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## Introduction

- 1 In face-to-face interactions, participants use different channels (verbal, vocal, visual) when they speak and one of the aims of Multimodal Discourse Analysis<sup>1</sup> is to study the contribution of each channel to the information content of messages. In line with this, the present article discusses subordination in spontaneous speech, more specifically the sequences containing subordinate constructions that operate at the syntactic level of modification (e.g. Huddleston and Pullum 2002).
- 2 As traditionally described in syntax and discourse analysis, modifiers in discourse subordination refer to elements specifying or elaborating upon some primary features, often described as additions associated to another propositional content in the host or embedding structure (Biber *et al.* 1999; Huddleston and Pullum 2002: 1048). Two semantic types are distinguished when describing dependency relations (van Rijn 2017). While some heads inherently require reference to a dependent, which may therefore be considered the head's argument, other dependents are not inherently presupposed by their head and are considered modifiers. They merely provide a further semantic characterisation of the referent (or state of affairs) expressed by the head, or supplement the head with additional information. Well-known examples of modifiers are relative clauses and adverbial clauses (van Rijn 2017).
- 3 Instead of comparing subordinate clauses to non-subordinate clauses in discourse, the study aims at identifying differences between three syntactic types of subordinate constructions in terms of informational weight, through their multimodal expression. In

the research presented here, the subordinate constructions (sc) under study encompass the three most widespread syntactic types of finite clauses<sup>2</sup> functioning as modifiers in our oral corpus of spontaneous interaction (described in the “Corpus and methodology” section of the paper): adverbial clauses, restrictive relative clauses, and appositive relative clauses which are illustrated in examples (1-3) below.

- 4 Adverbial clauses qualify the main-clause process with respect to agencies such as time, means, cause, and purpose, often with an element specifying the nature of their relationship (Langacker 2008: 419-420). This paper focuses on the adverbial clauses introduced by “when”. The results and conclusions given in this study for adverbial clauses only concern such temporal clauses. In (1) below, the adverbial clause specifies the circumstances in which the predicative relation in “I tried driving once in her car” is realised, locating in time the situation expressed by the verb and its complements. Its referential elements are stabilised in that their scope is defined.

(1)	<b>Adverbial clause</b> (Transcription conventions are provided in the Appendix at the end of the paper)		
	Rhianna	L	i tried driving once in her car
		sc	<b>when we were on a # little road</b>
			<b>in the countryside #</b>
		R	and hem (swallows) she said

- 5 Adverbial clauses are seen as exterior to the frame built by “main” clauses, and are related to the clause they modify through a connector indicating their adverbial status (Gosselin 1990)<sup>3</sup>. The semantic nature of their connector distinguishes several types of adverbial clauses, expressing for instance temporal relations with “when” in example (1). The semantic relation between adverbial clauses and the predication they modify is subject to debate (Muller 2008). According to Blühndorn (2008), adverbial connectives link portions of speech neither by government and embedding nor by linear sequence. Instead, they connect them by reference. Depending on where the required information is placed, anaphoric (backward oriented) and cataphoric (forward oriented) adverbial connections can be distinguished. In conversational English, adverbial clauses tend to follow the clause they modify (Miller and Weinert 1998) as seen in example (1) featuring an anaphoric adverbial connection. The function of adverbial clauses is to “signal that several clauses appearing in the thread of a text have the same relation with a certain criterion, and can thus be grouped inside units” called frames (Charolles 2003, Péry-Woodley 2000: 62). They have an effect on the cognitive process of the co-speaker. According to Dancygier and Sweetser (2000), “when” clauses engage the speaker to the reality of the mental space built in the “main” clause, even when this reality has already occurred or has not occurred yet. In example (2) below, the adverbial clause is in initial position. “I passed” as an event works as a cognitive landmark, framing the temporary cognitive state expressed in “I didn’t think I was a very good driver”.

(2)	<b>Adverbial clause</b>		
	Tim	L	although
		SC	<b>when I passed</b>
		R	I didn't think I was a very good driver

- 6 Whether initial or final, localising frames raise the question of their more or less rigid relation to the verb of the clause they are grouped with<sup>4</sup>. Initial adverbial clauses are used by speakers to avoid asserting some information considered as already known (*i.e.* as part of the common ground; Muller 2008). In example (2), Tim does not directly state that he has passed his driving licence, but uses it as part of the common ground between speakers to establish a contrast with the following utterance. Final adverbial clauses suggest exhaustiveness before a potential question from the co-speaker about the preceding utterance (Muller 2008). In example (1) further above, the adverbial clause answers a potential question from the co-speaker about the details in which “I tried driving once in her car” occurred.
- 7 While an adverbial clause modifies another clause, a relative clause modifies a nominal expression or a whole clause. A co-reference holds between the nominal referent and some participant in the process designated by the relative. This participant, or “pivot”, has a semantic role in both the relative clause and the matrix clause containing the modified nominal (Langacker 2008: 424). According to Muller (2006), relative clauses are roughly equivalent to adjectives given their function as adnominal adjuncts. Relative clauses feature either exclusive characterising functions (restrictive relative clauses) or non-exclusive characterising functions (appositive relative clauses). However, these characterising functions are performed by a verb, unlike adjectives. Emonds (1979) and Cotte (2008) describe restrictive relative clauses as “attached” relative structures compared to appositive relative clauses, which are “detached”, iconically marking out the distance of the object. Other studies (*e.g.* Muller 2006; Krifka 2007) mark out the limits of this distinction and state that the difference lies in the use of co-reference. Relative structures can be used as a complex determiner just like adjectives, if the verb is reduced to its specifying or qualifying function (see examples (3) and (4) below). However, in discourse, communicative priorities can be reversed using only the co-reference function of an antecedent. The last discourse segment is extended, but such an extension can feature its own pragmatic value (see examples (5), (6), and (7) further below). Several studies do not subscribe to the traditional opposition between restrictive relative and appositive clauses. However, they all support the fact that several broad types of relative clauses can be distinguished (Kleiber 1980)<sup>5</sup>.
- 8 In a restrictive relative construction, a nominal expression thus specifies a basic type, and a clause helps to identify a particular instance of this type. The antecedent is a member of a class which can only be identified by the information given by the modification. In (3), the restrictive relative clause increases the relevance of “the reasons”, creating a subcategory for this referent.

(3)	<b>Restrictive relative clause</b>		
	Tim	L	the reasons
		SC	<b>they gave #</b>
		R	I mean Blair was also #

- 9 This paper focuses on restrictive relative clauses introduced by “that” as a relative pronoun. “That” has been analysed as mainly working at defining the antecedent (Cotte 2008). Unlike “which” which links the referent it modifies with the contextual situation (Melis 2008), “that” as a relative pronoun is object-oriented (defining a property of the object) and is neutral in terms of utterer-based modality. The content in the relative clause is deemed more objective than subjective, as evidence of an effort from the speaker to avoid any commentary function (*ibid.*). This construction allows speakers to provide the co-speaker with more complex information about the antecedent than in non-relative structures, without the co-speaker having trouble processing it. The antecedent opens an informational file about the referent it describes, while “that” indicates that the informational file about this referent is about to be completed (Muller 2006). In (4), “the little bits” open an informational file, completed with “stick out” as a defining feature introduced with “that”.

(4)	<b>Restrictive relative clause</b>		
	Joey	L	you know and the little bits
		SC	<b>that stick out #</b>
	Elena		yeah
	Joey	R	you have those
			like with the pollen on #

- 10 Although also introduced with a relative pronoun, appositive relative clauses are not invoked to single out a nominal referent, but to make an additional comment about it (Langacker 2008: 429). Their modifying scope varies from a single nominal referent to a verb phrase or a whole clause (Longacre 1996). In (5), the appositive relative clause qualitatively evaluates “black pudding”, which can however be identified independently.

(5)	<b>Appositive relative clause</b>		
	Tom	L	but then again
			I'll happily eat black pudding

		SC	<b>which I know is disgusting #</b>
		R	blood and guts and #

- 11 This study focuses on appositive relative clauses introduced by “which” as a conjunction. Unlike “that”, “which” introduces a subjective comment bearing on the relationship between two propositions. In (5), Tom links “black pudding” with the non-neutral adjective “disgusting”. This subjective comment can add an event which participates to the succession of events in the text. In (6) below, the process <do on a computer> is consecutive to <get an assessed piece of work>.

(6)	<b>Appositive relative clause</b>		
	Tim	L	you get an assessed piece of work
		SC	<b>which you do on a computer</b>
		R	using a program called author catway

- 12 In terms of communicative dynamism, the “which” relative construction is an assertion that continues the narrative created by the first proposition, describing its outcome on the referent it comments upon (Muller 2006: 331). Setting up a functional distinction between several types of appositive relative clauses, Melis (2008) evokes comment appositive clauses (as in example (5) above) and continuation appositive clauses (as in example (6) above). In the latter type, the relative pronoun only intervenes as an inter-propositional relator.
- 13 The literature generally agrees on the fact that appositive relative clauses show several characteristics that are typically associated with non-subordinate clauses (Krifka 2007)<sup>6</sup>. Their capacity to form distinct illocutionary acts (*e.g.* Peterson 2004; Holler 2005) is one of such properties. Quirk *et al.* (1985) regard appositive relative clauses as semantically equivalent to coordinate clauses. Such a classification is particularly relevant to “sentential” relative clauses, in which the appositive modifies the whole proposition as an antecedent. In (7) below, the sequence could be glossed as “it’s only one shop for the whole thing now, and that is quite bad”.

