

Languages as Mechanisms for Interaction: Explorations and Repercussions

Workshop at Ghent University
24th -25th of June, 2016

Conference venue:

- Blandijn Campus : Blandijnberg 2, 9000 Ghent: <http://tinyurl.com/hd9hgsp>
- Room 120.083 (2nd floor: <http://www.flw.ugent.be/file/27>)

TIMES	FRIDAY 24 TH JUNE 2016
9:00-9:30	Registration
9:30-10:45	Keynote speaker: Hannes Rieser A Process Algebra Account of Speech-gesture Interaction
10:45-11:15	COFFEE
11:15-11:55	Evie Malaia, Joshua Borneman and Ronnie Wilbur Information-Carrying Capacity of Sign Language Measured by Fractal Complexity of Motion
11:55-12:35	Sam Duffy and Patrick Healey Transitions in Musical Interaction
12:35-14:00	LUNCH
14:00-14:40	Christine Howes, Mary Lavelle, Pat Healey, Ellen Breitholtz, Julian Hough and Rose McCabe Gesture, Self-Repair and Reasoning in Schizophrenia
14:40-15:20	Simon Dobnik Towards a Computational Model of Spatial Perspective Taking
15:20-16:00	David Schlangen There's more than one way to be wrong: Outlines of a Model of Justification and Clarification of Situated Reference
16:00-16:30	COFFEE
16:30-17:10	Robin Cooper Paderewski and Dialogue Interaction
17:10-17:50	Stephen Jones An Incremental Approach to the Syntax-Prosody Interface in Korean
17:50-18:30	Ethan Sherr-Ziarko and Jieun Kiaer Prosody-Sensitive Locality in Efficient Structure Building: The Case Study of Interveners in English Phrasal Verbs
19:00:-...	Workshop dinner at Coeur d'artichaut

TIMES	SATURDAY 25 TH JUNE 2016
9:30-10:10	Pedro Gras Interactional Features in Construction Grammar(s): A Case Study on Spanish Insubordinate Clauses
10:10-10:50	María Sol Sansiñena The Organization of Discourse Units in Colloquial Spanish: A Study on Complement Insubordination, Semi-insubordination and 'Sociation'
10:50-11:10	COFFEE
11:10-11:50	Eleni Gregoromichelaki and Ruth Kempson Language as Process and Practice: Developing a Grammar for Interaction
11:50-12:30	Hannah Gibson A Dynamic Approach to the Grammaticalisation of Bantu Auxiliary Constructions: Context and Change
12:30-14:00	LUNCH
14:00-14:40	Stergios Chatzikyriakidis Languages as Mechanisms of Interaction: The Case of Weak Object Pronouns
14:40-15:20	Miriam Bouzouita Fronted Past Participle Constructions in Old Spanish: A Dynamic Approach to Auxiliary Placement Variation
15:20-15:50	COFFEE
15:50-17:00	Workshop discussion

A Process Algebra Account of Speech-gesture Interaction

Hannes Rieser
(Bielefeld University)

The talk starts from the corpus-based observation that gestures are semantically related to the speech they accompany. In light of this observation, the question arises how they interact with speech and how this interaction can be modelled. Virtually all gesture research assumes that gestures have form and meaning. Following Kendon and McNeill, a gesture's structure is characterised by the three consecutive stages preparation, stroke, and retraction. The stroke extends over a time span measured in systematic annotation. Only the gesture's stroke must be present to represent a gesture; the meaning of a gesture resides in its stroke. Speech meaning and gesture meaning have different coverage. The expressive power of gestures is limited: although sequences of speech-accompanying gestures arise in multi-modal dialogue,

there are rarely full gestural propositions or dialogue acts, so there is hardly ever purely gestural discourse. When interacting with speech information, gestures do not perfectly synchronise with their rated semantic coordination point in speech. They can come before it, after it or overlap it. Sometimes gesture information is totally independent of speech information, thus providing additional content as in the example sketched below. In the talk, especially this last case is taken as evidence for the independence of the gesture system from the speech system and will largely determine the style of modelling. As a consequence, the description of speech-gesture coordination cannot be given fitting the gesture meaning

representation into the speech meaning representation in some naïve compositional way. Doing so could easily violate the independence of gestural information and unduly regiment natural data; especially its non-perfect synchronisation with speech would then escape reconstruction. Motivated by corpus data and concentrating on referential and iconic gestures, I propose to view gesture and speech as independent processes which interact if it is semantically apt, more technically, if they fit type-wise. Seen from one point of view, speech is gesture's main companion: gesture may offer its information to speech and speech may take it up. If taken up, we get multi-modal information, information assembled from different sources. If rejected, the gesture stroke can be held waiting for a more appropriate communication opportunity, which, however, could fail to arise. In this case, the gesture speech coordination resembles turn exchange in dialogue. There are also more subtle types of communication where speech provides the immediate context for gesture interpretation and the result then again integrates with speech.

