

Extra-Sentential Elements, Prosodic Restructuring, and Information Structure. A Study of Clitic-Left Dislocation in Spontaneous French

Mathieu Avanzi¹, Lisa Brunetti², Cédric Gendrot³

¹ Chaire de linguistique française, Université de Neuchâtel, Neuchâtel, Switzerland

² Laboratoire Dynamique du Langage (UMR 5596), Université Lumière Lyon 2, Lyon, France

³ LPP, UMR 7018/CNRS Université Sorbonne Nouvelle – Paris 3, Paris, France

mathieu.avanzi@unine.ch, lisa.brunetti@univ-lyon2.fr, cgendrot@univ-paris3.fr

Abstract

The aim of this study is to discuss the hypothesis according to which prosodic prominence and pragmatic salience are closely related. To do so, we focus on French clitic-left dislocated subjects, namely those constructions where the subject occupies a position in the left periphery and co-refers with a resumptive clitic pronoun within the main clause. Scholars have made the hypothesis that the different degree of prominence of the pitch accent on the last syllable of the dislocated NP depends on the degree of salience in the discourse: the more the topic referent is salient, the less the pitch accent is prominent. We semi-automatically process 101 sentences extracted from spontaneous speech corpora for prosodic and pragmatic analysis. A comparison of the two coding suggests that the mapping between prominence and salience is not that straightforward in spoken French, as it only concerns the class of shift topics. From this we conclude that if prosodic prominence plays any pragmatic role, it is not that of signaling salience, but rather a particular organization of discourse.

Index Terms: clitic left dislocation, prosodic phrasing, prosodic restructuring, prominence, topic, salience, spontaneous French.

1. Introduction

In the Prosodic Theory framework [1], French clitic-left dislocated elements, as the NP *ma mère* in the utterance *ma mère, elle est institutrice* ‘My mother, she is a teacher’, are predicted to be phrased as Intonational Phrases (IP) [2], *i.e.* followed by a strong prosodic break, realized in French by a pitch rise associated to a lengthened syllable, optionally followed by a silent pause (see, among many others [3] and [4], and the dislocated NP underlined in Fig. 3, §6 below, for an illustration). The phenomenon is also known for other Romance languages such as Italian [5] or Catalan [6], where it has been formalized with the Align-Topic rule:

- (1) **Align-Topic:** Align the right edge of a left-dislocated element with the right edge of an Intonational Phrase.

In recent literature nevertheless, it has been shown that left-dislocated NPs, as well as other extra-sentential elements, can be subjects to **restructuring phenomena**, and be phrased as Intermediate Phrases (ip) or Accentual Phrases (AP). In other words, they can be ended by a perceptually less strong pitch accent (see [7], [8] and below, Fig. 4 and Fig. 5 for attested spontaneous data). Avanzi (see [9]), for instance, says that the alignment rule formulated under (1) is violated in 70% of the cases in his corpus (around 441 clitic-left dislocated constructions extracted from spontaneous speech), and therefore proposes the following restructuring rule:

- (2) **Align-Topic restructuring:** Align the right edge of a left-dislocated NP with the right edge of an Intermediate Phrase or the right edge of an Accentual Phrase.

The reasons that motivate prosodic restructuring are numerous. Speech rate and metrical length have been mentioned to be strong factors (see among others [2] and [8] for example). As for clitic-left dislocations, some scholars have made the hypothesis that the prosodic variation of the boundary degree of the dislocated NP could be explained in pragmatic terms (see e.g. [3], [10]-[12]). According to these authors, the degree of strength of the pitch accent associated with the last syllable of the NP would depend on the activation status of the referent denoted by the NP in discourse. Strongly salient referents would not need to be prosodically prominent, while unactivated or new referents need to be strongly prominent when they are uttered for the first time. The generalization expressed under (3) resumes this hypothesis:

- (3) **Prosody/Pragmatic Interface Hypothesis:** the more the topic is salient in the discourse, the less the right edge of the dislocated constituent is prominent.