(7)	<b>Sentential appositive relative clause</b>		
	Tim	L	it’s only one shop for the whole thing now
		SC	<b>which is quite bad #</b>
	Tom		one shop
	Tim	R	yeah #

- 14 Subordinate constructions are generally defined as conveying background information (Tomlin 1985; Lambrecht 1996). However, the literature shows little consensus in weighing their informational input: while the information conveyed in subordinate structures is seen as serving grounding functions in discourse (Fleischman 1985), Cristofaro (2003) and Langacker (2008) signal that semantic and/or illocutionary subordination need not align with syntactic subordination, and that the notion of subordination is best understood in terms of dynamic conceptualisation. Predictable grammatical correlates of grounding are still assumed, but are considered relative by a number of studies (e.g. Wallace 1982). It has also been proposed that there may be a continuum of subordination even within one clause type (Tao and McCarthy 2001), and that certain subordinate clause types may not actually be best described as such, especially adverbials and appositive relative clauses (Depraetere 1996, Thompson 2002). This study therefore questions whether subordinate constructions all express the same absence of prominence in terms of informational content.
- 15 In this article, “background” and “foreground” (see 1.2) refer to the organisation of information in discourse. Synonyms for the textual organisation of information are “communicational weight” and “informational input”. Two other notions express related but distinct phenomena in this paper: “focalisation” reflects the point of view of language production, and points at a communicative effort from the speaker, which results in a specific syntactic, prosodic, and/or gestural configuration. “Salience”, on the contrary, reflects the point of view of perception. It refers to the cognitive mechanism deriving from the attentional state, in which one element is perceived by the co-speaker as standing out among others. We use “prominence” as a synonym for “salience”. A salient structure is thus the result, or outcome, of focalisation as a process. Focalisation participates in the elaboration of the foreground.
- 16 Subordinate constructions are relevant to examine language production and comprehension in real time, and present implications for discourse modelling. Yet, their analysis often focuses on speech alone. While some substantial work has focused on their syntactic (e.g. Lyttle 1974) or prosodic input (e.g. Couper-Kuhlen 1986), the development of analytical tools and schemes (e.g. Sloetjes and Wittenburg 2008, Benzitoun *et al.* 2009, Bigi 2012, Boersma and Weenink 2013) now facilitates an account of subordinate constructions as multimodal phenomena.
- 17 In face-to-face conversation, participants negotiate meaning through multimodal contributions, in which the linguistic resources of speech interface with gesture. These modes do not work independently from one another, although a particular mode may weigh more than the others at some points. Within speech itself, the vocal or the verbal mode may stand out as more prominent at particular points in time.
- 18 Viewing language as integrating speech and gesture in an organised system enables to investigate the contribution of subordinate constructions on several levels in discourse, overstepping the binary opposition between foreground and background. The main hypothesis, which arises from the consensus in the previous results, is based on the capacity of subordinate constructions to show distinct kinds of prominence depending on their syntactic type. Different degrees between foreground and background in discourse are consequently identified from the new perspective afforded by multimodality, providing a qualified picture of the communicational weight of subordinate constructions.



- 19 The first part of this paper presents a review of the literature concerned with the notion of subordination, focusing on its verbal, prosodic, and gestural acceptations. A detailed description of our corpus and methodology ensues, to be followed by the analysis and discussion of the data.

## 1. Theoretical background

### 1.1 Syntax

- 20 In the traditional division of clause complexes into two uneven and complementary subgroups, *i.e.* a main clause and a subordinate, modifiers are viewed as “optional” constituents functioning at a phrasal or clausal level: some elements of the message are deemed semantically useful without standing as constitutive elements. However, semantic necessity has been described as imprecise for analysing spontaneous speech, especially regarding the nature of introductory elements (*e.g.* Chafe 1984, Haiman and Thompson 1984).
- 21 From this observation, a hierarchy of relations has been suggested to evaluate the syntactic and semantic weight of segments. Clauses comprise an essential nucleus (which contains the predicate, corresponding to an event, process or state, and its core complements), and an optional periphery (corresponding to the spatiotemporal frame such as localisation or environment; Van Valin and LaPolla 1997). While high transitivity and dynamicity in the nuclear components denote the foreground (Longacre 1996), nominality and identification show an inferior semantic weight (Givón 1987). The superior pole of subordination within the gradation between nucleus and periphery is parataxis (Lehmann 1988) where the verbal categories of aspect, tense, and mood are retained. The inferior pole corresponds to the loss of predicate (*ibid.*).
- 22 Although subordinate constructions are broadly defined as dependent, the literature shows little consensus in defining clear scopes and boundaries for these structures. While subordinate constructions are seen as embedded elements (Jackendoff 1977), Jespersen (1927), Fabb (1990), and Peterson (1999) consider some relative constructions as exterior to the syntactic structure of the main clause. More specifically, the differentiation between restrictive relative clauses and appositive relatives on syntactic grounds is problematic (Borsley 1992, Arnold & Borsley 2008). While appositive relatives are derived from coordination for Burton-Roberts (1999) and De Vries (2006), Quirk *et al.* (1985: 1257) and Biber *et al.* (1999: 135) call for special levels of representation in subordination, with “telescoped relatives” and “peripheral elements” respectively. Appositive relatives are also classified as adverbials (Biber *et al.* 1999: 853). Finally, in the rich framework of syntactical relations proposed by Matthiessen & Thompson (1988: 238), adverbials and non-restrictive relatives are “less subordinate” than other structures, belonging to relations of hypotactic combination rather than embedding.

### 1.2 Discourse

- 23 In Discourse Analysis, the syntactic notion of subordination is enlarged to the rules governing the organisation of discourse segments. Clausal and textual<sup>7</sup> combinations are linked through notions such as nuclei and satellites (*e.g.* Matthiessen and Thompson 1988).

- 24 Subordinate constructions elaborate the discourse background (Tomlin 1985), contrasting with the continuation of the foreground. Current reference time, which has to be updated to move the discourse forward, can only be updated by main-clause events (*i.e.* main-clause telic bounded situations; Labov and Waletzky 1967).
- 25 The foreground traditionally features new, salient information (Hopper 1979) in discourse, standing out through a particular surface structure or through the important cognitive operations the information triggers on the co-speaker (Talmy 1978), while the background is inferior in prominence (Polanyi and Hopper 1981; Lambrecht 1996) and indicates given or presupposed information (Fleischman 1985). According to Reinhart (1984), only main clauses can belong to the foreground since subordinate clauses are considered to be presupposed.
- 26 Subordinate constructions facilitate the co-speaker's processing load, acting on the interpreting constraints and triggering certain inferential operations as they link accessible information to new elements (Chafe 1984), through an invocation of context (Levinson 2003). They give durative and descriptive information about the way the discourse and the interaction are organised.
- 27 However, the configurations between events and discourse-related material have been shown to depend on pragmatic and cognitive considerations such as the starting points speakers choose to convey their message (Vallduví and Engdahl 1996; Thompson 2002) instead of semantic weight. Givón (1987: 176) contradicts the notion of any fixed grammatical correlate to the foreground/background distinction in discourse.
- 28 While very little work has been conducted on subordinate constructions from a multimodal perspective, a large body of research has detailed prosodic subordination (*e.g.* Bolinger 1984; Chafe 1984, Local 2007), while other studies on co-verbal gestures have exposed visual means of subordination (Enfield 2009; Streeck 2009; Calbris 2011), more or less correlated to verbal subordination.

### 1.3 Prosody

- 29 Prosodic subordination is essentially achieved through intonation (Bolinger 1984). Throughout a vocal paragraph, pitch height naturally declines in a progressive manner. A subordinate unit is signalled by downwards changes in key (*i.e.* major levels in a speaker's pitch range) or in pitch height. Intonation can convey subordinate information that is not marked with verbal means.
- 30 A downstepped tone compared to a preceding high tone corresponds to the general neutral relationship between two prosodic groups. On the contrary, an upstep on the initial syllable signals emphasis. A high F0 (*i.e.* Fundamental Frequency which participates in pitch perception) on the accented syllable of a lexical item conveys new information in the discourse (Baumann and Grice 2006).
- 31 Likewise, while emphasis is coded with a rising-falling contour on the nuclear syllable (Selting 1987), flat or falling-rising contours are used to encode background information (Ward and Hirschberg 1984). Subordinate units are typically less modulated (*i.e.* showing less pitch movement) than their co-text (Hirschberg and Grosz 1992).
- 32 Background information can also be uttered with an increased speech rate whereas focalisation can be achieved through a significant decrease in rhythm (Wichmann 2000).

## 1.4 Gestures

- 33 In this study, gesture includes co-speech bodily movement that is considered part of an utterance, following Kendon's (2004) definition. We focus on eye gaze, head and eyebrow movement, as well as on hand gestures. Although posture and proxemics can also fall within the scope of communicative gesture, they are not included in this study. The important role of co-speech gestures in linguistic production has been shown in pragmatics (*e.g.* Lascarides and Stone 2009), cognitive linguistics (*e.g.* Sweetser 2006), and psycholinguistics (*e.g.* McNeill 2005).

### 1.4.1 Hand gestures

- 34 Some gesture features have been shown to participate in the maintenance of coherence and cohesion (Halliday and Hasan 1976) in speech (Calbris 2011). Likewise, representing referents through hand gestures is a cumulative process, often achieved through a series of several gesture units (Streeck 2009). Repeated gestures throughout an interaction create coherence in terms of discourse (Lascarides and Stone 2009). Inscribed in a continuity, the gestures encoding a same referent are more schematic, while those carrying new information are often more precise and clearer (Kita *et al.* 1998). In this sense, abstract organisational gestures are traditionally associated to the discourse background (Cassell and McNeill 1990).
- 35 Similarly, held gestures are used to modify meaning in real time (McNeill 2005). The simultaneous realisation of two uneven hand gestures in height and size denotes a semantic subordination through the use of form and space (Enfield 2009), contrasting with a preceding gesture sequence.

### 1.4.2 Gaze direction

- 36 Gaze often moves away from the co-speaker for discourse elaboration as soon as the speaking turn is taken and secured (Beattie 1978; Streeck 2014). A change in gaze direction towards the co-speaker within a turn is often linked to focalisation, functioning as an appeal to the co-speaker (Holler *et al.* 2014). A change in gaze direction towards an object can also work as a deictic gesture, given the directional vector it provides (Knoeferle and Kreysa 2012).

### 1.4.3 Head and eyebrow movement

- 37 Head gestures, particularly head beats (*i.e.* brief downward chin movements) and nods, can emphasise particular entities (Cavé *et al.* 1996). They are connected to discourse structure in their function (Kendon 2004), as they mark out the rhythmic organisation of the utterance. Eyebrow movement, especially rises, is linked to prosody, particularly to focalisation and emphasis (Granström and House 2005).

