forall^*[\mathbf{arrive-on-time}(x) \rightarrow \mathbf{odd}(\mathbf{arrive-on-time}(x))] \equiv \forall x[\mathbf{arrive-on-time}(x) \rightarrow \mathbf{odd}(\mathbf{arrive-on-time}(x))]$

Example (25) shows that there can be scope interaction between evaluatives and quantifiers: the adverb has or does not have scope over the quantifier. The second reading is in principle always available, but is more conspicuous if the adverb is postverbal (*la plupart des étudiants sont heureusement venus*).

- (25) Heureusement, la plupart des étudiants sont venus.
 ‘Fortunately , most students came’
asserts: $\mathbf{most}(\lambda x.\mathbf{student}(x), \lambda x.\mathbf{come}(x))$
comments:
 a. $\mathbf{most}(\lambda x.\mathbf{student}(x), \lambda x.\mathbf{come}(x)) \rightarrow \mathbf{fortunate}(\mathbf{most}(\lambda x.\mathbf{student}(x), \lambda x.\mathbf{come}(x)))$
 b. $\forall x[\mathbf{student}(x) \rightarrow [\mathbf{come}(x) \rightarrow \mathbf{fortunate}(\mathbf{come}(x))]]$

Bonami and Godard(in press, a) provides an HPSG account of evaluative adverbs that accounts both for their special illocutionary status and their scopal behavior.¹⁰ Parenthetical material is put under a special feature CMT (‘commitments’) within CONTEXT whose value is passed up the tree.



The value of the feature CMT is then interpreted at utterance level by a unary rule (Ginzburg and Sag, 2000) whose role is to interpret the different semantic

¹⁰The analysis of Bonami and Godard(in press, a) has a few limitations: it does not allow for phrasal parentheticals, and does not account correctly for cases of evaluatives embedded in a speech report. Both problems are addressed in Bonami and Godard(in press, b), which uses a modified version of MRS to account for the relevant data. We have not yet produced a unified analysis that accounts for all the relevant data using a single syntax-semantics interface framework, although there is no reason it cannot be done. What should be clear however is that both versions of the analysis interact correctly with the analysis of integrated and incidental occurrences provided here, since all differences between parenthetical and non-parenthetical adverbs lie in the way material from MOD is used to construct CONT and CMT values, and nothing in the analysis of incidentality is sensitive to such distinctions.

bits contributed by the sentence in terms of dialogue gameboard update operations (Ginzburg, to appear). Fig. 8 illustrates this in an example. The adverb *heureusement* makes no contribution to CONT, and just identifies its content with that of the head. It does however contribute a conditional proposition (□) to the CMT set. This is passed up the tree. At sentence level, we see that the content of the clause (□) receives a version of Ginzburg’s dual treatment for assertions: first, the speaker commits himself to the truth of *a student came*; second, the question whether a student came is put in discussion in QUD—only if the addressee accepts it will it become common ground. The contribution of the evaluative adverb is added to the commitment set, but not to QUD. This reflects the fact that parentheticals are solitary commitments: the speaker is committed to their truth, but does not call for an agreement of the addressee, and the dialogue can go on without that agreement being reached.

As we have seen in (25), parenthetical adverbs give rise to scope ambiguities. They depend essentially on the same mechanism as those of non-parentheticals (see (10)): as adjuncts, they take the content of the head as their argument (11), and they are a locus of quantification (12). If the quantifier is interpreted in the head daughter, it is included in the argument of the adverb (which has ‘wide scope’), as in (25a); if the quantifier is in the store of the head daughter, it is not included in the argument of the adverb (which has ‘narrow scope’), as in (25b). There are two differences which blur this essential similarity. First, given their status as parenthetical, the scope interaction does not affect the main content, but only the commentary. Second, regarding evaluative adverbs, their implicature structure makes the predicate-argument relation less conspicuous.¹¹ However, it is clear that parenthetical adverbs transpose in their own contextual realm the same scope mechanism that is used by other adverbs in determining the main content.

References

- Abeillé, Anne and Godard, Danièle, 1997. The syntax of French negative adverbs. In Danielle Forget, Paul Hirschbühler, France Martineau and María-Luisa Rivero (eds.), *Negation and polarity: syntax and semantics*, pages 1–27, Amsterdam: John Benjamins.
- Abeillé, Anne and Godard, Danièle, 2001. A class of lite adverbs in French. In J. Camps and C. Wiltshire (eds.), *Romance Syntax, Semantics and L2 Acquisition*, pages 9–25, Amsterdam: John Benjamins.
- Bonami, Olivier and Godard, Danièle, 2003. Incidentals adjuncts: an overlooked type of adjunction, paper read at the 10th HPSG Conference, East Lansing.
- Bonami, Olivier and Godard, Danièle, 2007. Adverbes initiaux et Types de phrase

¹¹For details of the HPSG implementation of the universal closure operator, see again Bonami and Godard, in press, a).

