The Language into Act Theory: A Pragmatic Approach to Speech in Real-Life

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Abstract

This paper briefly introduces the Language into Act Theory (L-AcT), that proposes a pragmatic framework for the corpus-based collection and analysis of spontaneous speech. The L-AcT methodology takes the utterance (i.e. the counterpart of a speech act) as the reference unit for analysis. A set of large-scale Romance corpora has been collected in accordance with the L-AcT methodology (LABLITA Corpus, C-ORAL-ROM, C-ORAL-BRASIL, Cor-DiAL). Data for each corpus can be compared across languages, since they are built using the same corpus design, which entails a set of variation parameters relevant for representing spontaneous speech and, specifically, its pragmatic variation. LABLITA-C-ORAL corpora are text/sound aligned at the utterance level. Empirical research carried out by LABLITA has verified a systematic correspondence between stretches of speech ending with a terminal prosodic break and the accomplishment of an illocutionary force, thus identifying utterances. Within the latter, a correspondence between chunks separated by non-terminal breaks and information functions has been identified. The IPIC database was created for the cross-linguistic comparison of information structure in Romance languages. With regard to the pragmatic classification of utterances, a working repertory of illocutionary types has been established, induced empirically from pragmatic and prosodic features shared in Romance corpora.

1. Introduction

1.1 The L-AcT Framework

The Language into Act Theory has been in development in Italy since the nineteen-eighties and aims at providing a pragmatic framework for the corpus-based collection and study of spontaneous speech (Cresti 2000). L-AcT focuses on four crucial aspects: a) a corpus building strategy for both the representation of the speech universe and for comparative studies; b) the exploitation of prosody for the identification of the linguistic reference units in the flow of speech; c) the information structure of the utterance; d) illocutionary types in spontaneous speech.

Within the tradition stemming from Austin (1962), L-AcT assumes that the utterance is the counterpart to a speech act and constitutes the primary reference unit for the analysis of speech. Its main innovation is to consider spoken activity as manifested through prosodic devices, specifically with regard to the core aspects of illocutionary force and information structure (IS). Therefore, the processing of prosody is taken as a mandatory step for the identification of both utterances and their information structure, and is achieved through the perceptual evaluation of prosodic breaks.

2. Corpus building

2.1 Collection criteria

The corpus design of the LABLITA resources entails a set of variation parameters that are considered relevant for representing natural interactions in spontaneous speech (Biber, 1988; Mello 2014) and, specifically, its dia-phasic variation (Berruto, 2000), selected to ensure probability of occurrence to the maximum number and variety of speech act types. The recording parameters are: a) informal, non-regulated and formal, regulated turn-taking; b) public, private, family context; c) dialogue, multi-dialogue, monologue exchange; d) public domain (law, religion, business); e) media and telephone production (Table 1). The recording strategy focuses on the acoustic data only, which given the relatively unobtrusive technology used in its recording allows the collection of a broad set of situations and domains, difficult to achieve with more invasive equipment such as for video.

2.2 Resources

Using the aforementioned corpus design framework, LABLITA has archived a resource with high dia-phasic (approx. 950 recording sessions) and dia-stratic (more than 2000 speakers) variation. From this huge collection, an Italian corpus has been derived whose recordings contain approx. 988,000 transcribed words and 107,000 reference units (Cresti et al. forthcoming). The recordings were transcribed in the CHAT-LABLITA format (Moneglia Cresti 1997; McWhinney 2000) and session metadata are in both the CHAT and IMDI format. The orthographic transcriptions (in txt files) are enriched by the tagging of terminal and non-terminal prosodic breaks. Each utterance has been aligned to its acoustic source in XML files, following L-AcT protocol. The text-to-speech synchronization was achieved through WinPitch, which allows real time F0 displacement of large speech excerpts. Beyond the Italian corpus, the L-AcT framework has been deployed and tested in the collection and annotation of comparable Romance corpora: C-ORAL-ROM (Cresti & Moneglia 2005), C-ORAL-BRAZIL (Raso & Mello 2012), Cor-DiAL (Nicolas Martinez 2013). The C-ORAL-ROM resource is a multilingual corpus of the main Romance languages (Italian, French, Spanish, European Portuguese), containing 1,200,000 words, 1,426 speakers, 772 spoken texts, and 123:27:35 hours of speech. The four corpora were collected using the same corpus design for reasons of later comparability.

The C-ORAL-BRASIL resource (2006-2010) was collected by Raso & Mello (2012) in the Minas Gerais metropolitan district using the C-ORAL-ROM sampling and annotation criteria. It presents 362 recorded speakers, 139 spoken texts, 21:08: 52 hours of speech, and 209,000 words, and focuses on informal dia-phasic variation.

2.3 Corpus Design and speech variability

The corpus design parameters of the LABLITA resource capture basic generalizations of the variability of spoken language. We are able to focus on the spoken performance, considering, for instance, basic phenomena such as the middle length of utterances and information units, the

noun-verb ratio, and the percentage of verbal and verbless utterances. Such properties are at the core of the linguistic constructions characterizing speech.