To our knowledge, the hypothesis formulated within (3) has not received any empirical accreditation yet. In this paper, we provide empirical data in order to test such a hypothesis, by analyzing a set of sentences extracted from spontaneous speech corpora and independently annotated for a prosodic analysis and for a pragmatic analysis.

2. Material

2.1. Data

101 declarative sentences containing a clitic-left dislocated NP subject were extracted from two spontaneous spoken corpora, representing two varieties of French: Northern (Parisian) French [13], and Southern French [14]. All the NPs of the extracted sentences comprise 2 or 3 syllables only, initiate a new prosodic utterance (they occur after a silent pause or a strong prosodic break) and are coreferent with a 3rd person subject clitic pronoun (*il(s)/elle(s)*). In all, 22 speakers (17 females, 5 males), each performing between 1 and 10 utterances, were analyzed.

2.2. Prosodic processing

Once transcribed, each utterance was processed with the EasyAlign script [14] running under Praat [16], which provides a 3-layer automatic segmentation: phone string, syllable string, and graphemic word string. The alignments are manually checked and corrected by one of the authors.

A second tool is then used to categorize the prosodic break associated with the last syllable of each dislocated NP. On the

basis of four automatically measured acoustic parameters (relative syllabic duration, relative f0 average, slope contour amplitude and presence of an adjacent silent pause), the software estimates a degree of strength for the last syllable of the NP. Since the system has been described exhaustively in other works (see [17] and [18]), we will not go further in the presentation of the theoretical and methodological foundations which sustain it. Let's just mention that the calculations rely on two fundamental principles. The first one is a **quantity principle**: the greater the number of acoustic parameters involved in the identification of a prominence and the distance from predetermined thresholds, the stronger the prominence is perceived. The second one is a **compensation principle**, which stipulates that if one of the classic parameters involved in the perception of prominence in French presents a low score, and another one a high score, there will be the same feeling of prominence as if the two involved parameters presented both medium score. The results of the calculation are provided in a dedicated tier: a mark comprised between 0/10 and 10/10 (from the less prominent to the more prominent) indicates the degree of strength of the break.

Fig. 3, Fig. 4 and Fig. 5 in appendix (§6) give each an illustration of 3 types of prosodic degree boundaries generally recognized as significant in French literature (see [19] for a recent discussion). Fig. 3 presents a case of IP break: the intravocalic rise is not followed by a pause but anchored on a lengthened syllable. We don't see such an increased duration for the final syllable of the NP analyzed in Fig. 4, which represents a typical ip boundary. Moreover, compared with the preceding and following syllables, the average of pitch points on the syllable [ʃa] in Fig. 3 are relatively higher than the ones of the syllable *les gamins* in Fig. 4. By contrast, the last syllable of the NP included in the utterance transcribed in Fig. 5 (*la personne*), which we analyzed as followed by an AP break, does not exhibit a pitch rise, neither bears a static tone or is the object of a lengthening.

2.3. Pragmatic coding

In line with a large part of the literature ([20]-[23], etc.), we assume a topic to be an entity that a proposition predicates something about. In [23]'s definition, for example, a topic is "a referent which a proposition is construed to be about in a given discourse situation", and a proposition is about a referent "if it expresses information which is relevant to, and which increases the hearer's knowledge of, this referent" ([23]: 494).

Speakers generally talk about referents that are already known by them and by the interlocutors, or whose identity the interlocutors are able to recover/infer from the context or their world knowledge. We classified topic subjects into six different types, and subdivided them into three classes depending on their degree of accessibility or salience: class A (active in the speakers' minds), class B (semi-active), class C (not active anymore).

We coded as *continuous topic* a referent that is already the topic of the current discourse, for instance the topic of an answer to a question (cf. a *ratified topic* in [23], and a *given topic* in [10]). We coded as *introduced topic* a referent that is introduced in the preceding utterance as the *upcoming topic* (see the discussion on 'topic promotion' in [22]). In (4) the presentational construction *ya* 'there are' introduces the new referent *beaucoup de petits chiens* 'many small dogs', which becomes the topic of the subsequent utterance (*ceux-là*, referring to the dogs):

- (4) *y a beaucoup de petits chiens là*
'Then there are many small dogs'

ceux-là ils aboient ils font un peu d'bruit mais...
those-ones SCL bark SCL make a bit of noise but
'these bark, make a little noise, but...'