The shift to considering communicating processes necessitates the move to a methodology working with a process ontology instead of a purely domain-of-objects one. The one I will use is the ψ -calculus, a recent extension of Milner's π -calculus, belonging to the field of Process Algebra. The ψ -calculus works with processes (also called agents) and data structures which can be transmitted among agents via structured channels using an output-input facility. Essentially, gesture and speech are viewed as such agents in the talk. ψ 's syntax, operational semantics and formal properties are introduced as needed. In the end, ψ 's output-input facility is taken to model speech-gesture coordination. Due to the grammar integrated, the logic of the data structures involved and the logic of ψ we arrive at a complex hybrid tool. The example treated is a portion of a multi-modal dialogue between a route-giver and a follower, the follower gesturing a winding property and then uttering "street" so that we get the multimodal meaning of winding street. He holds the gesture information across several turns thus keeping it on the agenda for both communication participants.

References

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Information-carrying Capacity of Sign Language Measured by Fractal Complexity of Motion

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Use of language for information transfer is characteristic of human societies. Babies can recognize the information-carrying channel during the language acquisition period: for example, hearing babies of deaf parents try to babble using their hands, likely because they recognize parental hand motion as informative (Petitto et al., 2001). But how does the language-ready brain of a deaf baby with no prior auditory exposure recognize a linguistic component in the visual input?

We take the first step toward characterizing the universal communicative properties of the linguistic signal by approaching it from the point of information transfer. The quantifiable measure of information is entropy: the uncertainty involved in predicting the next data point in a time series (Shannon, 1948). In the auditory domain, where linguistic signal is described as a series of sounds with specific characteristics, the world languages are described as having modulation spectra of moderate fractal complexity ($1/f$). However, the underlying properties of the visual linguistic signal allowing babies to identify a specific channel/ modality as carrying information/communicative have not been described.

Based on previous work identifying motion as key component in syntax and semantics of sign languages (Brentari, 1998), we characterized the information-carrying property of sign language in terms of fractal complexity of motion. The comparison between video clips of hand movements in everyday activities (e.g. Lego building) and hand motion in ASL narratives indicates significantly higher fractal complexity in sign language (Fig. 1).

These results suggest that more information can be transferred using the hand movement in ASL vs. that in everyday motion. The findings characterize a fundamental, modality-independent property of communicative interaction. The quantitative approach to analysis of communication is a starting point for development of more sophisticated methods of diagnostics for sign language development and fluency, as well as understanding of language as mechanism for interaction.

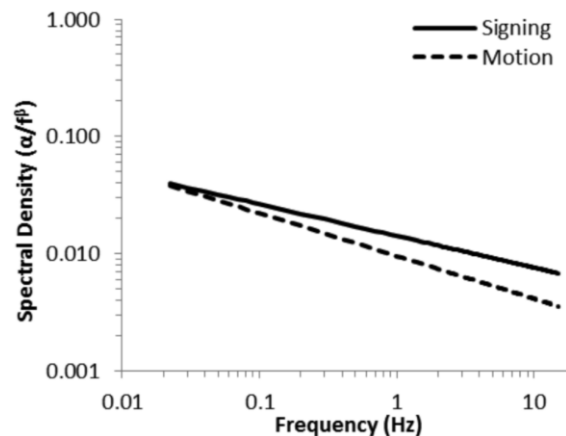


Figure 1. The log-log plot of the fractal complexity in the spectral density of optical flow in everyday motion (blue) and sign language (red) videos for frequencies between 0.01 and 15 Hz.

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Transitions in Musical Interaction

Sam Duffy and Patrick Healey
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Timing at the transition between speakers is an essential part of the organisation of turn-taking in conversation. The preference for just one person to talk at a time requires participants to work together to minimise gaps and overlaps (Sacks, Schegloff, & Jefferson, 1974). The ability to make split-second speaker transitions suggests the ability to project possible end points in a speaker's turn, where the listener then has an opportunity to take the floor (Levinson, 1983). The timing of the transition between speakers is sometimes referred to as the 'turn offset'; reported as positive if there is a gap or pause between speakers, and negative if there is an overlap. Longer pauses, and overlaps do occur, but a positive turn offset in the order of 0-200ms is generally perceived as a smooth turn transition (Heldner & Edlund, 2010; Stivers et al., 2009).