Corpus Variation Parameters			S.	W.	Utt.
Turn taking	Context	Structure of event			
Free Informal	Family Private	Monologue	26	48,606	4,866
		Dialogue MultiDial	141	242,896	46,133
	Public	Monologue	3	3,112	227
		Dialogue MultiDial	41	59,756	11,569
	Telephone	Dialogue	74	23,004	4,445
	Talking Children	Dialogue MultiDial	276	260,595	N.C.
Sub-total			561	637,969	67,240
Regulated Formal	Family Private	Monologue	1	3,139	193
		Dialogue MultiDial	28	53,126	8,582
	Public	Monologue	39	77,442	5,082
		Dialogue MultiDial	53	107,666	14,820
	Broadcast		69	108,553	11,031
Sub-total			190	349,926	39,708
Total			751	987,895	106,948

Table 1: Design of the LABLITA Corpus

The quantitative measures of each of the above phenomena show a systematic variation across textual diaphasic typologies, demonstrating the appropriateness of the corpus design. The Graph in Figure 1 analyses one of the main lexical aspects of speech: that it supposedly records a higher number of Verbs with respect to the written variety (Halliday 1976; Biber 1999). The figure shows however that the Verb vs Noun Ratio follows this prediction only in informal dialogues, and that it actually favors nouns in Formal - Monologic contexts.

From a syntax point of view, the presence of verbless utterances has been considered a very particular feature in speech performances (Blanche-Benveniste 1997); again, however, this feature strongly characterizes informal dialogues, where the ratio of Verbal to Verbless utterances is almost 50/50. Conversely, the number of verbless utterances decreases significantly in Formal contexts and is markedly reduced in Monologues. In summary, one of the relevant parameters turns out to be different to its predicted value for "formal / monologic" and "informal / dialogic" cases, both at the lexical and syntactical levels.

Given that the C-ORAL corpora have been collected and built using the same corpus design, it is worth noting that the quantitative variation of the above phenomena repeats with the textual variation of the four Romance languages and Brazilian Portuguese (Cresti & Moneglia 2005; Panunzi & Mittman-Malvessi 2014; Moneglia & Cresti 2015). This cross-linguistic trend is proof of the consistency of the correlation between the parameters and the core linguistic phenomena considered.

However, it must also be noted that in our interpretation the variation of the linguistic properties is grounded in pragmatics (illocutionary activation), which distinguishes the speech performance achieved in informal interactive Dialogic Contexts from that in Formal Monologues. It is worth exploring, in the context of this workshop, that the high-level distinction of "Formal" vs "Informal" which characterizes the L-AcT corpus design is not compliant with the model proposed in the most relevant corpus building strategy proposed nowadays i.e. the Balanced Corpus of Everyday Japanese Conversation by NINJAL (Koiso et al. 2016).
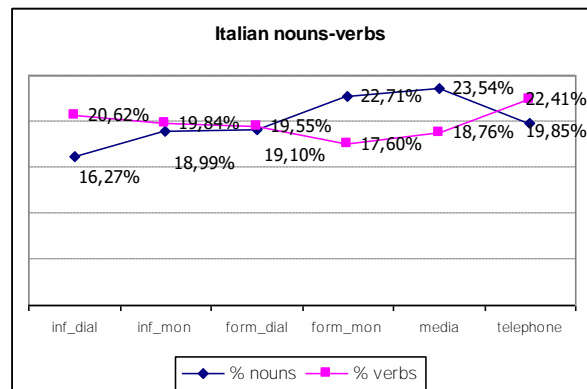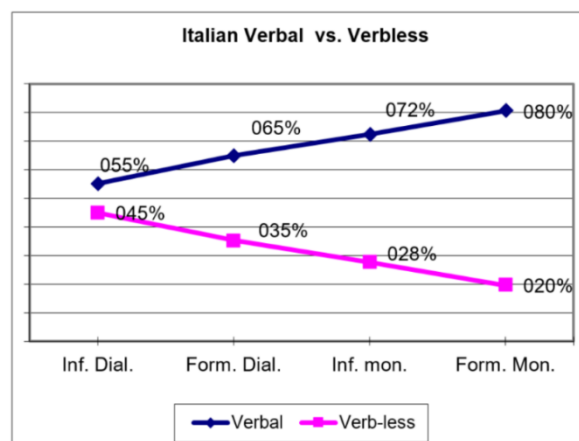

Figure 1: The Variation of Verb / Nouns Ratio

Figure 2: The Variation of Verbal vs. Verbless utterances

The pragmatic viewpoint of L-AcT focuses on the representation of speech act typologies, and their occurrence is not a function of the behavior accompanying the speech (eating, leisure, work, transfer, rest), as suggested by the NINJAL survey. Each speech act is accomplished as a function of the subjective initiative of the speaker toward the addressee. The L-AcT corpus design strategy is aimed at ensuring coverage of the maximum number of speech act types.