## 2. Corpus and methodology

### 2.1 Corpus recording

- 38 The corpus used for this study, ENVID (Lelandais and Ferré 2016), is a collection of dialogues in British English. This collaborative corpus gathers video recordings realised in soundproof studios between 2000 and 2012. Five dialogues were selected, making up a total of 2 hours and 10 minutes of interaction. They involved British people aged 20 to 23 who were friends or had already met. Each participant had a lavalier microphone, which provided two separate audio tracks. Two audio files corresponding to each microphone were created in a WAV format, so as to facilitate the analysis of overlapping speech. The native video recordings were transformed into MPEG-4 stereo files, with a rate of 25 frames per second. Each dialogue had a single MPEG-4 file, juxtaposing the images of both cameras which filmed each participant.
- 39 Each participant was filmed in a static, wide-angled shot, facing or three-quarters turned towards their interlocutor. They were visible at least from head to chest.

### 2.2 Corpus transcription

- 40 The corpus was first transcribed in Praat (Boersma and Weenink 2013) using a standard orthographic transcription of tone-units, in which subordinate constructions were localised and coded on a separate track as *sc*. All the annotations made in Praat were then exported into Elan (Sloetjes and Wittenburg 2008), a video annotation tool, to relate information in the different domains.

#### 2.2.1 Syntactic annotation

- 41 A total of 386 constructions were annotated in the corpus, which represents 9.76% of the total speaking time (*i.e.* 3.27 form/min): 83 restrictive relative clauses (1.65% of speaking time —0.7 form/min), 77 adverbial clauses (1.62% of speaking time —0.65 form/min), and 58 appositive relative clauses (0.82% of speaking time —0.32 form/min).
- 42 For this study, 40 occurrences of each syntactic type were selected for a balanced comparison, making up a total of 120 constructions. The selection targeted occurrences without an interruption, surrounded with immediate left and right co-texts other than a single silent pause yielding the speaking turn.
- 43 The selected occurrences were classified according to their syntactic type in Praat (restrictive relative clause, adverbial clause, appositive relative clause). A second track delimitates their environment: the preceding tone-unit was labelled L (left co-text), the subsequent one labelled R (right co-text).
- 44 In order to establish reliability of the clause type classification (restrictive relative clause, adverbial clause, appositive relative clause), a second coder judged 20% of the data that had been classified by the original coder. The second coder is also a specialist of the field. The agreement between coders was 100%.

### 2.2.2 Discourse annotation

- 45 The corpus was segmented in discourse sequences (*i.e.* narrative, argumentation, series of questions-answers, description). Each selected occurrence was classified in regards to its contribution to the main discourse sequence (essential, non-essential to the structure) and its discourse purpose (main, sub-sequence, side)<sup>8</sup>, following the parameters set by Grosz *et al.* (1995). Frequency counts per syntactic type were realised for any discourse-new referential item introduced as discourse-new items that move the discourse forward (Hopper 1979). Frequency counts for pronouns were also made as reduced lexical forms indicate the use of discourse-old referents (*e.g.* Stevenson 2002). Frequency counts for referential anaphoric items and for cataphoric items were also made in L, SC, and R, as they mark out cognitive centring (Grosz *et al.* 1995). Any substantial backchannel produced by the co-speaker between the subordinate construction and R (or overlapping with the beginning of R) was noted, as they reflect the co-speaker's treatment and selection of particular pieces of information within the stream.

### 2.2.3 Prosodic coding

- 46 The corpus was segmented into tone-units, according to the British school of intonation (Crystal 1969; Wells 2006) based on dynamic pitch contours.
- 47 The Momel-Intsint algorithm (Hirst 2007) was used for the automatic annotation of the F0 target points in the signal. Annotations are made in two respects: the algorithm notes pitch height (in Hz) on target syllables, which allows us to calculate mean F0 values for specific segments. The algorithm also codes symbolic (relative) values of intonation, in which each measured F0 value is compared to preceding ones, *i.e.* significant changes in the F0 curve either regarding the speaker's pitch range (Top, Bottom) or regarding the neighbouring tones or sequences of tones (Upstep, Downstep, Same, Low, High). We are particularly interested in values which indicate a significant pitch reset (Top, Bottom), or a significant change in pitch key (Upstep—change towards a higher pitch range, Downstep— towards a lower pitch range). We are also interested in the value “Same” which, if found in greater number in our sequences, would indicate that there is no break in between the different elements of the sequence.
- 48 Within each segment of the sequences under study, the nature of each nuclear contour (fall; fall-rise; rise; rise-fall; flat) was also coded manually. Pitch key was annotated in regards to each speaker's specific range (high; mid; low) on both the whole segments (L, sc, R) and the boundary (initial and final) syllables in these segments.
- 49 In order to establish reliability of the nuclear contour classification, a second coder judged 20% of the data that had been classified by the original coder. The second coder is also a specialist of the field. The agreement between coders was 81.9%.

### 2.2.4 Gesture coding

- 50 Communicative gestures were coded in Elan (Sloetjes and Wittenburg 2008), in which hand gestures, head and eyebrow movement as well as gaze direction were manually coded also by the two authors, following the parameters proposed by Bressemer and Ladewig (2011).

- 51 Gesture annotation was based on gesture phrases (Kendon 2004). Each gesture phrase was considered to start at the onset of the gesture and to end at the return to rest position if there was one. In the case of two consecutive gestures, the first gesture phrase ends at a significant change in shape and/or trajectory. Other gestural features such as direction and gestural space were also noted by the two coders following Bressemer and Ladewig (2011).
- 52 Head movements were labelled into nods (downward-upward movement on a vertical axis as in assent/greeting), shakes (side-to-side movement on a horizontal axis), tilts (inclination sideways on a diagonal axis), beats (downward chin movement on a vertical axis without any acquiescing value), or jerks (sudden backward chin movement). In separate tracks, gaze direction was annotated as either towards the co-participant or away, eyebrow movement distinguished between rise and frown, and hand gestures were categorised into iconics, metaphoric, pointings, beats, emblems, butterworths, and adaptators, drawing mainly from McNeill's typology (2005). As hand gestures may have several dimensions, two values could be noted and counted if need be.
- 53 Hand gestures were coded considering their link with co-occurring speech and their relationship to lexical affiliates (Kipp *et al.* 2007). Ambiguous types were resolved with discussion between the two coders and agreement was reached on the main dimension of gesture types. Iconics are "images of concrete entities and/or action", whereas metaphoric are "images of the abstract" involving a metaphoric use of form and/or space (McNeill 2005: 39). Pointing gestures are deictics whereas beats are linked with speech rhythm (McNeill 1992: 80), emblems are conventionalised signs and butterworths are disorganised gestures made in lexical retrieval. Adaptators, *i.e.* self-contact gestures used for comfort, were included although they cannot be considered as communicative gestures, because they give information on the organisation of turns, being more frequent when the participant is listening.
- 54 In order to establish reliability of the gesture type classification, a second coder judged 20% of the data that had been classified by the original coder. The second coder is also a specialist of the field. The agreement between coders was 100% for gaze direction, 96.4% for eyebrow movement, 81.3% for head movement, and 72.1% for hand gestures.
- 55 Each hand gesture was also assigned a function regarding co-occurring speech. According to our analytical needs, we distinguish between two broad functions. Gestures with a representational function describe or represent objects, actions, and/or ideas, while gestures with an organisational function convey abstract information about discourse or the interaction. Although no systematic relation holds between gesture types and gesture functions, the representational function is usually performed by types such as iconics, deictics, and some metaphoric. The organisational function is usually linked with types such as beats and metaphoric.
- 56 In order to establish reliability of the gesture function classification, a second coder judged 20% of the data that had been classified by the original coder. The second coder is also a specialist of the field. The agreement between coders was 84.9%.

### 2.3 Assumptions

- 57 Based on the theoretical background defined by the literature, a specific list of syntactic, discursive, rhythmical, intonational, and visual cues is taken into account to survey

different types of background information. These specific features are listed below and are expected to be correlated with subordinate clauses, as they would not be expected in main clauses, as main clauses are assumed to convey foreground information in discourse.

- 58 If the constructions belong to the discourse background, they should in majority (1) be syntactically governed, with state or copular verbs (Hopper and Thompson 1980). On the contrary, main clauses should feature process verbs and express dynamicity. (2) Subordinate clauses should represent old information (Hopper 1979) as opposed to main clauses presenting new information, and (3) provide little contribution to their embedding sequence (Longacre 1996), while main clauses are assumed to move the discourse forward with segments directly fulfilling the sequential discourse purpose.
- 59 At a prosodic level, (4) subordinate clauses should be uttered in a low or mid key (Wichmann 2000), as opposed to main clauses expressing foreground, which would be uttered in a higher key. (5) Subordinate clauses are expected to show flat or falling-rising contours (Ward and Hirschberg 1985) as opposed to definitive falling contours advancing the conversational agenda or to rising-falling contours associated with focalisation, and (6) should not cause any important change in rhythm, featuring few pauses (Local 1992), as some silent pauses also participate in focalisation.
- 60 As far as co-verbal gestures are concerned, (7) the selected subordinate constructions are expected to be produced in the same gesture unit as their sequential environment (Enfield 2009), while main clauses are usually produced with distinct accompanying gesture units. Subordinate constructions should be realised (8) without any change in gaze direction towards the co-speaker (Beattie 1978; Streeck 2014) as this would represent an appeal to the latter. (9) Held gestures and asymmetrical configurations are expected, with small organisational hand movements produced in the speaker's periphery or low coordinates (Streeck 2009), while these features are not associated with main clauses, and larger hand movements are linked with focalisation.

### 3. Results

- 61 The analysis evaluates the informational weight of subordinate constructions (background vs. foreground information). We test whether these forms mainly express foreground information or whether they preferentially provide secondary material in discourse. After identifying and measuring the most relevant cues expressing foreground in the different modalities drawing on our assumptions, the three syntactic types can be placed on a continuum from background to foreground information. The particularities are detailed for each syntactic type from the most auxiliary construction to the most foregrounded one. This section presents raw results. Examples will be provided in relation with these results in the Discussion section that follows. The subsequent series of tables presents the cues we take into account, along with their distribution in the different syntactic types of subordinate constructions. Our analysis is selective in choosing which elements to comment upon for reasons of space, and highlights different cues for each of the three clause types. However, each table gives the number of occurrences (out of 40) featuring the cue taken into account, and the percentage this number represents. Statistical F-tests were run instead of ANOVAs, as the sets of data do not follow a normal distribution and are relatively small. These tests aim at detecting a

significant difference between the three different types of subordinate constructions (appositive relative clauses, adverbial clauses, restrictive relative clauses).