Examining transitions in a one-to-one instrumental music lesson, the inclusion of musical contributions to lesson dialogue introduces an additional consideration. Both participants usually have a musical instrument, the student to produce musical contributions for assessment, and the tutor for the purpose of demonstration. Musical contributions and verbal turns are intertwined. When a problem in the student's performance is identified, they work together with the tutor in detail on the part of the music where the problem has occurred (Duffy & Healey, 2013). These short fragments of music are managed conversationally and even take on some of the characteristics of conversational turns (Duffy & Healey, 2014).

It is possible to identify four types of transitions to a new 'speaker' in a music lesson; talk following talk, talk following play, play following talk, and play following play. Whilst turn transitions from talk, to either talk or play, were found to observe offsets of the same order as those reported; transitions from play, to either talk or play, did not. It was found that turns following play tended towards a short overlap. Unpacking this further, the net turn offset differed depending on participant. When the student talked following tutor play, the net turn offset was a short pause of an order of magnitude consistent with that reported for naturalistic conversation. However when the tutor talked or played following student play, this tended towards an overlap. In other words, there was a preference for the tutor to talk or play over

student play at turn transitions. Fine-grained analysis of the period immediately prior to tutor 'talk-over-play' overlap reveals non-verbal cues by the tutor, in preparation for this bid for the floor, which are available to the student. In the context of the music lesson, the turn-offset commonly seen in naturalistic conversation is adjusted to accommodate the tutor's bid for the floor to initiate discussion of a problem in the student's performance.

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Gesture, Self-repair and Reasoning in Schizophrenia

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Successful social encounters require mutual understanding between interacting partners, and patients with schizophrenia are known to experience difficulties in social interaction. It is well known that world knowledge plays an important part in our understanding of pragmatic phenomena that are crucial for our ability to interact successfully with other human beings, and several studies have shown that in general people compensate for verbal difficulties (indexed by self-repair) by employing additional multimodal resources such as hand gesture (Seyfeddinipur and Kita, 2014) and head nods (Healey et al., 2013).

Many different aspects of communicative difficulties in patients with schizophrenia have been observed. For example, patients with schizophrenia may have difficulty monitoring their own verbal behaviour (Johns et al., 2001), display fewer hand gestures when speaking and have mismatches between gesture and speech (Millman et al., 2014). Patients also display differences in the way they reason in a number of decision making and logical reasoning tasks (Dudley and Over, 2003). However, most of this work relies on testing individuals and fails to take interaction into account. Recent work (Lavelle et al., 2013) shows that in interactions involving patients with schizophrenia, while patients non-verbal communicative behaviour is different to that of healthy participants, their interlocutors also adapt their non-verbal behaviours, despite being unaware they were interacting with a patient.

We present some data from discussions of the balloon task that show that during social interaction, schizophrenia patients repair their own speech less, and come up with fewer arguments regarding who to throw out of the balloon. In addition, although increased hand gesture is correlated with increased self-repair in healthy controls, there is no such association in patients with schizophrenia, or their interlocutors. Control participants in dialogues with a patient also come up with fewer arguments than those in dialogues without a patient, suggesting that controls interacting with patients also moderate their reasoning behaviour, in line with the non-verbal findings from Lavelle et al. (2013). This suggests that multimodal and reasoning impairments are not merely seen on an individual level but may be a feature of patients' social encounters.

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Towards a Computational Model of Spatial Perspective Taking

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In order to capture meaning and reference of such spatial descriptions such as “to the left of” and “above” one needs to include (i) perceptual knowledge obtained from scene geometry, (ii) world knowledge about the interaction of objects involved, and (iii) shared knowledge that is established as the common ground that includes both the history of dialogue and perceptually attended scene. A good example that demonstrates the interaction of such information is the assignment of perspective which determines the orientation of the frame of reference frame (FoR). For example, the same table may be described to be “to the left of the chair”, “to the right of the chair”, “behind the chair” or “South of the chair”. The FoR, may be described linguistically “from your view” or “from there” but in a free, spontaneous conversation it is frequently omitted. This means that conversational participants must adopt certain strategies to recover it. For example, they may rely on alignment in the dialogue common ground, or the perceptual properties of the attended scene (salient objects) or on some principles of interaction, for example conversational roles such as information giver and information receiver. In this presentation we describe

three lines of work which are leading towards building a computational model that would capture the dynamics of the human FoR assignment for situated artificial agents. Such models resolve considerable ambiguity that agents are facing when interpreting and generating spatial language as well as they lead to a more natural, human-like dialogue.