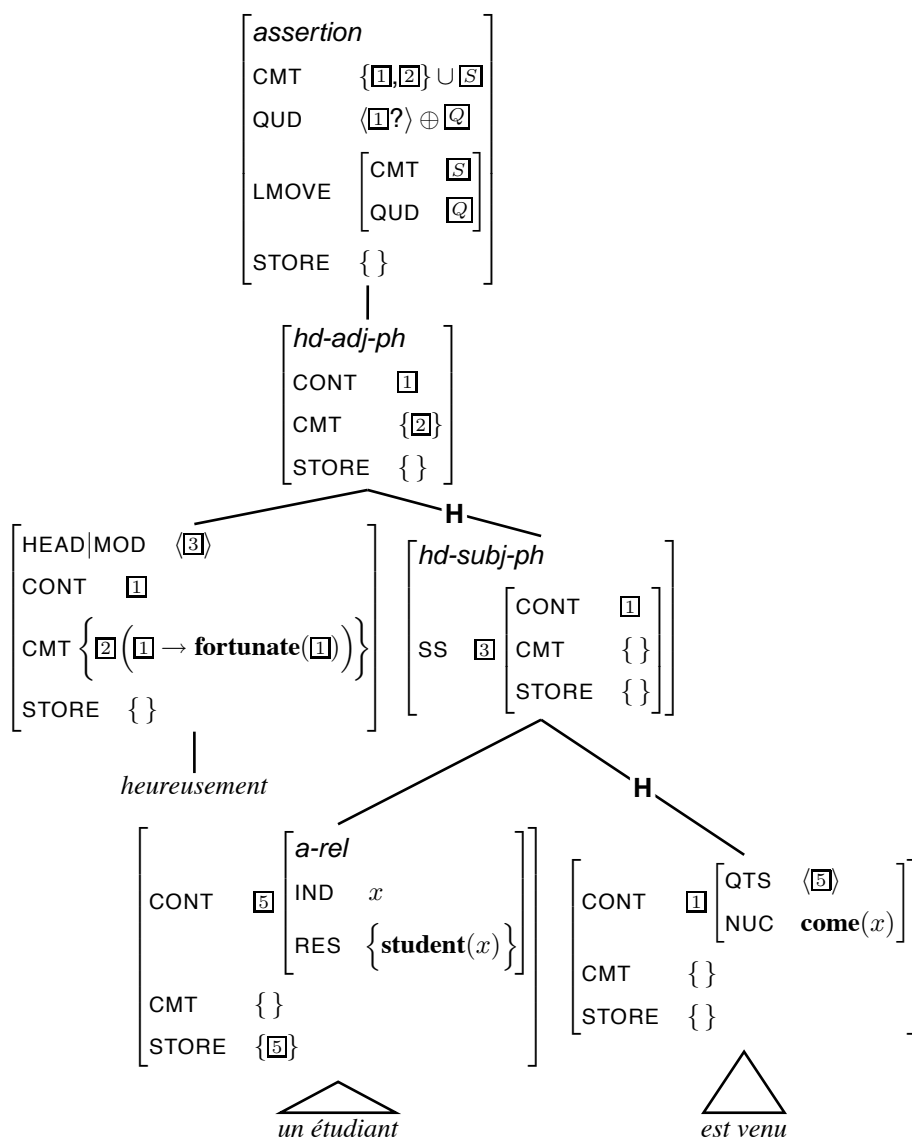


Figure 8: Analysis of an evaluative adverb

- en français. In Alexandra Cuniță, Coman Lupu and Lilianne Tasmowski (eds.), *Studii de Lingvistică și Filologie Romanică*, pages 50–57, Burarest: Editura Universității din București.
- Bonami, Olivier and Godard, Danièle, in press, a. Lexical Semantics and Pragmatics of Evaluative Adverbs. In Louise McNally and Chris Kennedy (eds.), *Adverbs and Adjectives: Syntax, Semantics, and Discourse*, Oxford: Oxford University Press.
- Bonami, Olivier and Godard, Danièle, in press, b. Parentheticals in underspecified semantics: the case of evaluative adverbs. *Research on Language and Computation*.
- Bonami, Olivier, Godard, Danièle and Kampers-Manhe, Brigitte, 2004. Adverb classification. In Francis Corblin and Henriëtte de Swart (eds.), *Handbook of French Semantics*, pages 143–184, Stanford: CSLI Publications.
- Bonami, Olivier, Godard, Danièle and Marandin, Jean-Marie, 1999. Constituency and word order in French subject inversion. In Gosse Bouma, Erhard Hinrichs, Geert-Jan Kruijff and Richard T. Oehrle (eds.), *Constraints and resources in natural language semantics*, Studies in constraint-based lexicalism, pages 21–40, Stanford: CSLI Publications.
- Bouma, Gosse, Malouf, Rob and Sag, Ivan A., 2001. Satisfying constraints on extraction and adjunction. *Natural Language and Linguistic Theory* 19, 1–65.
- Cinque, Guglielmo, 1999. *Adverbs and functional heads*. Oxford: Oxford University Press.
- Delais-Roussarie, Elisabeth, 2005. Vers une grammaire prosodique formelle: le cas des incidentes en français. In *Actes électroniques de la conférence Interface Discours et Prosodie 05*, Université de Provence.
- Dik, Simon C., 1997. *The Theory of Functional Grammar, Part 1: The Structure of the Clause*. Berlin: Mouton de Gruyter.
- Fagyal, Zsuzsanna, 2002. Prosodic boundaries in the vicinity of utterance-medial parentheticals in French. *Probus* 14, 93–111.
- Galliano, Sylvain, Geoffrois, Edouard, Bonastre, Jean-François, Gravier, Guillaume, Mostefa, Djamel and Choukri, Khalid, 2006. Corpus description of the ESTER Evaluation Campaign for the Rich Transcription of French Broadcast News. In *Proceedings of LREC 2006*, pages 315–320.
- Geuder, Wilhelm, 2000. *Oriented Adverbs. Issues in the lexical semantics of event adverbs*. Ph. D.thesis, Universität Tübingen.