With both kinds of topic, the referent not only is 'active' in the speakers' minds, but it is also *predicted* to be the upcoming topic. We therefore grouped them together in the same class A of active topics.

In other utterances of our corpus, the topic referent is *inferable* from another referent because semantically related to it (cf. an *accessible topic* in [22]'s Topic Accessibility Scale, and a *sub-topic* in [10]). We call this an *inferable topic* ((5)).

- (5) A: *y a Laurence* qui était métisse
there's Laurence who was of person of mixed race
B: *oui puis attends surtout son père* il venait des...
yes then wait above-all his father SCL came from ...

When the topic is inferable because it is a member of a previously mentioned set, we talk of a *partial topic*.

The topic referent can also be known to the hearer from world or shared knowledge, as in (6). The referent is less predictable than in the previous case, but it is still linked to the current topic: it is for instance an expected entity in a described scene, or it concerns a generic set of entities that are present in the speakers' mind in the current discourse, etc. We coded this as a *shared topic*.

- (6) *là Aix-en-Provence*, j'aime beaucoup mais euh **mes racines** elles sont à Grenoble
"Aix-en-Provence I like very much but um, as for my roots, they are in Grenoble"

These three topic types were grouped in the same class B of *semi-active topics* (borrowing from [10]'s terminology). They do not have an antecedent with identical reference which is the topic of the current discourse, so they are not active in the speakers' mind at the moment of the utterance; however, they are *indirectly* accessible from the current discourse, so they are not totally unexpected topics.

The last topic type was coded as a *shift topic*, and was put in a separate class of salience: class C. Its peculiarity is that it has been functioning as a topic in a previous discourse segment, but not in the *immediately preceding* one. In other words, the referent is *reintroduced* as topic after an interruption. This means that the referent *has* an antecedent, but it is *not* active anymore in the speakers' mind. As a result, the referent is not anymore the topic of the current discourse nor is predictable as topic of the upcoming discourse, since other referents could as well be.

In (7), speaker B resumes a topic (*les coqs*) that was introduced about 50 exchanges before, during which speaker A had been talking about other problems related to her apartment.

- (7) A: *le matin* [...] je suis réveillée par **les coqs** [...]
in the morning [...] I am awoken by the roosters [...]
B: *et les coqs* ils sont dans la pépinière ou...?
and the roosters SCL are in the nursery or...?
What about the roosters, are they in the nursery?

We included other cases where the interruption was much shorter (sometimes extremely short) but still, since the topic had been dropped, it was not fully predictable. In (8), for instance, the speaker stops talking about the old lady – what the discourse was about at the beginning – in order to describe the lady's bedroom, and then resumes the original topic.

- (8) A: *y avait aussi une vieille personne* [...] et un matin parce qu'ils **la** voyaient pas venir donc ils s'étaient dit tiens on va aller réveiller euh **la mémé** [...]
donc la chambre était à moitié remplie de neige!

‘and in fact, there was also an old lady [...] and one morning, since they did not see her coming, they said let’s go to wake up grandma [...] and so the room was half filled with snow!’

A: et **la mémé** elle était dans son lit et elle dormait tranquillement
and the grandma SCL was in her bed and she was sleeping quietly
‘and grandma, she was in her bed, sleeping quietly’

It must be finally pointed out that in our annotation we did not take into account whether the topic had a contrastive interpretation or not, because we considered that contrast is not strictly related to salience. Of course, we do not exclude the possibility that prosodic prominence be influenced by contrast (cf. e.g. [24] for German, [25] for English). However, this feature is not much present in our data since only 12 cases of explicit contrast were found (two topics of class A, nine of class B, and one of class C).

3. Analysis and Results

The comparison of the two coding tasks (degree of prosodic strength and pragmatic activation state) allows us to provide an empirical account of the hypothesis formulated under (3) above.