In the first line of work we use a constrained 3-d virtual environment setup as an online experiment through which we sample interaction data with human participants. The system elicits interactions and records human responses. We investigate what is most likely FoR to start the interaction with (in this visual and discourse environment), whether priming with a particular FoR develops into alignment in the next turn, whether alignment is persistent over several turns or it degrades, and the effects of the change in the roles of information giver and information receiver. This

allows us to build a statistical model for interpretation and generation of FoR over short stretches of dialogue which we subsequently test in the reversed interaction with humans.

In the second line of work we investigate strategies of FoR assignment in free, open dialogue between two humans in a similar virtual environment. The results of the dialogue corpora show that humans do align FoR locally over several (1-3) turns but there is no global preference for assignment of particular FoR. We isolate several conversational games where the dynamics of the FoR assignment appears to be linked to other properties of interaction between the agents, for example whether they are focusing on a particular part of the scene or whether they are identifying individual objects scattered over the entire scene. It follows that alignment is consistently used as a strategy but there are other factors that trigger the change in FoR.

In the third line of work we examine whether a selection/change of the FoR could be predicted from the (textual) dialogue data. We hypothesise that this would contain sufficient information about the dialogue games that conversational participants are engaged in and to which the FoR assignment appears to be linked. Through quantitative data analysis we attempt to identify features that are predictive of FoR changes and which would be useful for annotating and extending our corpus described above. The overall goal of this corpus is to provide a training dataset for machine learning that would allow us to build a model of FoR assignment. Finally, we also investigate a suitability of different machine learning models for the task.

**There's more than one way to be wrong:
Outlines of a Model of Justification and Clarification of Situated Reference**

David Schlangen
(Bielefeld University)

Hilary Putnam (1973) famously claimed to be able to talk meaningfully about elms, despite being unable to tell whether a given tree might be an elm or a beech. If we follow Putnam and allow for this possibility, then being able to identify a candidate object as falling under the extension of a term (or not) is not a necessary condition of being able to use that term meaningfully. Putnam defers to a division of labour here, and deems it sufficient that the speaker thinks that some expert could make this distinction. However, we'd probably have second thoughts about their elm-competence if when presented with a picture of a toy monkey and one of an elm, our test person could not make a choice as to which might be the elm. It seems thus that one's use of a term must be constrained at least by rough taxonomic knowledge: We'd allow Putnam to confuse types of trees, but not trees with flowers (and probably not even coniferous with deciduous trees). It's not enough to know that one could call on an expert to make the distinction, the question to ask must also be reasonable enough for the expert not to hang up on one's call.

But what if the speaker is a computer system whose knowledge about the world is shaky and potentially structured in a way that's different from other language users? We present the outlines of a model of incremental situated reference, whose basis is a bimodal representation of lexical meaning, with a referential component that handles naming and recognition, and an inferential component that handles taxonomic relations. (This model of lexical semantics is inspired by Marconi (1997).) The knowledge used by these components is acquired in interaction (or by observing interactions), and, crucially for our purposes here, can provide justifications for decisions, and consequently be modified and adapted in interaction. The model is implemented in a chat system that can identify objects in real-

world images, can justify its decisions and learn from being corrected. We observe interesting patterns of teaching and learning behaviour in interactions with naïve users.

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Paderewski and Dialogue Interaction

Robin Cooper
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Kripke (1979) introduces the problem of Peter who does not realize that the pianist Paderewski is the same person as the statesman Paderewski as a puzzle about belief. Using TTR (Type Theory with Records, Cooper, 2005a,b, 2012; Cooper and Ginzburg, 2015; Ginzburg, 2012), we will present the puzzle in terms of the updates of information states in dialogue when associating an individual with a proper name and suggest that the puzzle about belief arises through routine dialogue processing. From a dialogical perspective the phenomenon does not seem to be so puzzling, provided you have an appropriately dialogue oriented account of proper names in a theory where the semantics of natural language is in a constant state of flux as a result of interaction. Given certain constraints on interaction, proper names will in general uniquely refer within a dialogue but not necessarily across dialogues. We will discuss the semantics of belief reports in terms of matching the interpretation of the belief report complement against a type representing the long term memory of the subject of the belief report. This gives a natural account of the puzzle in terms of the mental state resulting from interaction.

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An Incremental Approach to the Syntax-prosody Interface in Korean

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Lexical Functional Grammar (LFG) (Bresnan, 2001) is an established constraint-based theory. Formal accounts of the syntax-prosody interface have been developed using LFG for both English (Mycock & Lowe, 2013) and Korean (Jones, 2015), focusing particularly on information structure. However, these accounts are declarative rather than incremental, and so do not address the widely-held psycholinguistic assumption (e.g. Hickok, 2013) that language comprehension processes include the prediction of meaning before an utterance is complete, nor the intuition that elements of information structure are part of this prediction.

