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From research to teaching: The case of English rising contours

Sophie Herment
Aix Marseille University

It is quite common to hear incongruous rises in the speech of EFL learners, and yet, native English speakers produce rising contours in the same contexts. To understand where this discrepancy comes from and how it can be avoided, this paper focuses on the forms and functions of rising contours in English through examples of French learners of English and native English speakers. Depending on the variety of English, the type of speech, the conditions in which the interaction takes place, the relationship between the interlocutors, etc., rises can take different forms and have different functions. On the basis of two studies of native read speech, it is shown that rising contours are rare and that contrary to what is stated in the literature, their main function is not to indicate non-finality and continuation, but rather to convey attitudes. The pedagogical implications of these results are of importance: in read speech, learners should try and avoid rises, even in non-final tone units. In spontaneous speech, learners should be aware of the attitude conveyed by rising terminals. A few examples are given of how the visualisation of prosody can help to better understand the contours and to better hear and produce them.

Keywords: EFL, English rising contours, melodic forms, discursive functions, visualisation



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1 Introduction

The aim of this paper is to show how research on intonation can inform L2 learning and teaching practice, illustrating this with the example of French learners of English.

For this study we adopted the theoretical framework of the British school of intonation (see, for example, Cruttenden, 1997, 2014; Roach, 2009; Wells, 2006). The British system is based on a configurational approach, which we have argued is better adapted to teaching than the American approach, based on a bitonal model (see Herment, 2018; Niebuhr et al., 2017). In the British tradition, speech is divided into Tone Units (TUs), which correspond roughly to syntax and semantics and are characterised by a coherent melodic contour. A TU is composed of at least one syllable, necessarily the nuclear syllable (or nucleus). The melodic movement starts on the nucleus and spreads on the post-nuclear syllables, if any. Fall (F), rise (R), rise-fall (RF) and fall-rise (FR) are the melodic contours commonly used to describe intonation (with a few variants according to Cruttenden, 1997, 2014; Roach, 2009; Wells, 2006).

French learners of English (hereafter referred to as learners) tend to produce (too) many rises when they speak English. This is why we focus on these contours, which are also found in the productions of native English speakers (hereafter referred to as natives). Rises in learners and natives are therefore examined, and their forms and functions discussed, as they can vary according to many factors, such as the variety of English, the type of speech, the conditions in which the interaction takes place, the relationship between the interlocutors, etc. The canonical functions of English intonation are then called into question based on two studies of native read speech, which are summarised. The following section deals with the pedagogical implications of the results and shows how visualisation can help improve the teaching and learning of prosody.

2 English rising contours

Several studies have shown that it is quite common to hear incongruous rises in the speech of learners of L2 English (or EFL learners), for questions (e.g., MacDonald, 2011; Pytlyk, 2008; Santiago-Vargas & Delais-Roussarie, 2012), but also at the end of declarative sentences (Contreras Roa, 2019; Horgues, 2010). Those rises sound inappropriate, and yet, native English speakers produce rising contours in the same contexts. Where does this discrepancy come from? How can it be avoided? How can learners be helped to integrate a more native-like prosody? To try and answer these questions, it is necessary to talk about variation and to focus on the forms and functions of rising contours, both in learners and natives.

2.1 Rising contours and learners

It is well known that it is difficult to master the prosody of a new language. One reason is that prosody is acquired in utero. Studies have shown that hearing is operational by the third trimester of pregnancy (Moore & Jeffery, 1994), but maternal tissues function as low-pass filters, removing the fine details of speech and allowing only the prosody (the melody and the rhythm) of the speech signal to pass through. Indeed, studies have shown that foetuses recognise their mother's voice. Kisilevsky et al. (2003) have shown that the heartbeat rate increases when foetuses hear their mother's voice. It has also been shown that new-borns recognise their mother tongue: infants had longer sucking bursts on a nipple connected to a pressure transducer when played recordings in their native tongue than in a foreign language (Moon et al., 1993).

The influence that a speaker's first language can exert on the production and perception of a second language is also well-known and variously referred to as *transfer* or *interference*. To

avoid the negative (and behaviourist) connotations of these terms, Sharwood-Smith (1983) suggested the theory-neutral term *cross-linguistic influence* (CLI) to refer to any kind of influence of a source language onto a target language.