- Ginzburg, Jonathan, to appear. *A Semantics for Interaction in Dialogue*. Stanford and Chicago: CSLI Publications and the University of Chicago Press.

- Ginzburg, Jonathan and Sag, Ivan A., 2000. *Interrogative Investigations. The Form, Meaning, and Use of English Interrogatives*. Stanford: CSLI Publications.
- Godard, Danièle and Marandin, Jean-Marie, 2006. Reinforcing Negation: the Case of Italian. In Stefan Müller (ed.), *Proceedings of the 13th International Conference on Head-Driven Phrase Structure Grammar*, pages 174–194, CSLI Publications.
- Jayez, Jacques and Rossari, Corinne, 2004. Parentheticals as Conventional Implicatures. In Francis Corblin and Henriëtte de Swart (eds.), *Handbook of French Semantics*, pages 211–229, Stanford: CSLI Publications.
- Kathol, Andreas, 2000. *Linear Syntax*. Oxford: Oxford University Press.
- Maekawa, Takafumi, 2006. Long and short adjunct fronting in HPSG. In Stefan Müller (ed.), *Proceedings of the HPSG 2006 Conference*, pages 212–227, Stanford: CSLI Publications.
- Marandin, Jean-Marie, 1998. Grammaire de l'incidence, manuscript, Université Paris 7.
- Mertens, Piet, 2004. Quelques aller-retour entre la prosodie et son traitement automatique. *Le français moderne* 72, 39–57.
- Miller, Philip, 1992. *Clitics and constituents in Phrase Structure Grammar*. New York: Garland.
- Molinier, Christian and Levrier, Françoise, 2000. *Grammaire des adverbes*. Genève: Droz.
- Noord, Gertjan van and Bouma, Gosse, 1994. Adjuncts and the processing of lexical rules. In *Proceedings of COLING-94*, pages 250–256.
- Parsons, Terence, 1972. Some problems concerning the logic of grammatical modifiers. In Donald Davidson and Gilbert H. Harman (eds.), *Semantics of natural language*, pages 127–141, Dordrecht: Reidel.
- Peterson, Philip, 1997. *Fact, Proposition, Event*. Dordrecht: Kluwer.
- Potts, Christopher, 2005. *The Logic of Conventional Implicatures*. Oxford: Oxford University Press.
- Reape, Mike, 1994. Domain union and word-order variation in German. In John Nerbonne, Klaus Netter and Carl Pollard (eds.), *German in HPSG*, pages 151–197, Stanford: CSLI Publications.
- Schäfer, Martin, 2005. *German Adverbial Adjectives: Syntactic Position and Semantic Interpretation*. Ph. D.thesis, Universität Leipzig.
- Selkirk, Elisabeth, 1984. *Phonology and syntax*. Cambridge: MIT Press.