3.1. Degree of prosodic frontier according to the topic type

As a first step, we test whether each topic type could be discriminated according to the degree of strength of the boundaries ending the NPs. ANOVA shows that there is a significant global effect of the topic type on the degree of the prosodic boundary ($F=3.66$ $p=0.00451^{**}$), but a post-hoc test shows that there is no significant distinction among all the categories. The only significant contrast concerns the Shift topic category with the Introduced topic, Inferable topic, Partial topic, and Shared topic categories respectively (Fig. 1).

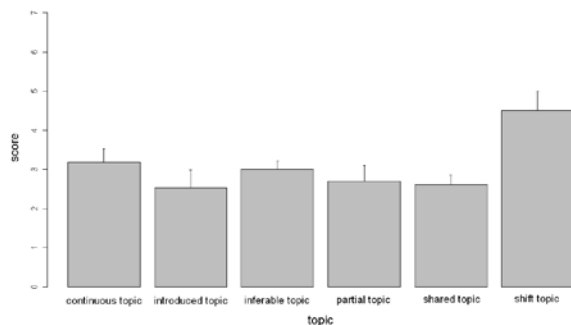


Fig. 1: Classification of the different topics according to the strength of the prosodic break ending the dislocated NP. The ordinate indicates the prosodic score.

3.2. Degree of prosodic frontier according to the salience degree

We then compared the three classes of topic, offering a less fine scale, in order to check whether there was any correlation between the activation status of the referent and its prosodic strength boundary. We ran an ANOVA that shows a significant global effect of the topic class on the degree of the prosodic boundary ($F=7.793$ $p=0.000727^{***}$), but again, a post-hoc test shows that there is no significant distinction among the classes A and B, while there is between A and C and between B and C (Fig. 2).

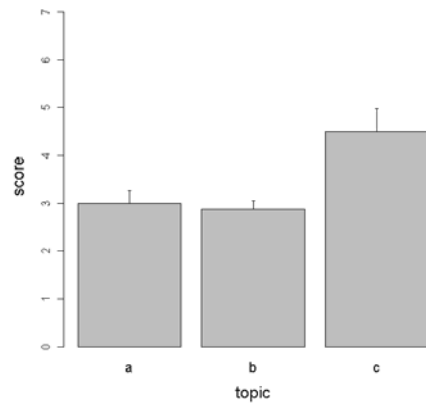


Fig. 2: Classification of the topic classes according to the strength of the prosodic break ending the NPs, with the prosodic score in the ordinate and the three topic classes in the abscissa: A (active), B (semi-active), and C (non active).

4. Discussion and Conclusion

In [10], a qualitative study is carried on the relation between prominence and pragmatic salience, based on examples of different types of detachment constructions extracted from spontaneous spoken French corpora. [10]’s classification of topic types approximately corresponds to the three classes of salience presented here. The conclusion drawn in [10] is that a different level of prosodic prominence corresponds to each topic class (the higher the prominence, the less salient the topic). In other words, generalization (3) is fully met in [10]’s study.

Our results, however, lead us to draw a different conclusion. No clear mapping between the degree of salience and the degree of prosodic prominence is given in our data, since *only* topics of class C, namely *shift topics*, are significantly more prominent than those of the other two classes, and no significant difference exists between class A and class B.

It is possible that, with a larger set of data, we may also show a significant difference between topics of class A and class B, as predicted by (3) and in compliance with [10]’s work. However, a more interesting explanation can be given to our results. Marking a shift topic does not just mean marking a topic that is not active: it aims at showing that that the topic is not active *anymore*, namely that it was the topic of a preceding discourse segment, which must be retrieved in order to understand the upcoming discourse. In other words, prominence makes the listener aware of a particular *organization* of topics in the discourse.

Note that the difference in the activation state of a topic of class B (an inferable topic from previous discourse or from shared knowledge) and one of class C (a shift or reintroduced topic) is sometimes very subtle (shared topics, for instance, can be very weakly accessible to the speakers’ mind). Despite this fact, prosodic prominence consistently marks only the *latter* class. Therefore, it seems to be more important for the interlocutor to understand how the discourse is structured, rather than to simply be aware of the introduction of a new referent.