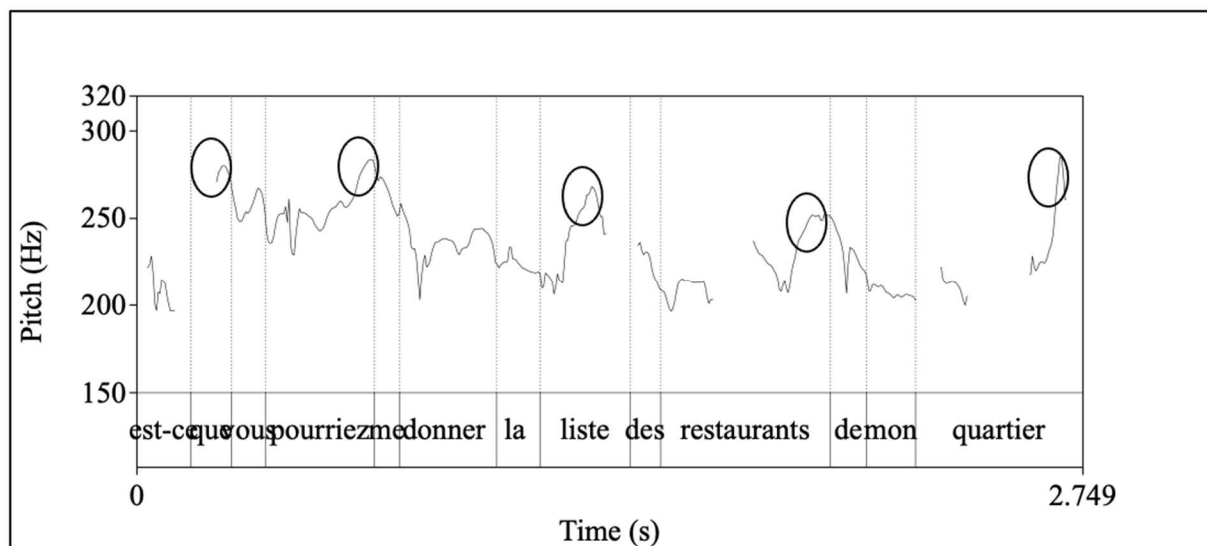
In the case of French learners of English, CLI from French to English is striking, particularly as far as rhythm is concerned. In French, the chunking (the division into rhythm units) is very different from English. An intonation phrase is divided into small groups of words (accentual phrase), which are realised with a rising contour on the very last syllable of the group, whatever the nature of the word. Figure 1 below, which is a screencapture from the PRAAT software (Boersma & Weenink, 2001), shows the production by a French native speaker of the following example sentence (1):

- (1) Est-ce que ↗ | vous pourriez ↗ | me donner la liste ↗ | des restaurants ↗ | de mon quartier ↗ ?
Can you give me a list of the restaurants in the neighbourhood?

In the example above (and in the ones further on), the division into rhythmic groups is shown by the horizontal bars and the syllable bearing the melodic movement is underlined (the last syllable in each group in this example). The arrows show the melodic movement (rises here). In Figure 1, the rises are marked by the ellipses on the melodic curve.

Figure 1

French Sentence Produced by a Native French Speaker



Est-ce que vous pourriez-me donner la liste des restaurants de mon quartier ?

The production of the equivalent sentence in English by a French learner is shown in Figure 2 and exemplifies CLI. A native English speaker would have divided the sentence into two rhythmic groups, as in example (2):