### 3.1 Appositive relative clauses

#### 3.1.1 Verbal encoding

- 62 From a macro-syntactic viewpoint, no syntactic or semantic cue is mainly used to index foreground information in appositive relative clauses. However, it can be noted that appositive relative clauses feature significantly less segments that do not carry their own pragmatic weight (*i.e.* presuppositions) than their co-text (L:  $F(39,39) = 1.92, p < .05$ ; R:  $F(39,39) = 2.23, p < .01$ ). Appositive relative clauses feature more characteristics about background information. For instance, they feature the highest distribution (adverbial clauses:  $F(39,39) = 1.96, p < .02$ ; restrictive relative clauses:  $F(39,39) = 1.96, p < .02$ ) of state verbs (85%), mainly denoting a permanent (79.4%) feature of the grammatical subject. Likewise, from the point of view of discourse, this syntactic type features the lowest proportion (30%) of segments which are essential to the development of their embedding discourse sequence, as shown in (5) in the Discussion section. However, the differences with their co-text and with the other syntactic types are not significant. Table 1 describes the verbal features for foreground that are considered in our analysis and their distribution in appositive relative clauses.

Table 1. Verbal features taken into account to determine foregrounding (grey zones) or backgrounding in Appositive Relative Clauses.<sup>9</sup>

Syntactic and semantic status	nb of occurrences			total (L+SC+R)	%
	L	SC	R		
presuppositions	12	5	23	40	12.5*
state verb	12	34	12	58	85*
transitivity	10	5	6	21	12.5
perfective aspect	2	2	3	7	5
marked informational flow	6	5	6	17	12.5
<b>Discourse status</b>					
pronominal reference	8	14	10	32	35
new referential item introduced	25	2	8	35	5
cataphora in previous tone-unit + anaphora in following tone-unit	15	6	12	33	15
inaccessible information	16	28	10	54	70



essential to sequence	28	12	24	64	30
substantial backchannels	1	4	2	7	10

### 3.1.2 Prosodic encoding

- 63 Appositive relative clauses feature two prosodic tendencies for prominence. They show the highest distribution of emphatic (rise-fall) contours on nuclear syllables with 15% of occurrences produced with such a contour. In contrast, only 7.5% of adverbial clauses ( $F(39,39) = 2.68, p < .005$ ) and 10% of restrictive relative clauses ( $p > .05$ ) show this type of emphatic contour. In relation with their propensity to convey prosodic emphasis, appositive relative clauses feature the lowest proportion of flat contours, which characterises 2.5% of occurrences, while this marks 5% of adverbial clauses ( $p > .05$ ) and 10% of restrictive relative clauses ( $F(39,39) = 1.89, p < .05$ ). Their nuclear contours are then very clear and distinct from their environment (L:  $F(39,39) = 1.89, p < .05$ ; R:  $F(39,39) = 1.94, p < .05$ ). Table 2 features the prosodic cues we have included in the analysis and their distribution in appositive relative clauses.

Table 2. Prosodic features tested in Appositive Relative Clauses.<sup>10</sup>

Prosody	nb of occurrences			total (L+SC+R)	%
	L	SC	R		
falling tone	17	13	12	41	32.5
rising-falling tone	5	6	5	16	15
flat contour	6	1	6	9	2.5
rising tone	4	4	10	18	10
falling-rising tone	8	16	7	31	40
INTSINT Same values out of a total of 84 in sequences (L+SC+R)	29	27	28	84	32
average pitch upstep (>20Hz) in sc per speaker (10)		1			10
speech rate in sc				5.4 syll/ sec	

### 3.1.3 Visual encoding

- 64 Appositive relative clauses also visually index modal and pragmatic foci, through various articulators. They first feature significantly less held gestures than adverbial clauses ( $F(39,39) = 2.08, p < .02$ ) and restrictive relative clauses ( $F(39,39) = 1.94, p < .02$ ), meaning that their gestures are less static. While generally possessing distinct hand gesture units, they

function above the propositional level: gestural layering (Cassell and McNeill 1990) takes place in the visual encoding of appositive relative clauses. While iconic and other representational gestures are used before sc, creating foci at the objectal, propositional level, the gestures used in sc do not directly represent referents. They are more concerned with the organisational level of discourse, mainly giving information about the structure of these referents, and about the expression of a stance. In line with this modal and/or pragmatic level of action, appositive relative clauses feature the highest distribution of eyebrow rises both in their host sequence (L:  $F(39,39) = 1.94, p < .05$ ; R:  $p > .05$ ) and compared to adverbials ( $F(39,39) = 1.71, p < .05$ ) with 60% of rises produced in their host sequence. They are the only syntactic type to feature more eyebrow movement in sc than in L or in R. Table 3 shows the gestural parameters we have considered as cues for foreground and their distribution in appositive relative clauses.

Table 3. Gestural features tested in Appositive Relative Clauses.<sup>11</sup>

Gestures	nb of occurrences			total	%
	L	SC	R	(L+SC+R)	SC/total
number of hand gestures with a representational function out of a total of 42 in sequences (L+sc+R)	15	12	15	42	28.6
number of hand gestures with an organisational function out of a total of 111 in sequences (L+sc+R)	37	40	34	111	36
high hand gestures out of a total of 25 in sequences (L+sc+R)	14	5	6	25	20
low hand gestures out of a total of 130 in sequences (L+sc+R)	44	42	44	130	32.3
held hand gestures out of a total of 23 in sequences (L+sc+R)	11	4	8	23	17.4*
hand beats out of a total of 22 in sequences (L+sc+R)	11	7	4	22	31.8
head beats out of a total of 49 in sequences (L+sc+R)	17	19	13	49	38.7
gaze units away out of a total of 88 in sequences (L+sc+R)	36	26	26	88	29.5
eyebrow rises out of a total of 35 in sequences (L+sc+R)	8	21	6	35	60*
average hand gesture rate in sc	1.3 gesture/segment				

## 3.2 Adverbial clauses

### 3.2.1 Verbal encoding

65 Adverbial clauses are different from appositive clauses in their macro-syntax, which denotes a high number of processes (with 47.5% of occurrences featuring a process verb). They present a relatively high transitivity rate, with 25% of occurrences displaying a transitive verb. From the perspective of discourse, adverbial clauses have extendable interpretative and textual scopes; 60% of them predicate information that remains relevant for the interpretation of two or more tone-units. The informational value of adverbial clauses then resides in their propensity to evolve in status, going from relevance for one tone-unit only to relevance for several successive tone-units. Table 4 shows the distribution of verbal cues in adverbial clauses. The table shows, however, that no significant result concerning their verbal characteristics can differentiate adverbial clauses from the other syntactic types.

Table 4. Verbal features tested in Adverbial Clauses.<sup>12</sup>

Syntactic and semantic status	nb of occurrences			total	%
	L	SC	R	(L+SC+R)	SC/40
presuppositions	22	23	23	68	57.5
state verb	18	21	14	53	52.5
transitivity	5	10	2	17	25
perfective aspect	1	6	0	7	15
marked informational flow	1	0	2	3	0
Discourse status					
pronominal reference	9	23	9	41	57.5
new referential item introduced	8	5	2	15	12.5
cataphora in previous tone-unit + anaphora in following tone-unit	13	6	12	31	15
inaccessible information	12	32	14	58	80
essential to sequence	24	22	21	67	55
substantial backchannels	0	3	5	8	7.5

### 3.2.2 Prosodic encoding

- 66 While not showing any rhythmic difference, this syntactic type features the highest distribution of high rising contours among their embedding sequence (L:  $F(39,39) = 2.08, p < .02$ ; R:  $F(39,39) = 1.71, p < .05$ ), with 25% of adverbial clauses featuring such a contour. This is significantly more than appositive relative clauses ( $F(39,39) = 1.71, p < .05$ ) and restrictive relative clauses ( $F(39,39) = 2.7, p < .005$ ). Table 5 displays the prosodic features of adverbial clauses.

Table 5. Prosodic features tested in Adverbial Clauses.<sup>13</sup>

Prosody	nb of occurrences			total	%
	L	SC	R	(L+SC+R)	SC/40
falling tone	16	17	15	48	42.5
rising-falling tone	2	2	2	6	5
flat contour	9	3	11	23	7.5
rising tone	4	10	5	19	25*
falling-rising tone	6	8	7	21	20
INTSINT Same values out of a total of 70 in sequences (L+ SC +R)	21	26	23	70	37.1
average pitch upstep (>20Hz) in sc per speaker (10)		0			0
speech rate in sc	5.5 syll/sec				

### 3.2.3 Visual encoding

- 67 Adverbial clauses mostly stand out through their visual strategies, featuring a densely coded content with the highest production of hand gestures (1.5 hand gesture per segment in average). The gestures in adverbial clauses tend to be tense and articulated, with a significant increase in the production of representational gestures (from 23.1% of representational hand gestures produced in L to 38.5% in SC;  $F(42,35) = 1.76, p < .05$ ), although the gestures accompanying adverbial clauses mostly fulfil organisational functions. The increase in representational gestures is illustrated in example (11) in the Discussion section. Adverbial clauses also feature significantly more hand gestures realised in the upper part of the main speaker's gestural coordinates (high hand gestures) than the other syntactic types (adverbials:  $F(39,39) = 1.78, p < .05$ ; appositive relatives:  $F(39,39) = 2.08, p < .02$ ). Adverbial clauses also feature the highest proportion of head beats (45.9% of head beats in SC) in their host sequence (L:  $p > .05$ ; R:  $F(39,39) = 1.92, p < .05$ ). The head beat in example (11) shows that adverbial clauses simultaneously participate to the textual

structuring of discourse with their co-occurring gestures. Table 6 shows the distribution of the gestural cues for foreground in adverbial clauses.