This presentation builds on previous work on Korean questions containing content pro-forms, e.g. *nwukwu* 'who/someone', *encey* 'when/sometimes', which combine the functions of wh-interrogatives and indefinites in English. The dual function of these words leads to ambiguity between open and polar questions and, in some speech styles, to further ambiguity between questions and declarative statements.

- 1) *acwumeni-ka nwukwu-lul manna-syeoss-eyo*
auntie-SBJ someone/who-OBJ met-SH.PST-POL
- a. 'Auntie met someone.'
b. 'Did auntie meet someone?'
c. 'Who did auntie meet?'

Jones (2015) provides an account of the disambiguation of the sentence in (1). The difference between the statement (1a) and the question readings (1b,1c) is indicated by the specific sentence-final tonal patterns HL% and LH% respectively, and the polar question (1b) is distinguished from the open question reading (1c) by differential prosodic expression of focus, associated with the feature EXPANDED PITCH RANGE. Grammatically, the two question readings are distinguished by scope of focus, but the prosodic expression of focus does not cover the entirety of the focused syntactic constituent. However, in each case, the right edge of the focused constituent is aligned with the right edge of prosodic expression of focus. Accordingly the principle of Interface Harmony (Dalrymple & Mycock, 2011) holds.

This paper describes a novel incremental analysis of the data at a syllabic level of granularity. Working on the assumption that Interface Harmony will ultimately hold, it is possible to identify the contribution of prosody to the predictions that are generated and constrained during utterance processing. Implications of this analysis are discussed, including the potential to develop a unified framework for the analysis and integration of the various contributions of prosody (e.g. Kiaer, 2011), scrambling (Choi, 1999) and morphology (e.g. Lee, 2016), to Korean information structure.

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Prosody-sensitive Locality in Efficient Structure Building: The Case Study of Interveners in English Phrasal Verbs

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In this paper, we argue that the prosody-sensitive locality plays the key role in incremental therefore efficient structure building. We show this by examining phrasal verb constructions in British National Corpus (BNC). While previous theories of locality (e.g. Hawkins, 2011) have focused largely on syntactic structures and word counts in intervening items as the illustrative factors of domain-minimisation, our evidence from the speech in the BNC indicates that a higher-level theory of locality is necessary in order to encompass all the relevant interactions. The patterns observed in the articulation rate data appear to support the initial hypothesis of intervener duration being sensitive to prosodic factors, particularly articulation rate. It appears that, at least where phrasal verbs are concerned, the goal of domain-minimisation is not necessarily realized directly through a hard restriction on the duration of intervening items, but through an effort to increase the articulation rate – and thereby decrease the duration – of any intervening items. More specifically, it appears that prosodic factors such as duration (syllable count in this case), and articulation rate must be considered as significant in any such theory, as they appear to be a significant factor – if not the main one – in determining the possible lengths of intervening items. The pattern observed suggests that while an increase in articulation rate as the intervening item increases in duration indicates a desire to minimize the domain of the phrasal verb, this desire is limited by the speaker's cognitive processing abilities.

Therefore the main conclusion drawn from this study is that any restrictions on the length of intervening items is not adequately explained strictly by word count or syntactic structure, but rather must take into account the relationship between articulation rate, domain-minimisation, and processing difficulty. Although the lack of 9 and 10 syllable tokens in the BNC means that there is not likely to be strong statistical evidence of the downturn in articulation rate at that boundary, the fact that a consistent pattern suddenly breaks down at that point, and the fact that there are so few occurrences of utterances at or past that syllable-count boundary in the reality of spoken English supports the theory that lengths of intervening items are governed at least partially by a speaker's ability to increase articulation rate to aid in domain minimisation.

While the findings of this study do in principle support the theory of locality put forth by Hawkins (2011), they also mean that any such theory of locality should also be sensitive to prosodic factors. While theories that state that there is a restriction on the length of intervening items due to a desire for domain-minimisation do not appear to be incorrect, they also do not adequately explain how these restrictions are realised in speech, as explanations that rely on word counts do not seem sufficient or accurate based on the lack of a significant relationship between word count and articulation rate.

Further work on the subject would likely require a more controlled lab experiment in order to elicit a greater number of tokens containing 9 or more syllables, and to allow further analysis of acoustic factors such as stress, f0, and vowel quality which could not be examined in this study.

Interactional Features in Construction Grammar(s): A Case Study on Spanish Insubordinate Clauses

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One of the main contributions of constructional approaches to language is to have shown that conventional pragmatic information is not only tied to (simple) discourse particles but also to complex (semi-)schematic patterns (Fillmore, 1996). In this light, the Spanish form *que* 'that' constitutes an interesting case study. In addition to its function as a subordinator marker (1), *que* can head a main clause (2). This behaviour is consistent with the phenomenon of insubordination (Evans, 2007), i.e., the use of typical resources of subordination in independent clauses.