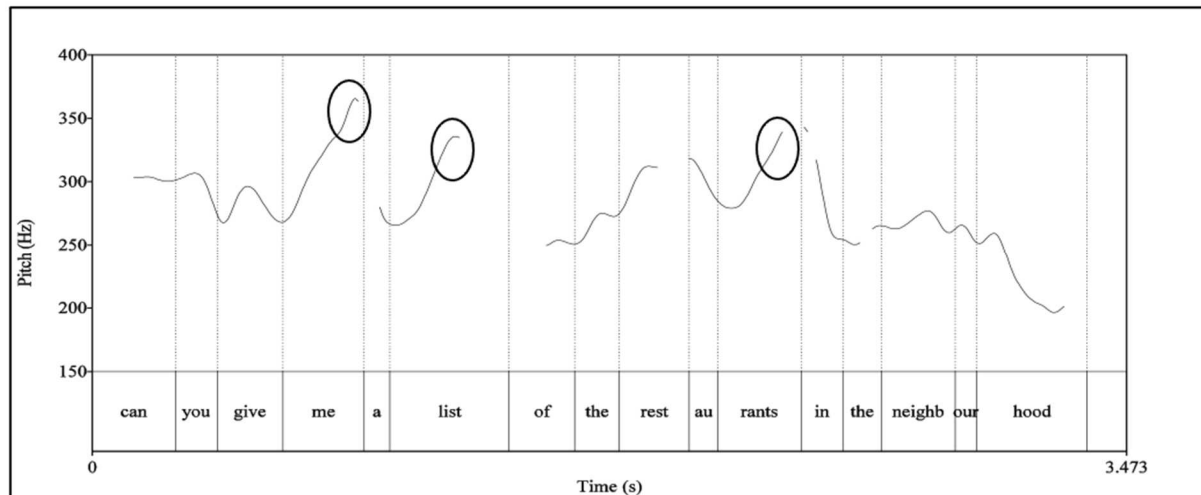
- (2) Can you give me a list of the restaurants ↗ | in the neighbourhood? ↗ |

The French learner of English divides the sentence into four groups, as in example (3), and like in their mother tongue, pronounces rises on the last syllable of each group (except the last one), whatever the nature of the word and its stressed syllable:

- (3) Can you give me ↗ | a list ↗ | of the restaurants ↗ | in the neighbourhood? ↘ |

Figure 2

English Sentence Produced by a French Learner of English



Can you give me a list of the restaurants in the neighbourhood?

Although this example is particularly striking as far as CLI is concerned, the rising contours in learners are probably not only due to language transfer. Santiago-Vargas and Delais-Roussarie (2015) studied the intonation of questions in Mexican learners of French. They show that some cases of erroneous productions can be attributed to the transfer of L1 contours to L2, but that not all errors can be explained in this way. The authors suggest that the acquisition process itself may be responsible for some of the erroneous contours produced by learners.

These numerous rises might also be linked to the pragmatic functions of intonation and specifically of the rising contours. An upward contour on declarative sentences, which English teachers are familiar with, is often referred to as tentative intonation. It sounds as if the learner integrates a question in their sentence, the pragmatics of which could be *Am I right? Is this the right answer?*. It denotes linguistic insecurity, which is also found in the production of native speakers (see example 4 below). An interesting example from a corpus of Canadian English is to be found in Rodrigues Da Mota and Herment (2016): the authors give an example (4) in which the speaker, who addresses a French person in English, pronounces the French word *Grenoble* with a high rising pattern, probably because she is not sure her pronunciation is right and expresses her insecurity in front of a native French person.

- (4) and so now we don't have a car | so we can't get to Maastricht | so we're going to Grenoble ↗ | for a few days I think |

This suggests that the pragmatic functions of intonation should also be taken into account. When a learner uses rising intonation on a declarative, it often sounds tentative. Rising contours are also heard among natives on declaratives, with several pragmatic functions, as explained in the next section.

2.2 Rising contours and natives

Rising contours can take different forms and different functions among natives, according to the variety of English spoken, the context of speech or sociological factors. To allow comparison with learners, we focus here on rising contours at the end of declarative sentences.

2.2.1 Stylistic rises

The term *stylistic rises* is used in this paper (following Bongiorno, 2021) for the rising contours found at the end of declarative sentences in English for pragmatic and stylistic purposes. Other authors talk about *high rising terminals* (HRTs) (e.g., Wilhelm, 2015) or *uptalk* (e.g., Warren, 2016). We prefer stylistic rises because they do not necessarily appear at the end of a sentence and because we contrast them with systemic rises (see §2.2.2).

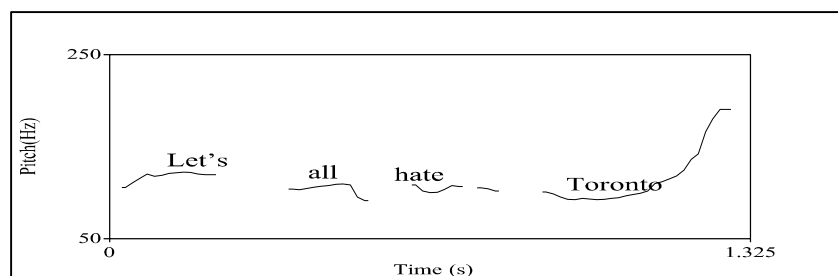
Stylistic rises have been widely documented (see Warren, 2016). First attested in Australia and New-Zealand (2nd half of the 19th century), then in North America (Pacific rim) at the end of the 19th century, they are now rapidly spreading in Great Britain. They can take different forms in different varieties of English, but they are most often characterised by a sharp rise and a flat prenuclear contour, as exemplified in Figures 3 and 4 below, in 2 different varieties of English.

