Discourse ‘major continuatives’ in a non-monotonic framework
Jacques Jayez, ENS-LSH and L2C2, CNRS
Mathilde Dargnat, Nancy 2 and ATILF, CNRS

1. Starting point
In a well-know paper, Delattre [6] proposed to classify the melodic contours of French into ten categories, including minor and major continuatives (mcs vs. MCs). Delattre associated physical and functional differences with the contours. The physical differences he mentions have been questioned [3] and have been found elusive in certain respects, see [11, p. 123, fn 8, chap. 5, sec. 5.2.2., chap. 7]. Functionally, mcs occur at the frontier between elementary meaningful constituents, whereas MCs signal that (i) a number of smaller meaningful constituents have been grouped together into a bigger one and (ii) a new ‘big’ (= non-elementary) constituent is about to begin. We examine here the status of continuative boundary tones between sentences/clauses (see [4] for cross-linguistic data and [5] for French paratactic structures), that we call \(D(\text{iscourse})C(\text{ontinuative}) R(\text{ises})\) and consider to form at least a subset of Delattre’s MCs.\(^{19}\)

2. The cognitive status of DCRs
DCRs can be seen either as objective acoustic entities, whose properties can be studied apart from any interpretive behaviour, or as cognitive entities, which can be recognised by native speakers and enter the discourse interpretation process. Here, we address the well-known issue of the cognitive discrimination of DCRs and questions, limiting our research to DCRs in assertions. We describe a simple experimental protocol, which, in spite of its limitations, shows clearly that French native speakers confuse DCRs with questions, when they are presented in simple sentences.

22 native speakers of French between 19 and 25 years old, who were not aware of the goal of the experiment and had no training in phonetics, were collectively presented with 16 sentences of four different discourse types: Assertion, Question, Exclamation and Continuation, in a 4x4 design. Continuation sentences were ‘artificial’. They had been obtained by cutting the signal corresponding to a S1S2 paratactic structure, where S1 ended with a DCR; there was no break (pause) between S1 and S2 and S1S2 formed a meaningful unit. For instance, the unit \(\text{Jean a raté son examen il avait rien fichu} ('\text{John has failed his exam he had done bugger all}')\) was shortened to the first part (\(\text{Jean a raté son examen, 'John has failed his exam'}\)). Each sentence had been prerecorded and was played twice, 8 by a female speaker and 8 by a male speaker. The 16 sentences were randomised. Subjects were instructed to assign to each sentence at least one of the labels Assertion, Question, Exclamation\(^{20}\) or Indeterminate. See figure 1 for illustration.

Using the R software (http://cran.R-project.org), we analysed the data under a polytomous logistic regression approach [12, ch. 10] with the help of the VGAM package [14]. The probability results are summarised in figure 2. The last line tells us that the dispersion is very weak and the regression, accordingly, is highly reliable. The other lines express the probability of getting a response of a certain type (the right four columns) given a sentence of a certain type (the left column). E.g., Assertion is preferably associated with an Assertion rating (at a 92% probability), DCR with a Question rating (81%) and Question with a Question rating (97%). Crucially, the probability of a DCR eliciting an Assertion rating is

\(^{19}\) We are not concerned with the possible relation between the mc vs. MC distinction and recent hierarchies of prosodic constituents [7,8,9], which is difficult to assess in a precise way.

\(^{20}\) In order not to multiply sources of confusion, exclamations were realised as (relatively) end-falling or end-flat.
only 8%. Given this cognitive proximity, it is unlikely that a simple compositional analysis, where contours ‘trigger’ distinct (sets of) meanings is appropriate. We propose instead that DCRs convey several default interpretative instructions, which may lead to different results in different contexts.

3. A non-monotonic approach

We need a modular and non-monotonic framework. For space reasons, we will essentially use SDRT [1,2], deferring the discussion of a more general approach [10] to the full paper. The intuition we capture is that (i) in isolation, DCRs favour a question interpretation, (ii) when more context is adduced on the right, they enter constructional patterns or demand that the constituent on the right be directly attached to the constituent that bears the DCR. In SDRT, rules have a general form $\Sigma > \varphi$, ‘if $\Sigma$, then, normally, $\varphi$’, where $\Sigma$ is a finite sequence of expressions, $\varphi$ an expression and ‘$>$’ non-monotonic entailment. We extend SDRT inference engine by ordering rules. (1.R1) says that if a constituent $\alpha$ bears a DCR ($dcr(\alpha)$) and its morpho-syntax is compatible with a question interpretation, it triggers a default question interpretation. R1 has priority ($<$) over the other two possibilities (assertion, exclamation).