- 1) a. Este es el libro que te recomendé. / 'This is the book (that) I recommended you.'
b. Me dijo que vendría hoy. / 'He told me (that) he would come today.'
- 2) - Tienes que llamar al banco. / 'You have to call the bank.'
- Que ya he llamado. / 'I have already called.'

The literature has identified several meanings/functions for complement insubordinate constructions in Spanish, such as third person imperatives, optatives, evaluative modality, signaling relevant information, and quotative evidentiality, among others. This presentation will address the formal and interpretative features that give rise to quotative interpretations of complement insubordinate constructions, as in examples (3-5):

- 3) - Voy a cenar. / 'I'm coming to dinner'
- ¿Que vienes a cenar? 'That you are coming to dinner?'
- 4) - Voy a cenar. / I'm coming to dinner.
- ¿Qué? / What?
- Que voy a cenar. / 'That I'm coming to dinner.'
- 5) Ha llamado tu hijo. Que viene a cenar. / 'Your son called. That he's coming to dinner.'

Focusing on quotative interpretations, recent generative approaches (Etxepare, 2008; Rodríguez Ramalle, 2008; Demonte and Fernández Soriano, 2009) have related quotative meanings with the specific position that the initial complementizer occupies in the left periphery of the sentence. However, as I will argue, quotative interpretations only arise in specific interactional contexts. Therefore, the goal of this paper is to identify the relevant interactional and formal features that give rise to quotative interpretations of complement insubordinate constructions in Spanish.

This study is based on the analysis of manually extracted examples (aprox. 130 tokens) from the Val.Es.Co. corpus (Corpus de conversaciones coloquiales, Briz & Val.Es.Co., 2002), containing

spontaneous conversations among adults from Valencia (Spain). Each occurrence is analysed taking into account grammatical (TAM, person and number, sentence modality), semantic-pragmatic (modal values, illocutionary force, connective value) and interactional factors (initial vs. mid position in the intervention, initiative vs. reactive intervention, preferred vs. dispreferred response). The grammatical and interactional analysis is confronted with independent research on the prosody of these constructions (Roseano et al., in press; Elvira, in prep.). Theoretically this paper is in line with constructional-interactional approaches to grammar (Fillmore, 1989; Linell, 2009; Gras, 2011, 2012, in press; Gras & Sansiñena, 2015).

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The Organization of Discourse Units in Colloquial Spanish: A Study on Complement Insubordination, Semi-insubordination and ‘Sociation’

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This paper addresses the phenomenon of ‘semi-insubordination’ (Van Linden & Van de Velde 2014) in Spanish and discusses it against related phenomena, namely complement insubordination (Evans 2007) and the so called ‘causal *que*’. Specifically, it discusses the relations that are established between *que*-clauses and immediately preceding elements in the conversational turn, delimiting turn-constructural units (Ford & Thompson 1996) and minor discourse units (Cabedo Nebot 2014).

In Spanish semi-insubordinate constructions the *que*-clause functions as the propositional content of a modal element expressing (i) subjective evaluation of the content of the proposition, as in (1), or (ii) evidential or epistemic qualification of the truth of a proposition. The interjection derived from the noun *lástima* ‘pity’ used in (1) preceding a *que*-clause in the subjunctive mood develops a factive or evaluative component. The pattern <element + *que*-clause> here constitutes one turn constructural unit.

- 1) *Lástima que Ronaldo fallara esos dos goles.*
‘Too bad [that] Ronaldo missed those goals’ (CREA oral, Supergarcía, Cadena COPE, Spain)

The empirical evidence shows that there are diverse types and degrees of (in)dependence available for constructions with initial unstressed *que* between the traditional use of a subordinate clause as part of a complex sentence and the ‘main clause’ use of a formally subordinate clause (Sansiñena 2015; Sansiñena, De Smet & Cornillie 2015). The purpose of this paper is to account for the distribution and functional properties of the semi-insubordinate construction as in (1) above, and to disentangle this construction from complement insubordinate *que*-clauses preceded by prefaces expressing attitudinal, interpersonal or metadiscursive values, as illustrated in (2), and the so-called ‘causal *que*’, a case of sociation (in the spirit of Lehmann 1988) in which an element with illocutionary force precedes a *que*-clause that functions as a justification of the previous speech act, as in (3). In order to do so, the limits of discourse units and turn constructural units will be identified and described on the basis of prosodic and semantic-pragmatic features.