Typically, these rises have interactional and discursive functions, among which and not exclusively:

- the integration of an underlying question, such as *Do you see what I mean? Do you know what I am talking about?*, to make sure the interlocutor follows what the speaker is saying;
- the sign of the speaker's uncertainty, for example, when they indicate an approximate distance;
- the mark of the speaker's linguistic insecurity;
- the speaker's wish to obtain feedback, e.g., *Is this what you're expecting from me?*.

Figure 3

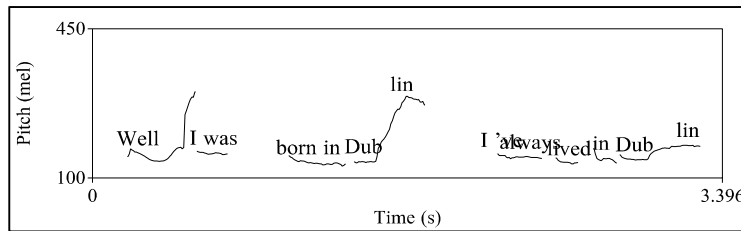
Canadian English



Let's all hate Toronto (Rodrigues da Mota & Herment, 2016)

Figure 4

Dublin English



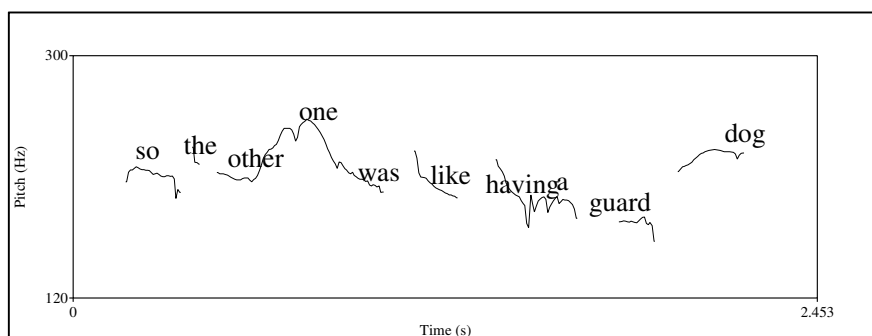
I was born in Dublin (Bongiorno & Herment, 2018)

2.2.2 Systemic rises

Another type of rises heard among natives is referred to as Urban Northern British Intonation (UNBI) and is found, as its name indicates, only in certain varieties of British English and more particularly in the large cities of the North: Belfast, Derry, Glasgow, Newcastle, Liverpool, Manchester, Leeds, Birmingham. In these places, the rising contour is the intonation by default on declaratives, hence the term *systemic* (as opposed to the stylistic rises mentioned above). According to Wilhelm (2015), five different types of rises are heard in UNBI: a) low rise, b) rise-slump, c) rise plateau, d) rise-plateau slump, and e) high plateau. The examples in Figures 5 and 6 exemplify c) and d) respectively.

Figure 5

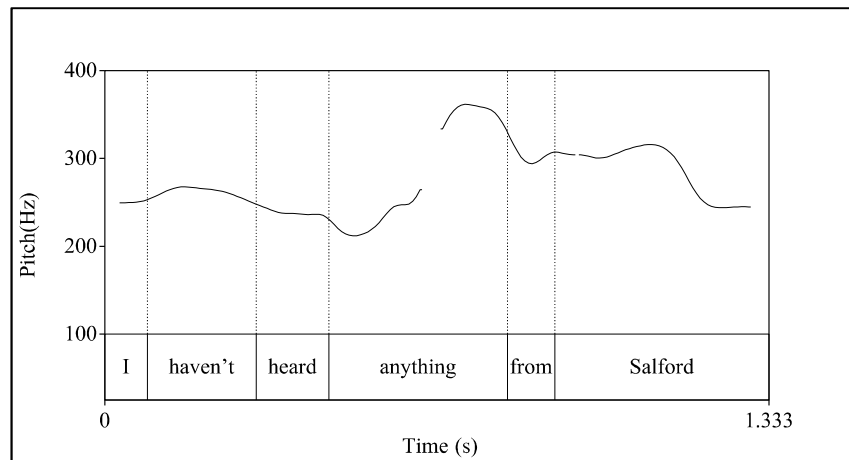
Rise-plateau on 'guard dog' in Donegal English