Table 6. Gestural features tested in Adverbial Clauses<sup>14</sup>

Gestures	nb of occurrences			total (L+SC+R)	%
	L	SC	R		
number of hand gestures with a representational function out of a total of 52 in sequences (L+ sc +R)	12	20	20	52	38.5*
number of hand gestures with an organisational function out of a total of 117 in sequences (L+ sc +R)	41	40	36	117	34.2
high hand gestures out of a total of 30 in sequences (L+ sc +R)	7	14	9	30	46.7*
low hand gestures out of a total of 77 in sequences (L+ sc +R)	29	24	24	77	31.2
held hand gestures out of a total of 21 in sequences (L+ sc +R)	5	10	6	21	52.4
hand beats out of a total of 20 in sequences (L+ sc +R)	8	7	5	20	35
head beats out of a total of 37 in sequences (L+ sc +R)	11	17	9	37	45.9*
gaze units away out of a total number of 96 in sequences (L+ sc +R)	37	27	32	96	28.1
eyebrow rises out of a total of 17 in sequences (L+ sc +R)	6	8	3	17	47
average hand gesture rate in sc	1.5 gesture/segment				

### 3.3 Restrictive relative clauses

#### 3.3.1 Verbal encoding

- 68 From a macro-syntactic point of view, restrictive relative clauses present the highest distribution of aspectual marks and modal auxiliaries (35% of restrictive relative clauses; adverbials:  $F(39,39) = 2.08$ ,  $p < .02$ ; appositive relatives:  $F(39,39) = 0.3$ ,  $p < .0001$ ) which denote radical modality, emphasising the subject-predicate relation (see 4.3.1). The verbs in restrictive relative clauses are also characterised with the highest rate of direct transitivity: 27.5% of restrictive relative clauses feature a verb accepting a direct object (adverbials:  $p > .05$ ; appositive relatives:  $F(39,39) = 1.8$ ,  $p < .05$ ). Table 7 features the verbal parameters taken into account and their distribution in restrictive relative clauses.

Table 7. Verbal features tested in Restrictive Relative Clauses.<sup>15</sup>

Syntactic and semantic status	nb of occurrences			total (L+SC+R)	%
	L	SC	R		
presuppositions	28	31	13	72	77.5
state verb	11	20	14	45	50
transitivity	9	11	7	27	27.5*
perfective aspect	2	14	3	19	35*
marked informational flow	5	8	3	16	20
Discourse status					
pronominal reference	4	19	17	40	47.5
new referential item introduced	14	6	12	32	15
cataphora in previous tone-unit + anaphora in following tone-unit	1	13	5	19	32.5*
inaccessible information	8	13	12	26	32.5
essential to sequence	26	31	27	84	77.5
substantial backchannels	0	2	1	3	5

69 At the level of discourse, the distribution of cataphoric referential elements in L is the highest among both subordinate constructions and the different segments while that of anaphoric elements is in R (L:  $F(39,39) = 9, p < .0001$ ; R:  $F(39,39) = 2, p < .02$ ; adverbials:  $F(39,39) = 0.001, p < .02$ ; appositive relatives:  $F(39,39) = 9.3, p < .0001$ ). This configuration creates a focus of attention in 32.5% of restrictive relative clauses. Stevenson (2002) refers to this phenomenon as cognitive centring.

### 3.3.2 Prosodic encoding

70 Restrictive relative clauses are the most modulated among both the different types and their surroundings (20% of speakers showing a significant contrast in pitch movement between L and SC;  $p < .05$  for these speakers). Table 8 presents the prosodic results for restrictive relative clauses.

Table 8. Prosodic features tested in Restrictive Relative Clauses.<sup>16</sup>

Prosody	nb of occurrences	total	%
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	L	SC	R	(L+SC+R)	SC/40
falling tone	15	18	22	55	45
rising-falling tone	4	4	5	13	10
flat contour	6	4	3	13	10
rising tone	9	3	2	14	7.5
falling-rising tone	4	11	8	23	27.5
INTSINT Same values out of a total of 84 in sequences (L+ SC +R)	34	21	29	84	25
average pitch upstep (>20Hz) in SC per speaker (10)		2			20*
speech rate in SC	5.5 syll/sec				

### 3.3.3 Visual encoding

71 Restrictive relative clauses feature the highest distribution of representational gestures, with 37.8% of representational gestures co-occurring with restrictive relatives (vs. 28.9% of representational gestures in R). This substantial proportion, however, is shared with adverbial clauses. Restrictive relative clauses also increase their production of organisational gestures specifically concerned with focalisation, as the increase in the number of organisational hand gestures (from 27.5% of organisational hand gestures in L to 36.3% in SC) is caused by hand beat gestures only. The proportion of hand beats rises from 18.5% of the total number of hand gestures produced in L to 32% of the total number of hand gestures produced in SC. Restrictive relative clauses then feature the highest number of hand beats (42.1% of these gestures are produced with this syntactic type), compared with their embedding sequence (however  $p > .05$ ) and the other syntactic types (adverbials:  $F(49,58) = 2.09$ ,  $p < .002$ ; appositive relatives:  $F(49,52) = 1.9$ ,  $p < .002$ ). Table 9 presents the gestural characteristics of restrictive relative clauses.

Table 9. Gestural features tested in Restrictive Relative Clauses.<sup>17</sup>

Gestures	nb of occurrences			total	%
	L	SC	R	(L+SC+R)	SC/total
number of hand gestures with a representational function out of a total of 45 in sequences (L+sc+R)	13	17	15	45	37.8
number of hand gestures with an organisational function out of a total of 91 in sequences (L+sc+R)	25	33	33	91	36.3

high hand gestures out of a total of 29 in sequences (L+sc+R)	11	6	12	29	20.7
low hand gestures out of a total of 86 in sequences (L+sc+R)	24	30	32	86	34.9
held hand gestures out of a total of 17 in sequences (L+sc+R)	2	9	6	17	52.9
hand beats out of a total of 38 in sequences (L+sc+R)	10	16	12	38	42.1*
head beats out of a total of 30 in sequences (L+sc+R)	9	9	12	30	30
gaze units away out of a total of 82 in sequences (L+sc+R)	30	16	36	82	19.5
eyebrow rises out of a total of 22 in sequences (L+sc+R)	9	5	8	22	22.7
average hand gesture rate in sc	1.25 gesture/segment				

## 4. Discussion

### 4.1 Appositive relative clauses

#### 4.1.1 Verbal encoding

- 72 As seen in the results section, no syntactic or semantic cue is mainly used to index foreground information in appositive relative clauses. They feature the highest distribution of state verbs, denoting a permanent feature of the grammatical subject. They provide a large number of subject complements as in (8):

(8)	Alex	L	and (h) it took us to Limoges #
		sc	<b>which was like # what like four hours away from here #</b>
		R	(h) so yeah that was pretty grim

- 73 Unlike the encoded process in L, validating < it take us to Limoges >, sc comprises a state verb denoting a qualitative property of L's last lexical item. However, appositive relatives have distinct illocutionary contents. The co-speaker can indeed directly react to sc (*e.g.* "Four hours? I don't think it is that far away").
- 74 From the point of view of discourse, these constructions are concerned with a parallel discourse purpose to that of the ongoing sequence. They mainly comment upon their co-text as in (9), through a shift in the assertive parameters in which factual descriptions are turned into utterances showing a strong modal stance:

(9)	Tim	L	and they played this Irish # tune
-----	-----	---	-----------------------------------



		SC	<b>which was awesome #</b>
		R	this guy with em # a whistle

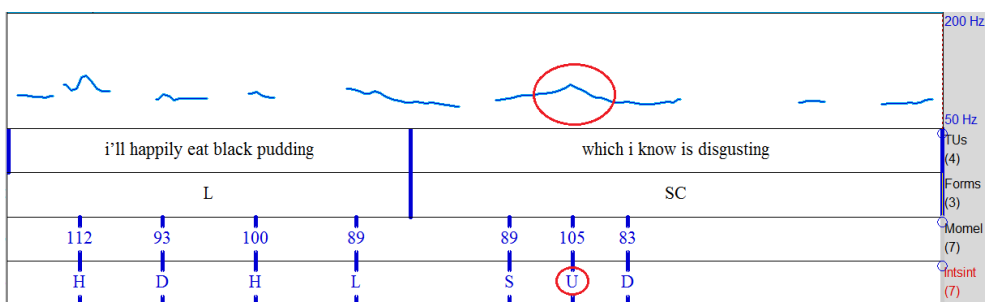
- 75 Tim answers a question from the co-speaker about a music band who performed in a bar the night before. Contrary to L, SC does not convey any relevant information to Tim’s description of the band and their music, but modifies “this Irish tune” with a semi-hyperbolic term, introducing a stance. Tim leaves the ongoing factual description to deliver a modal orientation about the quality of a referent he has just activated (“this Irish tune”).
- 76 In sum, appositive relative clauses show a certain form of macro-syntactic autonomy in that they represent independent speech acts. However, the lexical content of appositive relative clauses mainly marks an evaluative stance from the speaker, which does not represent critical information in the referential and/or sequential development of discourse.

#### 4.1.2 Prosodic encoding

- 77 The highest distribution of emphatic (rise-fall) contours in appositive relative clauses is shown in example (10) represented in Figure 1 below.

(10)	Tom	L	but then again
			i’ll happily eat black pudding
		SC	<b>which i know is disgusting #</b>
		R	blood and guts and #

Figure 1: Intonation curve of example (10) in Praat, showing a rising-falling contour in Sc.<sup>18</sup>



- 78 In this argumentation on the composition of transformed products, SC provides a concession to one of Tom’s main arguments. He still eats “black pudding”, whose composition he already knows and describes as “disgusting”. This humorous contradiction is prosodically marked, F0 rising from 89 Hz to 105 Hz on the vowel in “know” (Intsint “U” value for upstep), then decreasing to 83 Hz. Tom’s argumentation remains coherent: what bothers him is being misled on a product’s origins. This

movement takes place at an inferior pitch level to L’s initial syllable: these segments are in the same vocal paragraph.