- 2) J04: *gilipollas que es fácil (.) haces así luego para allá*
J04: ‘moron [QUE] it’s easy (.) you do like this then to that side’ (MALCE2-04A, COLA M)
- 3) G01: *cuidado (.) que se cae*
G01: ‘be careful, [QUE] it will fall’ (MAESB2-01C, COLA M)

Based on the analysis of conversational data, the following questions will be resolved: first, what are the syntactic relations between the preceding element and the *que*-clause? Second, by virtue of those relations, what types of elements can precede the *que*-clause? Finally, what are the precise boundaries of the objects under analysis? To answer these questions it is necessary to clarify whether the combination of the procedural meaning of *que* with the meaning of a preceding (modal) element has a compositional or unitary structure. To this end, the analysis makes use of formal and semantic criteria. Attention is paid to the meanings expressed by semi-insubordinate constructions, their near equivalence to plain *que*-clause alternatives – if any –, the restrictions on the meaning of the *que*-clause imposed by the preceding element, the potential for an intonation break between the *que*-clause and the element

that precedes it, and the type of syntactic relation established between them. Instances of the constructions under examination were collected by querying the components from Madrid, Santiago de Chile and Buenos Aires of the COLA and the oral subcorpus of the CREA for *que*-clauses constructed with verbs in both subjunctive and indicative mood in non-initial position in the turn, manually selecting the relevant cases and filtering out noise.

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Language as Process and Practice: Developing a Grammar for Interaction

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Informal conversation is full of “fragmentary” utterances, with seamless shifts between speaker and hearer roles. Arguably, in conversation, any linguistic dependency can be distributed across more than one participant, the strings, contents, and speech acts performed emerging incrementally and without any one of the participants having envisaged in advance the result of the interaction. The problem is universal but appears particularly acutely in languages where word order is relatively free, adjusted according to processing considerations (e.g. Modern Greek). In such languages, in addition, verb words include a lot of information like anaphoric subjects, tense/mood, and anaphoric objects (clitics) while NPs have case morphemes which indicate semantic information. As a result, the syntactic practices of such languages can allow much greater flexibility in the expression of semantic contents and the performance of context-dependent speech acts.

Most standard grammar formalisms have problems accounting for such data because the concept of ‘constituency’ and ‘syntactic domains’ embodied in such formalisms is entirely independent of performance considerations. This prevents a natural explanation of how suspended and resumed dependencies can be licensed online while speakers/hearers not only construct and process input but also predict upcoming continuations at various levels. On the other hand, Conversational Analysis accounts are also unable to account for the whole range of such data since they rely on a notion of

Transition-Relevant-Places (TRP), defined on the basis of the grammar of English, for the explication of the normativity that underlies the significance attributed to such switches. However, in languages like Greek, even more obviously than in English, interruptions, overlaps, continuations, etc. do not necessarily occur close to the boundaries of what have been characterised as Transition-Relevant-Places (TRP). All this shows that grammatical licensing and semantic processing is performed incrementally subsententially online with the interlocutors evaluating their own and the other's contributions according to contextual parameters that can get reset at least at each word utterance event (Gregoromichelaki, to appear). Therefore, these contextual dependencies and resettings, which affect not only linguistic content but also linguistic form, need to be represented within the grammar formalism so that it is possible to model how each interlocutor's contribution is subsententially integrated and steering predictions of upcoming linguistic and non-linguistic contributions.

Starting from these premises, we will argue that explaining this type of human behaviour necessitates viewing natural language as a type of "skill" employing routinised domain-general mechanisms for incremental and dynamic interaction with others and the environment. We will provide a sketch of Dynamic Syntax in which underspecification and incremental time-relative update of meanings and utterances constitute the sole concept of "syntax", and the basis for modelling core phenomena of discontinuous dependencies, eliminating the need to posit encapsulated context-blind and abstract linguistic mechanisms as an explanation for human linguistic knowledge.

Confirmation of this perspective lies in the demonstration of how the interactive effects of conversation follow immediately, without any need to invoke higher-order inference. Accordingly, we will propose that language needs to be seen as an embodied practice, directly inducing real-time processes of context-relative interaction with others, a conclusion relevant to the ongoing debates in cognitive psychology about representations, processes, and interactivism (see e.g. Bickhard 2009, Anderson 2014). On this model of a speaker's ability, "competence" is nested within an over-all process-oriented model of cognition.