So the other one was like having a guard dog (Turcsan & Herment, 2015)

Figure 6

Rise-plateau-slump starting on ‘anything’ in Newcastle English



I haven't heard anything from Salford (Herment et al., 2020a)

2.2.3 Speaking styles

Intonation also varies according to speaking styles. In spontaneous conversations, speakers tend to use rising contours so as not to lose their speech turn. Rising contours with pragmatic functions (stylistic rises, see §2.2.1) are also more frequent in interactions (spontaneous conversations in particular). In non-prepared speech, hesitations are also more common and often trigger a rising contour. This is the case in sports commentaries, where journalists tend to use numerous rising contours to increase suspense (Samlowski et al., 2018). Falls are more frequent in formal speech. Teachers, for example, know that they will not be interrupted so they do not have to utter rising contours to keep the floor. In reading aloud, which is a rather codified exercise, a canonical intonation is expected, i.e., the intonation described in manuals or phonology books.

2.2.4 Canonical intonation

It is difficult to describe a canonical intonation, since so much variation exists - within speakers, between speakers and in different varieties of English. However, many authors like Cruttenden (2014), Tench (1996) or Wells (2006) agree on the following basic functions of intonation for standard British English:

- Rises signal non-finality, falls finality and completeness;
- Rises are produced in yes-no questions and falls in WH-questions;
- Falling-rising contours signal continuity, implication, contrast, the desire to draw the co-speaker's attention to what is being said (Brazil, 1997) or to what follows (Gussenhoven, 2004);
- Rise-falls are used for irony or surprise (Roach, 2009).

These principles are often taught to learners of English. However, when listening to recordings of British English natives, we noticed an amazingly high proportion of falling contours in read speech. We decided to analyse this speech style to determine how many rises

and falls occur, where and why. Our hypothesis is that incomplete statements (non-final tone units), usually described as displaying a non-fall contour, can be, and frequently are, pronounced with a falling tone in read speech, contrary to what is generally admitted.

The next section briefly describes two studies (Herment & Tortel, 2021 and Herment et al., 2020b) in which we tested this hypothesis.

3 Analysis of read speech by native English speakers

In order to study L2 English by French learners, two corpora were collected and analysed: the English corpus (Tortel, 2008) and the AixOx corpus (Herment et al., 2014), which contain the same passages in English read by both native English speakers and French learners of English. The hypothesis mentioned above stems from listening to the native English speakers of these two corpora. Our results confirm our hypothesis (see Herment & Tortel, 2021): concerning non-final tone units, 78.5% are produced with a fall. Contrary to what is generally admitted, the rising tone is far from being the most common contour for incomplete statements as only 14.5% were found and 7% were falling-rising tones, which amounts to only 21.5% when combined. As far as final tone units are concerned (534 TUs), the most common tone is the fall with 85%, followed by 10.5% of fall-rises and 4.5% of rises. Falls are clearly the most common contours in read speech. We then conducted a qualitative analysis of the corpus and took a close look at the types of sentences, clauses, and phrases to see how the tones were distributed in relation to syntax and attitudinal functions (Herment et al., 2020b).

Tonal sequences (F/R, R/F, FR/F, etc.) were analysed, i.e., the intonation contours in sentences containing two or more TUs. The notion of dependency, which is important as far as syntax is concerned, was also considered: the elements which are not complete in themselves are dependent on some other structure. An independent element is an independent clause or main clause in a complex sentence or last clause in compound sentences.

The literature (see Cruttenden, 1997; Wells, 2006) reports that a fall is found on the main part of the utterance, and a non-fall on the subordinate or dependent part, whether final or initial (as in adverbials in trailing position). The sequence F/F (fall plus fall) is also commonly found: the information is then presented as two separate and potentially complete items, as is often the case with coordinate clauses, related by *and*, *but* and *or*.

The results of our qualitative analysis (248 tonal sequences) show that (see Herment et al., 2020b for details):

- the sequence F/F dominates in our data (especially in coordinate clauses with 95% and subordinate clauses with 82%);
- the rising contour can be described as exceptional in read speech, even in non-final clauses;
- the main function of rising contours is not to indicate non-finality and continuation, or dependency, but rather to convey the speaker's implication or emotional state.