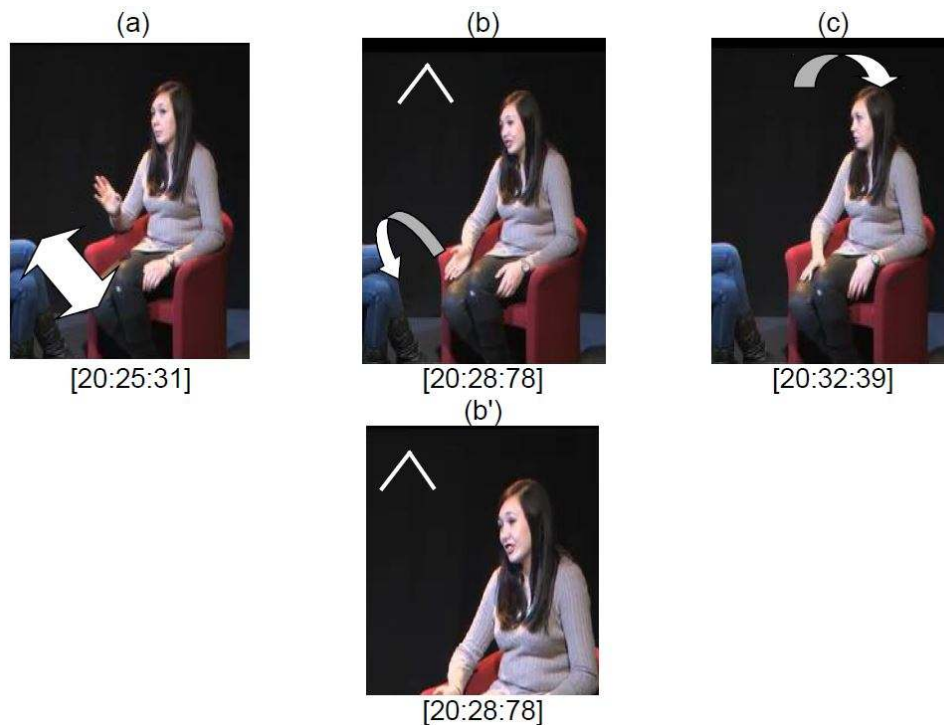
- 79 In sum, the vocal cues used in appositive relative clauses serve more the expression of modality rather than that of informational emphasis. Prosody is therefore in accordance with the discourse features of these syntactic constructions.

4.1.3 Visual encoding

- 80 Eyebrow rises are also used to convey a modal stance and to mark a break in the discourse structure, as shown in example (11), represented in Figure 2, in which Rhianna lays out the reasons why she does not want to learn to drive.

(11)	Rhianna		i mean
		L	[(a) my mum’s pushing ] me to get my license
		sc	<b>(h) uh which [ (b) i guess i should ] #</b>
		R	(h) but well [ (c) first of all
			for the moment

Figure 2: Eyebrow rise during the gestural realisation of example (11), with a lower hand gesture in sc (b) than that in L (a). The timing of the video stills is indicated under each image.



- 81 Rhianna first mentions an adverse opinion in L, as an argumentative move in its own right: her mother would like her to get her license. Rhianna marks this information with a sweep of her right hand corresponding to the verbal item “pushing” (a). This iconic

hand gesture gives a hyperbolic dimension to the discourse segment, as Rhianna gives a literal and concrete expression to her mother's will, and materialises her advice as strong pressure. However, *sc* does not elaborate upon her mother's advice: this segment is a comment going back on L's new information ("get my license"). *sc* introduces a change in point of view, in that the argumentation switches back to Rhianna's voice in the debate. With a head nod and a lower flip of her right hand (b), Rhianna acts both as the character in the situation she has described in L (Rhianna assents to her mother's exhortation) and as a speaker-utterer: she acknowledges the legitimacy of her mother's advice and marks this concession with a hand flip. She also raises her eyebrows in this design (Figure 2b' is a close-up), taking a strong modal stance on L's arguments, and marking *sc* as a contrastive move. Rhianna resumes her main argumentation line in R with a much more categorical expression: while bent in assent during *sc*, she holds herself upright in R and accompanies the next tone-units with a continuous negative head shake. This sequence is then characterised with two successive modal positions which are not equal in intensity: the stance taken in R is stronger than that in *sc*. This asymmetry mirrors the discourse structure, as R continues her sequential discursive agenda while *sc* does not.

#### 4.1.4 Summary

- 82 Appositive relative clauses do not bring a substantial propositional input, as shown by their low transitivity and their capacity to insert modality in the discourse. They mainly play a pivotal role in the sequential sub-structure in that they give a new modal orientation to a previous referential item or to a whole utterance, permitting the speaker to elaborate upon the ongoing topic and /or subtopic. The emphatic contours and eyebrow rises on these forms are evidence of their interactional orientation, as they are centred on the co-participant and engage a negotiation on the way some successive informational items are presented. These constructions seek the establishment of a consensus between speaker and co-speaker, bearing on interactional felicity rather than propositional meaning. The exchange space they create can mainly be seen with their gestures, reflecting pragmatic preoccupations above the representational level. While their gestures and prosody indicate local salience, the verbal features of appositive relative clauses clearly mark background information.

## 4.2 Adverbial clauses

### 4.2.1 Verbal encoding

- 83 As seen in the Results section, no verbal feature in adverbial clauses can significantly set them apart from the two other syntactic types. However, we note that they present a relatively high transitivity rate, with 25% of occurrences displaying a transitive verb, and are prone to dynamicity, as in (12):

(12)	Kate	L	i fe- i felt really sick
		<i>sc</i>	<b>when i when i tried it</b>
		R	i was like mh #

- 84 Unlike L and R, sc's verb denotes a punctual action (< try it >), which refers to eating a piece of cake. This sc is not a presupposition: the co-speaker can question it independently from the rest (e.g. "I didn't know you had tried it as well"). The majority of adverbial clauses are full speech acts.
- 85 From the perspective of discourse, adverbial clauses are not significantly different from the two other syntactic types either. However, one of their most distinct tendencies concerns their capacity to have extendable interpretative and textual scopes; a majority of them predicate information that remains relevant for the interpretation of two or more tone-units:

(13)	Alex		cos i'm really scared of flying
			and i always look at the air hostesses
			if they're like reass-
		L	you know
		sc	<b>when there's turbulence</b>
		R	(h) i always look at them
			i'm like
			(h) if they're standing there smiling
			then it's fine (laughs)
			whereas if they ever look worried
			i'm always a bit like
			why- why me why now

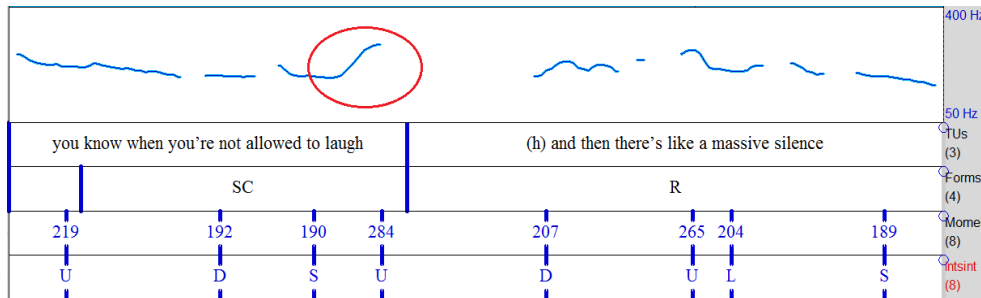
- 86 In sequence (13), sc opens a discourse frame as well as a distinct substructure, developing a narrative-like description of air turbulence. sc establishes the first essential descriptive element in an experiential order (The plane goes through turbulence. Alex then looks at the air hostesses). Providing some propositional content and a textual framing signal, sc emphasises both new cognitive and textual units: several clauses are grouped in their necessity to be interpreted through its criterion, which must stay activated in the co-speaker's memory. The informational value of adverbial clauses then resides in their propensity to evolve in status, going from episodic to global relevance.

#### 4.2.2 Prosodic encoding

- 87 Adverbial clauses display the highest distribution of high rising contours. Sequence (14) features a high final rising contour in sc, represented in Figure 3:

(14)	Alex	L	(h) you know
		SC	<b>when you're not allowed to laugh</b>
		R	and then there's like a massive silence

Figure 3: Extract in Praat of sequence (14), in which sc features a high rising contour.



- 88 While sharing a single prosodic contour with L, sc's final syllable is higher than the initial one (284 Hz vs. 219 Hz) and does not match R's beginning, which is downstepped (Intsint "D" value). sc constructs a landmark for what follows, embedding R.
- 89 To sum up, while the verbal features of adverbial clauses suggest a two-fold role both in referential elaboration and textual elaboration, their prosody signals background information, with a single focalisation cue. This vocal mark points out the important textual role of the subordinate segment to the co-speaker.

### 4.2.3 Visual encoding

- 90 The increase in representational gestures is shown in Figure 4, that illustrates example (15), in which L and sc provide a short abstract to Rhianna's narrative:

(15)	Rhianna	L	i tried [(a) driving once <small>HEAD BEAT</small> ] in her car
		SC	<b>when we were on a # [(b) little road <small>HEAD BEAT</small> in the countryside] #</b>
		R	[(c) and hem (swallows) she said <small>HEAD BEAT</small> turn left #]

Figure 4: Metaphoric gesture in L in sequence (15), followed by a large iconic gesture in sc.



- 91 In (15) Rhianna realises an emphatic metaphoric gesture in the low periphery (a) in L, insisting on the exceptional character of the situation. She then produces a large iconic gesture (b) in sc, her two hands symmetrically drawing parallel lines in front of her, in a representation of the “little road”. She positions herself as a participant in her narrative, contrary to L in which she does not describe any event but gives information about them as an utterer. Her gaze on this gesture has a deictic value. sc also features a head beat; sc is marked as textually equal to its surroundings. R is not accompanied by any hand gesture (c), although this segment describes the first event triggering the complication. sc’s established gestural frame, while still valid for R’s interpretation, is not held or elaborated upon.
- 92 The head beat in example (15) shows that adverbial clauses simultaneously participate to the textual structuring of discourse with their co-occurring gestures.

#### 4.2.4 Summary

- 93 Adverbial clauses feature a solid number of cues; however, these signals are not evenly distributed in the different modalities: their prosody plays a very weak role in the creation of focus. Prominence is mainly expressed visually, as they increase the saliency of the gestures coding some propositional content, but also feature signals related to the structuring of discourse. However, only a small majority of adverbial clauses are essential to the development of this discourse; this discrepancy between salience and relevance suggests their verbal action is primarily textual. Adverbial clauses mainly trigger a structural (re)interpretation of some portions of discourse, with interpretative frames and scopes ranging from a single segment to a whole series of tone-units.