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A Dynamic Approach to the Grammaticalisation of Bantu Auxiliary Constructions: Context and Change

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A number of East African Bantu languages exhibit a word order alternation in which the position of the auxiliary with respect to the main verb appears to be highly context-dependent. Consider the examples below from the Tanzanian Bantu language Rangì, where the auxiliary appears post-verbally in declarative main clauses (1) and an attempt at pre-verbal placement in such contexts results in ungrammaticality (2). However, in interrogatives and negative constructions the pre-verbal placement of the auxiliary is obligatory (3), (4).

- 1) Háánd-a tw-íise mi-disi

- plant-FV SM1stpl-AUX_FUT1 4-banana.plant
 'We will plant banana plants.'
- 2) *Ndí-rí terek-a chá-kurya.
 SM1stsg-AUX cook-FV 7-food
 Intd.: 'I will cook food.'
- 3) Ani á-rí wúl-a ma-papai a-ya?
 who SM1-AUX buy-FV 6-papaya DEM-6
 'Who will buy these papayas?'
- 4) Nííni sí ndí-rí dóm-a na Kondoá təkə.
 1stsg.PP NEG SM1stsg-AUX go-FV CONN Kondoá NEG
 'I will not go to Kondoá.'

Rangi is not alone in exhibiting this word order alternation. Five other languages spoken in Kenya and Tanzania also exhibit auxiliary-based constructions which exhibit a constituent order alternation in a range of contexts. Languages vary with regards to the number of tenses which exhibit this order, the form of the auxiliary (or auxiliaries) which participates in the construction, as well as the contexts in which an alternation, i.e. in interrogative clauses, negation and/or with fronted (and thereby focal) elements.

This paper explores the way in which information in auxiliary constructions is built up incrementally, with the lexically-specified contributions made by the individual elements in the clause highly context-dependent. The challenge is how best to capture the micro-variation found in this subset of languages with regard to this construction type. Drawing on the concepts of underspecification and attendant update the paper addresses questions such as: What is the best way to model the word order alternation(s)? What is the best way to model the restrictions on this alternation? What are the possible paths of grammaticalisation which may have given rise to micro-variation apparent in this subset of languages? And, how best to capture the micro-variation?

The paper employs the tools of Dynamic Syntax to explore these issues with a view to developing a parsing-oriented approach to micro-variation and the establishment of propositional meaning in context. In this way, the paper contributes to our understanding of variation on a fine-grained level, as well as the formal mechanisms available to capture this.

Languages as Mechanisms of Interaction: The Case of Weak Object Pronouns

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In this talk, I look at the behaviour of clitics, i.e. weak object pronouns, in Greek in a dialogue setting. Pronominal anaphora is a classic case where one finds collaborative building of structure where the antecedent may be recovered irrespective of who was responsible for providing it in the first place. There are three ways that this can be done: a) anaphorically, b) cataphorically and c) indexically. All these different cases can easily arise in a dialogue setting (examples from Kempson et al. forthcoming):

- 1) A: He B: or she A: yes, they would do their utmost to cause us trouble.

- 2) A: It's obvious B: that you are wrong.
- 3) [Context: A is contemplating the space under the mirror while re-arranging the furniture and B brings her a chair]
A to B: That's/It's perfect. Thanks.

The same picture arises in languages which make use of clitic pronouns like Greek. In these cases as well, we find the same three ways of resolving structure across participants:

- 4) A: Tu milise xtes... B: Tu Giorgu / Tu Giorgu?
him.cl talked yesterday the George / the George
- 5) A: Tu Giorgu oposdipote... B: Tu milise?
the George definitely him.cl talked
- 6) A: Tis... B: Milai tora?
her talk now

Now, a further interesting fact with respect to clitics in a dialogue setting, concerns clitic clusters, i.e. cases where more than one clitic are present. In such situations, it seems that a split is possible within the clitic cluster, as witness the example below:

- 7) A: Irthe o Giorgos xtes ke tis... B: to edose
came the George yesterday and her.cl it.cl gave

What is more, person restrictions associated with clusters in Greek and many other clitic languages (the notorious Person Case Constraint (PCC, see Anagnostopoulou 2003, Chatzikiyiakidis and Kempson 2011 among many others)) have to be respected in split utterances as well:

- 8) A: Irthe xtes o Giorgos ke tu... B: se edose?
came yesterday the George and him.cl you.cl gave

Given these data, I want to discuss whether the anaphoric, cataphoric and indexical resolution of pronouns present on the subsentential level, further turns up on the sublexical morphosyntactic level. To do this, I look at a range of clitic cluster constructions in Greek, in order to see whether this assumption can be maintained or an alternative account where the individual members of the cluster involve separate lexical entries rather than one complex macro of actions for the whole cluster. Furthermore, I discuss the consequences of assuming that resolution is operative on the sublexical level and look at whether this is an assumption we really want to maintain.