These results run counter to what the literature reports as canonical intonation (see §2.2.4), at least in reading, and thus to what is generally taught. They therefore have important pedagogical implications.

4 Pedagogical perspectives

In this section, we develop two main pedagogical perspectives: a) the use of rises depending on the level of the learner, and b) the contribution of visualisation techniques in the teaching and learning of prosody.

4.1 Level of learners

Rises are very infrequent in the read speech of natives but they are quite frequent in interactional speech, where they take on particular pragmatic and discursive functions and convey emotions and attitudes. In the speech of French learners of English rises are very common, because of CLI and other reasons, but these rises tend to sound incongruous. Therefore, teaching practices should insist upon falling contours. We are aware that read speech is not necessarily a model for typical everyday speech communication. However, the fact that so many falls are found is intriguing, and shows that it is possible to use mainly falls to communicate, at least at the beginning of the learning process. Knowing this could counteract the overuse (and harmful effects) of rises among beginner learners. Therefore, the level of learners should be taken into account when teaching prosody.

The functions of rises correlate with other aspects such as the variety of English, the speech style, or being a learner. When a learner speaks, native speakers recognise that they are a learner because their pronunciation is not that of a native. This is very important because native interlocutors will adapt to the fact that they have a learner in front of them and will therefore probably understand a rise as a sign of insecurity or uncertainty. The lower the level of the learner, the more native speakers will be tempted to attribute rising contours to a feeling of insecurity. The more advanced the learner, the more native interlocutors will interpret a pragmatic function, as they would when listening to other native speakers.

Beginner or intermediate learners should therefore avoid rising contours, even in non-final contexts and in yes-no questions. Teachers should make them practise the realisation of falling contours as much as possible. In contrast, advanced learners should not ban rises from their speech, but they should be (made) aware of the pragmatic and discursive functions of rising contours, especially in final TUs, so that possible misunderstandings are avoided.

4.2 Visualising prosody

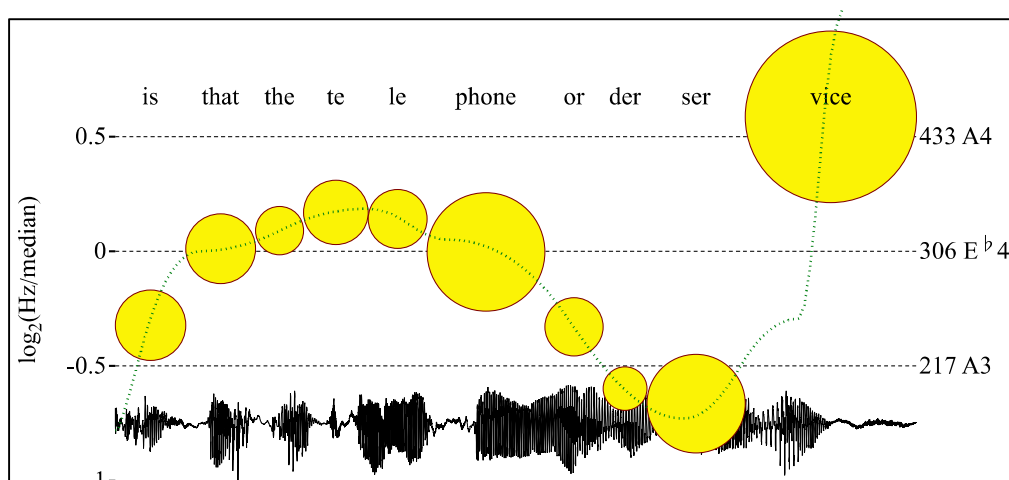
As already argued in Herment and Tortel (2021), learning (and teaching) prosody is facilitated by its visualisation. The representations of prosody shown in Figures 7–11 below were generated using the ProZed plugin (Hirst, 2005) implemented in PRAAT. In each Figure, from top to bottom, one can see the sentence read, the melodic curve (the green line), each syllable of the sentence (yellow balls on the curve), and the oscillogram. The green curve is a representation of the fundamental frequency, and thus provides a visualisation of the intonation contour. The size of the yellow balls corresponds to the duration of the syllable: the bigger the ball, the longer the syllable. The size of the ball is a good clue for lexical stress in English. If the ball is big, the syllable is very likely to be accented, at least not reduced (apart from the last syllable, which is longer than average because final and not necessarily accented). In Figures 7 and 8, the same sentence is read by a native and a learner respectively and the equivalent sentence in French is read by a native French speaker in Figure 9.