(1) Prioritised rules

R1 : $dcr(\alpha)$ syntax-compat($\alpha$,Question) $>$ Question($\alpha$)
R2 : $dcr(\alpha)$ syntax-compat($\alpha$,Assertion) $>$ Assertion($\alpha$)
R3 : $dcr(\alpha)$ syntax-compat($\alpha$,Exclamation) $>$ Exclamation($\alpha$)
R2, R3 $<$ R1

In certain cases, S1S2 paratactic structures, where S1 bears the DCR, are constructional patterns with a ‘frozen’ meaning, such as a conditional interpretation in pseudo-declaratives and pseudoimperatives (Tu viens/Viens je te donne les documents = ‘if you come I give you the documents’). (2) says that, whenever certain (possibly complex) constraints $\Phi$ and $\Psi$ are satisfied by the first constituent $\alpha$ (a sentence or clause which bears the DCR) and the second constituent $\beta$ (sentence or clause S2) respectively, there is a certain construction which connects $\alpha$ and $\beta$ through a discourse relation R.

(2) Constructional rule schema

$\Phi(\alpha) \Psi(\beta) dcr(\alpha) > dcr-construction(R,\alpha,\beta)$, where $dcr-construction(R,\alpha,\beta) \subseteq R(\alpha,\beta)$ (or $R(\beta,\alpha)$)

$\Phi$ and $\Psi$ usually stand for more detailed information than just syntax-compat($\alpha,X$). In sufficiently rich non-monotonic systems (including SDRT), default rules with more specific premisses win over rules with less specific premisses (specificity principle). So, (2) will in particular override (1), illustrating the fact that right context information can defeat choices made ‘in isolation’.

Finally, (3) expresses the discourse meaning of ‘continuation’. It says that, when attempting to attach $\beta$ to $\alpha$ in a tentative discourse structure $\lambda$, if the penultimate (last-1) constituent $\gamma$ carries a DCR, then, normally, (i) $\alpha = \gamma$ (no back jump) and (ii) no Topic-Shift relation is allowed.

(3) ?($\alpha,\beta,\lambda)$ last-1 $= \gamma$ last $= \beta$ $dcr(\gamma) > \alpha = \gamma$ & $\lambda$ Topic-Shift($\gamma,\beta,\lambda$)

The no back jump condition forces a purely local attachment (the rightward constituent must ‘continue’ the left one). It is is stricter than the Right Frontier constraint of SDRT, which limits but does not exclude non-local attachments. The prohibition on topic shifts derives directly from the fact that they prevent continuation. (3) does not impose any particular
discourse relation (it just bans *Topic-Shift*). Moreover, (2) and (3) do no prevent a question interpretation if it is compatible with the chosen constructional pattern (2) or the discourse relation used in the attachment (3). The present interpretation of continuation (expect a local topic-preserving attachment) is in line with the observation in [13] that continuation marks in English (rise + prolongation) raise the attention level of hearers about the constituent to come and facilitate its interpretation.

Under the present perspective, DCRs are not reduced to some sort of intonational meaning. They participate in a complex network of competing (ordered) default rules, which exploit various types of information. In the full paper, we provide a detailed exposition of a general non-monotonic system, which allows us to integrate different contours, and we discuss more precisely various experimental settings relevant to the interpretation of contours.

Figure 1: Exclamation

Figure 1: Continuation (MC)

Figure 1: Question
References

[8] D’imperio, Maria Paola, Bertrand, Roxanne, Di Cristo, Albert and Portes, Cristel (2007). Investigating phrasing levels in French: is there a difference between nuclear and prenuclear accents? In J. Camacho et al. (Eds.), *Selected Papers from the 36th Linguistic Symposium on Romance Languages*, Amsterdam: Benjamins.