### 4.3 Restrictive relative clauses

#### 4.3.1 Verbal encoding

- 94 Restrictive relative clauses present the highest distribution of aspectual marks and modal auxiliaries which denote radical modality, emphasising the subject-predicate relation as in (16):

(16)	Michelle	L	(h) and so she # disowned everything
		sc	<b>that # she could associate my nana #</b>
		R	for example her accent # and #

- 95 Using a de-actualised form of “can” which evokes an elapsed possibility, Michelle asserts a strong relation between “she” and the predicate, and reduces the referential scope of “everything”. This predicate represents new information and establishes a narrower focus than that of L. This type of emphatic coupling is described as a maximalist relative (Grosu and Landman 1998), which provides identification features but also introduces scalarity. R’s adverbial phrase elaborates on the conceptual whole formed by sc and its antecedent.
- 96 Example (16) also highlights the highest rate of direct transitivity of restrictive relative clauses: sc features a direct transitive verbal form (*i.e.* “associate”). At the level of discourse, their predisposition to cognitive centring with cataphoric referential elements in L and anaphoric elements in R is shown in (17), where Zoe describes in a narrative how depressed she was to come back for a second year abroad:

(17)	Zoe		i sat there thinking
			[...]
			this is stupid
		L	i’m coming back <u>for someone</u>
		sc	<b><u>that’s not even there (laughs) #</u></b>
		R	(h) it was awful #

- 97 While “someone” in L points forward, projecting further precision on a referent whose relevance in the sequence is not yet justified, R’s pronoun “it” in R refers to the whole situation described in the narrative. sc’s emphatic contradiction (“not even”) encapsulates her feelings, thinking she had made an absurd decision, and presents an adversative element through the subordinating morpheme “that”. The unit formed by L and sc could be glossed as “I’m coming back for someone, but that someone is not even there”.
- 98 Restrictive relative clauses also highly and directly contribute to their embedding discourse sequences: the focus in (17) is not on Zoe coming back, but on her reasons for coming back. While L makes a decent reason to come back in itself (“I’m coming back for someone”), the information explaining best Zoe’s unhappiness is the ascribed feature to L’s referent: that “someone” is “not even there”. L and sc provide a coherent informational unit, showing no hierarchy. Zoe’s laugh punctuates sc, and confirms this unit as the climax. R is a concluding evaluation, in this sense less informative.

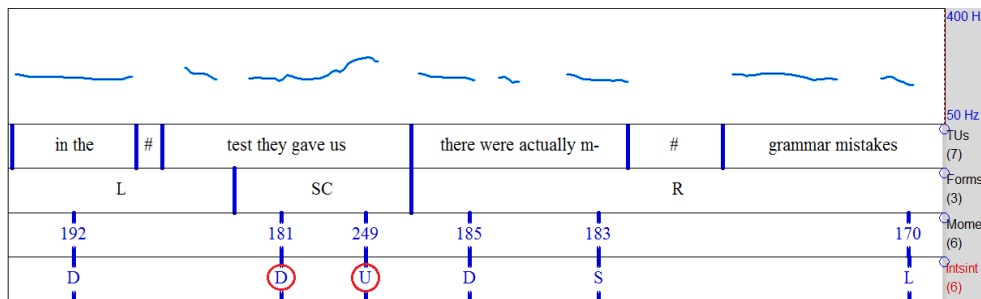
99 In sum, restrictive relative clauses are characterised with dynamicity, in their macro-syntactic features as in their discourse functions. Their verbal marks clearly participate to the foreground, increasing not only their salience (*i.e.* they are easily distinguished from the co-text given their markedness) but also their relevance (*i.e.* they provide fundamental referential information and advance the discourse agenda).

### 4.3.2 Prosodic encoding

100 Restrictive relative clauses are the most modulated among both the different types and their surroundings, as in (18), represented in Figure 5:

(18)	Rhianna	L	cos hem (h) in <u>the</u> # test
		SC	<b>they gave us</b>
		R	there were actually m- # grammar mistakes #

Figure 5: Extract from sequence (18) in Praat, showing a more modulated pitch in sc.



101 Sharing the same tone-unit as L and containing the prosodic nucleus, sc shows more movement than R, with a 68-Hz F0 variation. Completing the identification of the item “test”, sc delays the verbal sequential focus, set in R with a presentative structure and the discourse marker “actually”. sc’s final rising contour indexes more talk to come, and centres the co-speaker’s attention on the forthcoming segment.

102 In short, the vocal features of restrictive relative clauses participate to the foreground. These syntactic constructions stand out from their co-text with an immediate upstep in pitch, and show more modulation.

### 4.3.3 Visual encoding

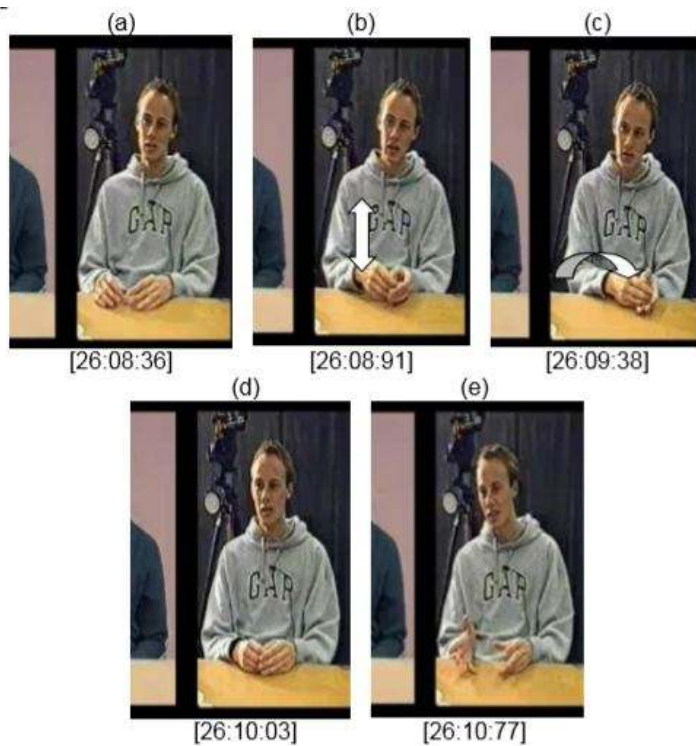
103 Restrictive relative clauses increase their production of hand beat gestures. These hand beats create a pragmatic focus as in sequence (19), represented in Figure 6 where Tom explains a television programme which tackles a different topical health issue each time. He focuses on a particular report about salmon farming and its important impact on the public:

(19)	Tom		there’s a chance that it could #
------	-----	--	----------------------------------



	L	like lead to the [(a) cells]
	sc	that [(b) deve] lop [(c) cancer]
	R	[(d) but # and] [(e) again # ]
		why not

Figure 6: Two successive hand beats in example (19), followed by a metaphoric hand gesture in R.



- 104 In (19) sc stands out from the rest of the sequence with its two successive hand beats (b) and (c), whose preparation is initiated on the antecedent (a). This antecedent is redefined in sc with the creation of a property attributed to “the cells”. While the first beat takes place on a vertical axis at the centre of the speaker’s coordinates, the second one is placed further on the left side of the speaker. Their succession in co-occurrence with the verb and its object complement highlights the predicate and the process it describes, pragmatically indexing the most relevant informational content in the sequence. Tom does not withdraw from the exchange space, maintaining his gaze towards the co-speaker throughout these two segments. The beat configuration is held until the end of sc, after which Tom finds a rest position (d). His gaze also shortly leaves the co-speaker for the left side, as he goes through some processing and/or projecting difficulties.

#### 4.3.4 Summary

- 105 Restrictive relative clauses are the only forms to present both salience and relevance, *i.e.* focalisation cues at several levels as well as contributions which are more decisive to the construction of referential meaning and to the realisation of sequential discourse

purposes than their co-text. These subordinate constructions also show the highest modal density (Norris 2009), in that the three modalities feature at least one cue participating to the presentation of high informational input. This suggests an even distribution of information, and a great variety in their presentational modes.

## Conclusion

- 106 This analysis presented a study of three types of subordinate clauses (appositive relative clauses, adverbial clauses and restrictive relative clauses) in a corpus of spoken English. Its aim was to establish whether the affirmation that subordinate clauses constitute background information as opposed to their host main clauses holds true.
- 107 Our analysis shows that the different syntactic types of subordinate constructions can be differentiated on the grounds of their communicational input. Figure 7 positions them on a continuum from background to foreground, including intermediate communicational strategies.

Figure 7: Continuum from background to foreground in the marking process of subordinate constructions.



- 108 Appositive relative clauses (ARCS) gather three focalisation cues. They create pragmatic and/or modal foci above the propositional level, mainly relying on visual strategies. Prosody mostly indexes background information while gesture signals local salience for this type of sc.
- 109 Although only presenting one additional cue, adverbial clauses (ACs) show a different scope and greater thematic relevance. Positioned at the centre of the continuum, they provide comprehensive messages, both concerned with referential elaboration and with textual sequential organisation, distributing the propositional content in homogeneous blocks. In this type of sc, while prosody generally encodes background information, gesture mainly signals prominence.
- 110 Finally, restrictive relative clauses (RRCs) gather five focalisation cues. They show a more complete and distributed communicational effort, deploying all the surveyed components in the creation of focalisation, and join both salience and relevance. They participate to the construction and the organisation of meaning, encoding content whose interest can simultaneously be propositional, pragmatic, and interactional. With this sc, the verbal, vocal, and gestural modalities encode foreground information.
- 111 Focalisation is mostly expressed by speakers with gestures, showing a different relation to the linearity of discourse through the use of physical space. Gestures mostly index the referential and sequential status of newly-introduced elements, thanks to stratification techniques indexing the value of an item or segment on several simultaneous scopes, from the most descriptive to the most abstract level.
- 112 While subordinate constructions are not significantly emphasised through their syntactic realisation or lexical coding, the increase in the referential value of the gestural components suggests a shift towards a visual manipulation of representational features,

and a global, sequential valorisation of information, through held gestures and repetitions throughout tone-units. The weak distribution of prosodic cues in the expression of foreground suggests that speakers preferentially use this modality for demarcation. While less drawn on, the verbal and vocal cues create very distinct differences between the types, contradicting their traditionally unified picture.