The intonation of the learner is clearly very different from that of the native, and strikingly modelled on that of French. Showing such representations to learners is probably very helpful because they can see what they produce, and it is well-known that seeing helps perceiving.

Another example of the difference between French and English contours is illustrated in Figures 10 and 11, where a WH-question is read, with a typical falling contour by the native, and a typical rising contour by the learner. The teacher could show such examples in class to help learners visualise the difference. The size of the yellow balls could also be commented upon by the teacher, to help learners with word stress and reductions (e.g., *for*).

Figure 7

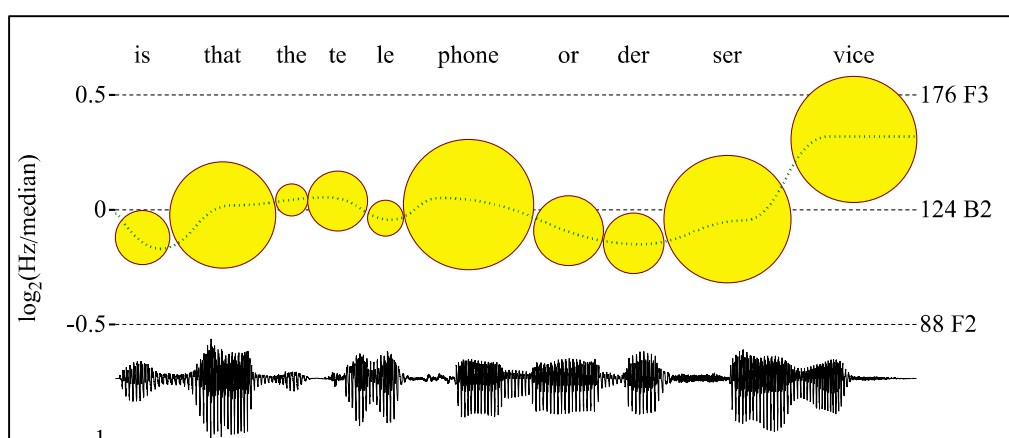
Native English Speaker



Is that the telephone order service?

Figure 8

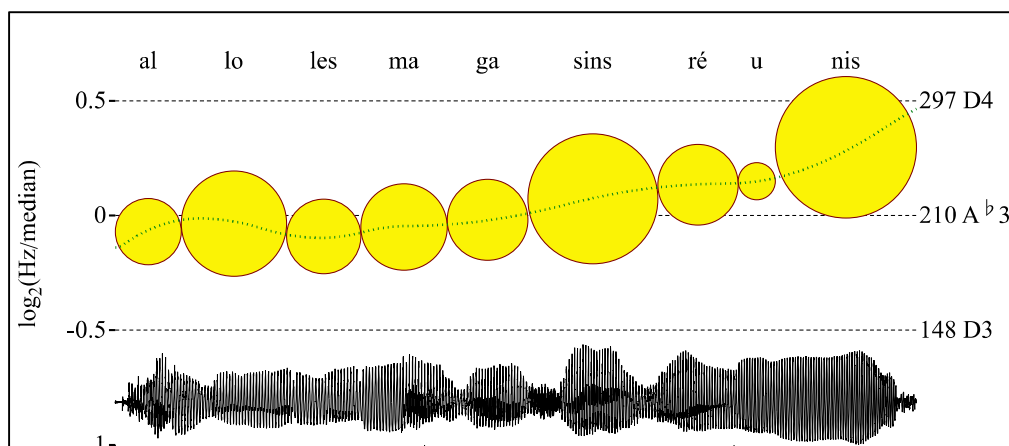
French Learner of English, Intermediate Level



Is that the telephone order service?