In conclusion, our data confirm that pragmatic features may be marked by accentual prominence; nevertheless, it is not (or not just) salience that is marked by this prosodic feature, as hypothesized in (3). Rather, prominence seems to signal a more subtle pragmatic phenomenon, namely the way different topics are organized and structured in a discourse.

5. References

- [1] Selkirk, E. Phonology and syntax. The relations between sound and structure, MIT Press, 1984.
- [2] Delais-Roussarie E. & Post, B. "Unités prosodiques et grammaire de l'intonation: vers une nouvelle approche", Proc. JEP-TALN, 2008.
- [3] Delais-Roussarie, E. Doetjes, J. & P. Sleeman, "Dislocation", in F. Corblin & H. de Swart (eds.), Handbook of French Semantic, Stanford, 501-528, 2004.
- [4] De Cat, C. French Dislocation. Interpretation, Syntax, Acquisition, Oxford, University Press, 2007.
- [5] Frascarelli, M. The Syntax-Phonology Interface in Focus and Topic Constructions in Italian. Dordrecht, Kluwer, 2000.
- [6] Feldhussen, I. Sentential Form and Prosodic Structure in Catalan, Amsterdam/New York, Benjamins, 2010.
- [7] Jun, S. A. & Fougeron, C. "Realization of Accentual Phrase in French", Probus, 14, 147-172, 2002.
- [8] Fougeron, C. & Jun, S. A. "Rate effects on French Intonation: prosodic organization and phonetic realization", Journal of Phonetics, 26, 45-69.
- [9] Avanzi, M. L'interface prosodie/syntaxe en français. Dislocations, incises et asyndètes, Thèse des universités de Neuchâtel et de Paris Ouest, 2011.
- [10] Lacheret-Dujour, A. & François, J. "De la notion de détachement topical à celle de constituant thématique extrapositionnel", Cahiers de praxématique, 40, 167-198, 2004.
- [11] Likhacheva, L. L'articulation pragmatique du discours. Le cas des constructions détachées à gauche, Thèse de l'Université de Toulouse, 2008.
- [12] Grobet, A. & Simon, A. C. "Constructions à détachement à gauche: les fonctions de la prosodie", in Apothéloz, D. et al. [eds], Les linguistiques du détachement, Berne, Peter Lang, 289-303, 2009.
- [13] Branca-Rosoff, S. et al. Discours sur la ville. Corpus de Français Parlé Parisien des années 2000 (CFPP2000). <http://ed268.univ-paris3.fr/CFPP2000/>, 2009.
- [14] Bertrand, R., Blache, P., Espesser, R., Ferré, R., Meunier, C., Priego-Valverde, B. & S. Rauzy, "Le CID – Corpus of Interactional Data - Annotation et Exploitation Multimodale de Parole Conversationnelle", Traitement Automatique des Langues, 49/3, 1/30, 2008.
- [15] Goldman, J.-Ph. "EasyAlign: an automatic phonetic alignment tool under Praat", Proceedings of Interspeech, 3233-3236, <http://latlcui.unige.ch/phonetique/>, 2011.
- [16] Boersma, P. & Weenink, D. "Praat: doing phonetics by computer (Version 5.2)". www.praat.org, 2011.
- [17] Avanzi, M., Lacheret-Dujour, A. & Victorri, B. "A corpus-based learning method for prominence detection in spontaneous speech", Proc. Prosodic Prominence: Perceptual and Automatic Identification, Speech Prosody 2010 workshop, Chicago, USA, 2010.
- [18] Avanzi, M., Lacheret-Dujour, A., Obin, N. & Victorri, B. "Toward a Continuous Modeling of French Prosodic Structure: Using Acoustic Features to Predict Prominence Location and Prominence Degree", Proceedings of Interspeech, 2033-2036, 2011.
- [19] D'Imperio, M.-P. & Michelas, A. "Embedded Register Levels in French and Prosodic Phrasing in French", Proceedings of Speech Prosody, 2010.
- [20] Strawson, P. "Identifying reference and truth-value", Theoria 30, 96-118.
- [21] Reinhart, T., "Pragmatics and Linguistics: An Analysis of Sentence Topics", Philosophica, 27, 53-94, 1981.
- [22] Lambrecht, K., Information structure and sentence form: Topic focus, and the mental representations of discourse referents. CUP, 1994.
- [23] Lambrecht, K., Michaelis, L.A., "Silence accent in information questions: default and projection". Linguistics and Philosophy 21, 477-544, 1998.
- [24] Braun, B. & Ladd, D.R., "Prosodic Correlates of Contrastive and Non-Contrastive Themes in German", Proceedings of the 8th European Conference on Speech Communication and Technology, 89-792, 2003.