- 113 This study aimed at demonstrating that a composite, contextual vision of linguistic communication sheds new light on discourse subordination, which derives from numerous interactions between verbal, vocal, and visual components. The analysis focuses on discursive focalisation in its production; a qualified picture could be developed from the point of view of perception, including an experimental process to compare the most relevant cues and modalities in the perception of focalisation in subordinate constructions.

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## APPENDIXES

### Appendix. Transcription conventions *Appendice. Conventions de transcription*

(h)	audible inbreath
#	pause
(...)	vocal activity (laughs, swallowing, sighs)
[...]	illustrated gestural activity
-	interrupted construction
L	left co-text
Sc	subordinate construction
R	right co-text

One line of transcription corresponds to one tone-unit

## NOTES

1. Multimodal Discourse Analysis (MDA) is a diversified and growing field of research that includes works in a wide array of disciplines such as communication studies, social semiotics or (psycho or socio-) linguistics. In linguistics, most 'multimodal' studies are in fact rather bimodal, since they are mainly concerned with the relation of verbal phenomena to gesture. In this discipline, very few studies adopt a truly multimodal perspective: Loehr's work (2004) can be mentioned, since it focuses on timing relationships between gestures and intonation units in discourse. Swerts and Kraemer's studies (2005; 2008) are also multimodal, investigating audiovisual prosody. Dohen and Løevenbrück (2009) analyse audiovisual cues in perception studies about discourse phenomena. Finally, Ferré (2014) proposes a multimodal approach to markedness in discourse. However, we are not aware of any work on subordination in MDA other than the study described in the present paper.

2. For comparison's sake, this study focuses on subordinate structures that feature a finite predicate. Nominal subordinate clauses are therefore excluded from the study.

3. Traditional grammar does not detail in great length the syntactic link between adverbial clauses and the clause they modify (Gosselin 1990; Auer 2005). Adverbial clauses are given a

different status from that of completive clauses, functioning either as subject or complement of a verb, *i.e.* an argument. They are “satellites”, as dependencies that are more external to predicates and their arguments (Dik 1989). Blanche-Benveniste (1990: 19) explains that some elements can agglutinate around the verbal nucleus of a clause, but are only “associated” with the verbal construction. Harris (1982) considers adverbial clauses as predicates in which one of the agents is the verbal action in itself. Just as other predicates, they are not included in choices occurring at a lower level, such as the choice of their arguments. Lazard (1994: 81) describes adverbial clauses as “required as part of the communicative target”, but not from the point of view of grammatical agency. While it is often difficult to distinguish the range of adverbial clauses between the narrow target of the verbal phrase and the larger target of the whole clause, they are detached constructions that create an external entity to the predication by their syntactic position, but internal to the utterance. They connect portions of speech without necessarily involving their predicate in a syntactic relation of subordination (Muller 2006). From the point of view of utterer-based grammar, they are seen as performing secondary specification on predications. While essential notions (*i.e.* subject, verb, complement) are tied to the predication by “main” clauses, adverbial clauses mainly give stability to the referential elements, framing their interpretational range (Wyld 2003). Adverbial clauses belong to the discourse background, related to the predictions of the clause they modify (Dancygier & Sweetser 2000).

4. The interpretational range of initial and final adverbial clauses has been investigated by numerous studies in the discourse literature. Chafe (1976) first describes adverbial clauses as establishing “a spatial, temporal, or individual framework within which the main predication holds”. Thompson and Longacre (1985) argue in favour of their relevant contribution to the structuring of discourse paragraphs. Initial temporal relative clauses are “grammatical signals” indicating the opening of a new discourse unit, which they frame (Brown and Yule 1983; Chafe 1984; Charolles 1997; Longacre 1996; Van Dijk 1977; Virtanen 1992). Thompson (2002) adds that an initial adverbial clause raises a “problem” regarding the expectancies fulfilled by previous discourse segments, and that the following utterances bring solutions. Final adverbial clauses play a more restricted, local role, explicitly unfolding the spatio-temporal scene in which the action described in the previous clause is achieved (Muller 2006).

5. Kuroda (1968) analyses the difference with respect to deep structure, as a contrast between determiners. Le Goffic (1979) distinguishes between five types of relative clauses depending on the identification operations they mark. Larreya (1979) also identifies five types of relative structures drawing on Culioli’s framework of identification. Van den Broeck (1973) replaces the binary distinction with an eight-point scale, going from total “restriction” to total “non-restriction”. The middle point corresponds to occurrences in which the co-text and context do not help clearing up the ambiguity. Thompson (2002) breaks out of the traditional grammatical frame, no longer regarding the class of relative clauses as subordinate structures, but as pertaining to conjunction phenomena.

6. While the functional distinction between continuation appositive relative clauses (moving the discourse on and contributing to the foreground) and comment appositive relative clauses (bringing background information in discourse) is widely accepted (Combettes 1992; Lambrecht 1998; Holler 2005; Looock 2007), a recent study (Lytvynova and Dao 2014) calls it into question, asserting that none of these two categories can be likened to autonomous discourse units, from both grammatical and pragmatic points of view. Potts (2005) also describes the content of appositive relative clauses as non-asserted, as it cannot be directly questioned.

7. A text is here considered as a coherent structured semiotic entity.

8. According to Grosz *et al.* (1995) and to Van Kuppevelt (1995), discourse is composed of series of sequences, each one carrying a distinct communicative purpose with specific goals and intentions. Within a discourse sequence, a distinction is made between discourse units fulfilling the main purpose of the sequence, those contributing to any pre-requisite to the fulfilment of the

main purpose (which are thus related to the sequence, and are relevant at a sub-sequential level), and those dealing with intervening, side purposes. These three levels of discourse structure are respectively called main structure, substructure, and side structure. The criterion for the identification of these levels in discourse structure is a potential question from the co-speaker. The main structure corresponds to an appropriate answer to a critical, topic-defining question (e.g. “and then what happened?” in a narrative). Substructures constitute the “goal-satisfying part” of the answer given to the main question (e.g. “how/when did it happen?”), while side structures answer a completely different question, implying a topic digression.

9. The first column gives the number of constructions out of 40 that shows each feature in each segment in the sequence. The total column gives the number of features present in sequences (L+Sc+R) that contain an Appositive Relative Clause. The last column gives the percentage of appositive relative clauses showing each feature out of the total 40. An asterisk (\*) signals a statistically significant result ( $p < .05$ ).

10. The table follows the reading model of Table 1.

11. The table follows the reading model of Table 1, except the first column (which gives the number of gestures showing each feature per segment) and the last column (which gives the percentage of the gestures in appositive relative clauses out of the total of gestures in the sequence –L+Sc+R).

12. The table follows the reading model of Table 1, but concerns adverbial clauses. The total column gives the number of features present in sequences (L+Sc+R) that contain an Adverbial Clause. The last column gives the percentage of adverbial clauses showing each feature out of the total 40.

13. The table follows the reading model of Table 4 (adverbial clauses).

14. The table follows the reading model of Table 4, except the first column (which gives the number of gestures showing each feature per segment) and the last column (which gives the percentage of the gestures in adverbial clauses out of the total of gestures in the sequence –L+Sc+R).

15. The table follows the reading model of Table 1 and Table 4, but concerns restrictive relative clauses. The total column gives the number of features present in sequences (L+Sc+R) that contain a Restrictive Relative Clause. The last column gives the percentage of restrictive relative clauses showing each feature out of the total 40.

16. The table follows the reading model of Table 7 (restrictive relative clauses).

17. The table follows the reading model of Table 7, except the first column (which gives the number of gestures showing each feature per segment) and the last column (which gives the percentage of the gestures in restrictive relative clauses out of the total of gestures in the sequence –L+Sc+R).

18. The first track shows the speech transcription in tone-units, the second transcription track shows segments –L, Sc– in the sequence, the third transcription track gives Momel’s corrected F0 values in Hz, and the fourth transcription track shows Intsint’s coded values.

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## ABSTRACTS

Based on a video recording of conversational British English, this paper tests within the framework of Multimodal Discourse Analysis whether several different subordinate structures all

express background information. Subordinate constructions have been described in syntax as dependent structures elaborating on primary elements of discourse. Although their verbal characteristics have been deeply analysed, few studies have focused on the articulation of the different communicative modalities in their production or provided a qualified picture of their informational input. Beyond showing that subordinate constructions express different types of prominence, the results suggest that the creation of focalisation mainly relies on gestural cues in these constructions. Changes in the modal configuration throughout the sequence suggest modalities are dynamic and flexible resources for expressing background or foreground information in subordinate constructions relatively to their syntactic type.

À partir d'un corpus vidéo de conversation spontanée en anglais, notre étude s'attache à déterminer dans le cadre de l'Analyse de Discours Multimodale si différents types syntaxiques de constructions subordonnées expriment tous de l'information d'arrière-plan. En syntaxe, les constructions subordonnées sont décrites comme des structures dépendantes, qui spécifient ou élaborent l'information de premier plan dans le discours. Si de nombreux travaux se consacrent à leurs caractéristiques verbales, peu d'études choisissent d'examiner l'articulation entre les différentes modalités communicatives lors de leur production, et de fournir une vision plus nuancée de leur apport informationnel. En montrant que les constructions sous étude n'expriment pas les mêmes types de *foci* selon la façon dont les locuteurs utilisent les modalités prosodique et gestuelle pour exprimer plus ou moins de proéminence, les résultats suggèrent que la création de focalisation s'appuie majoritairement sur des indices de nature gestuelle. Des changements dans la configuration modale au fil de la séquence discursive contenant une subordonnée indiquent quant à eux que les modalités verbale, vocale, et gestuelle constituent des ressources dynamiques et flexibles pour exprimer de l'information d'arrière-plan ou de premier plan, en fonction de leur type syntaxique.

## INDEX

**Keywords:** information structure, subordination, prosody, Multimodal Discourse Analysis, gesture

**Mots-clés:** structure informationnelle, subordination, prosodie, Analyse de Discours Multimodale, gestualité

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