Figure 9

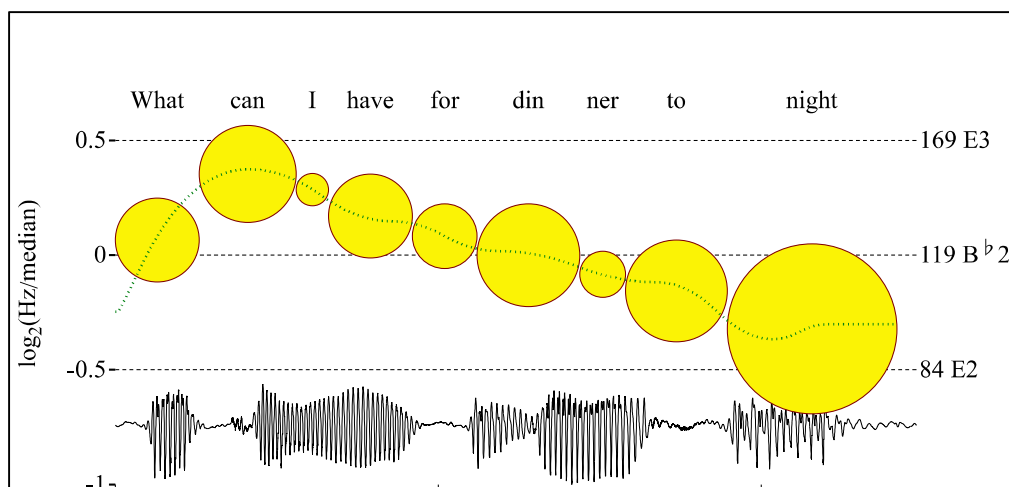
Native French Speaker



Allo, les Magasins Réunis?
Hello, is this the Magasins Réunis?

Figure 10

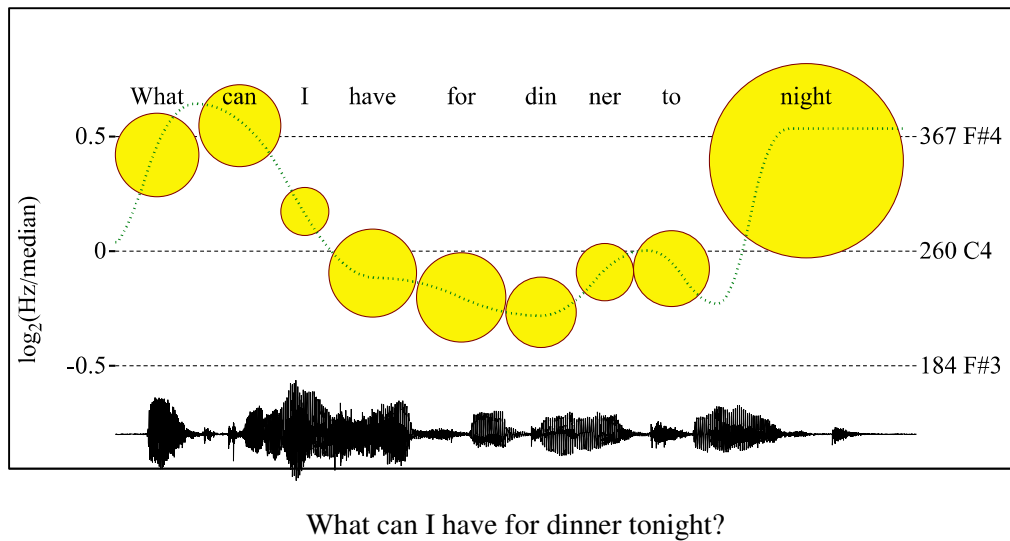
Native English Speaker



What can I have for dinner tonight?

Figure 11

French Learner of English, Intermediate Level



5 Conclusion

Avenues of research and of teaching practice, derived from our experience of teaching English prosody to learners, have been proposed in this paper. The next step is to analyse the impact of visualisation on the learning of prosodic contours. A study testing two groups of learners, one learning prosody with the help of visualisation and the other without, could be set up. Other visualisation techniques could be used and developed. We believe that this is one way to effectively improve the learning and teaching of prosody, which is sorely lacking in English language classrooms.

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About the author

Sophie Herment is a full Professor in the department of English studies at Aix-Marseille University, France. She has taught English phonetics and phonology to French students at all levels of the university curriculum, including the teacher training programme, for 25 years. As a member of the Speech and Language Lab (LPL, co-funded by the university and the CNRS – the French National Centre for Research), of which she is deputy director, she works mainly on prosody. Her research interests concern L2 prosody, the varieties of English, the prosody/syntax interface and corpus prosody. She co-supervises the PAC programme (Phonology of Contemporary English).

Email: sophie.herment@univ-amu.fr