- [25] Calhoun, S., "Phonetic dimensions of intonational categories: the case of L+H* and H*", Proc. of Speech Prosody, Nara, Japan, 2004.

6. Annexes

The figures below are ANALOR screenshots (see [9], [17] and [18]). In the abscissa, temporal values are given in milliseconds; in the ordinate, the values of F0 in a logarithmic scale can be seen. The transcription tiers are, from top to bottom: phone tier, syllable tier (both in SAMPA alphabet); automatic prominence detection tier and the orthographic word tier. Fig. 3 shows a left-dislocated element followed by an IP boundary, Fig. 4 shows a left-dislocated element followed by an ip boundary and Fig. 5 a left-dislocated element followed by an AP boundary. The final NP syllables are framed in red.

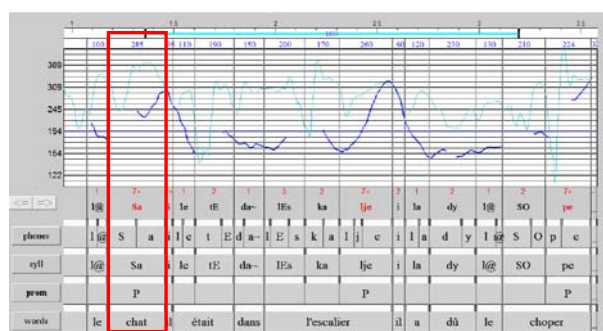


Fig. 3: ANALOR screen shot. Transcription of the utterance: *le chat il était dans l'escalier il a dû le choper [CID]*

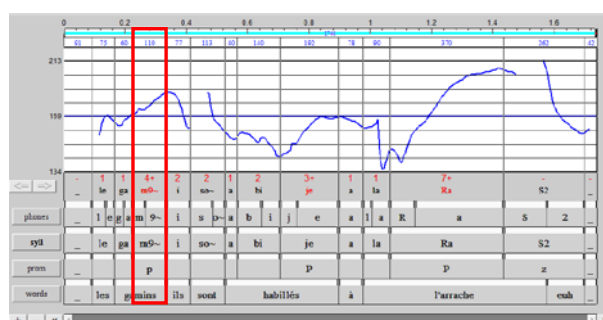


Fig. 4: ANALOR screen shot. Transcription of the utterance: *les gamins ils sont habillés à l'arrache [CID]*

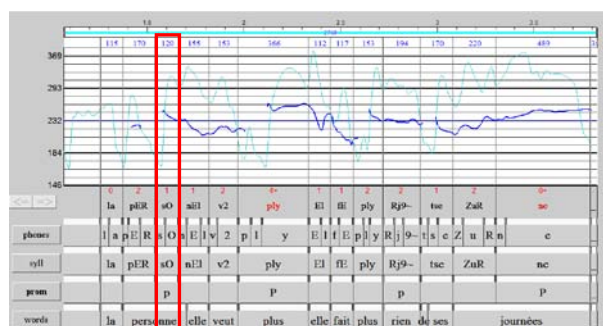


Fig. 5: ANALOR screen shot. Transcription of the utterance: *la personne elle veut plus elle fait plus rien de ses journées [CFPP]*