3. Exploitation of prosody

The L-AcT methodology assumes a systematic correspondence between stretches of speech ending with a terminal prosodic break and the accomplishment of an illocutionary force, and, within the utterance, between chunks segmented by non-terminal breaks and information functions (Cresti & Moneglia, 2005). The idea of the perceptual relevance of prosodic breaks traces back to the IPO tradition, which stresses the relevance of intentionally performed prosodic cues ('t Hart & al., 1990). Their correlation with acoustic features in speech has been
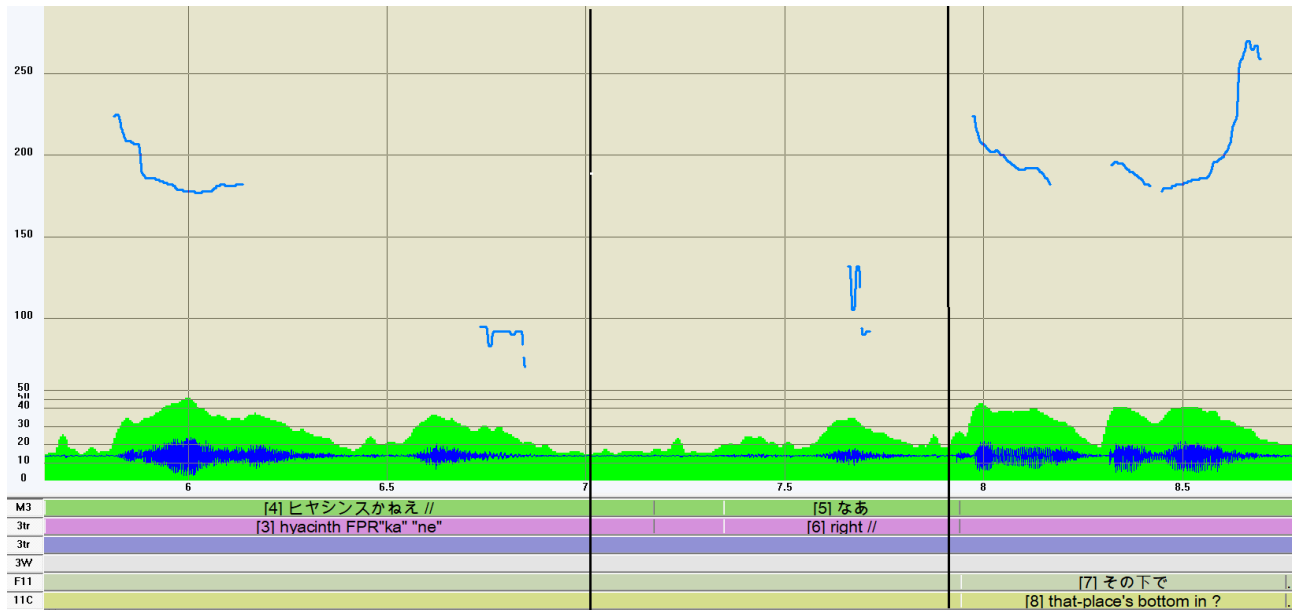
Figure 3: Text-to-speech alignement per utterance of two turns (WinPitch software)

extensively debated (Swerts & Geluiken 1993; Swerts, 1997; Firenzuoli, 2003; Martin, 2015). For all LABLITA and C-ORAL corpora, text to speech alignment at the utterance level according to prosodic cues (terminal breaks), and the scanning of the utterance into prosodic units (non-terminal breaks), has been implemented using WinPitch. This methodology ensures significant segmentation of speech into reference units, forming counterparts to speech acts as pragmatically defined. The annotation of prosodic breaks has been validated (Danieli et al 2004; Raso & Mittmann 2009; Moneglia et al., 2010; Mello et al., 2012).

Beyond the Romance languages, the methodology has been extended to the English language and is in progress for Japanese (Cresti & Fujimura forthcoming). The example in Figure 3 shows of how a dialogic turn by a Japanese speaker appears when segmented into independent utterances.

4. Information Structure

Within L-Act, the scanning of the utterance into prosodic units using non-terminal breaks reveals the prosodic interface for the Information Sstructure (IS). IS has its center in the pragmatic accomplishment of the illocution, which is developed by a necessary information unit i.e. the Comment. The Comment may be accompanied by optional components, forming the information pattern, which may be composed of many information units each developing different functions: textual (Topic, Parenthesis, Appendix, Locutive Introducer) and dialogical (Discourse markers) (Moneglia & Raso 2014). Each information unit is performed by a dedicated prosodic unit type.

This conception is retraceable to Chafe (1970; 1994) and moves away from one of the most popular nowadays that of Krifka (Krifka 2007; Krifka & Musan 2012). The latter is grounded in natural logic and finds the conditioning origin of information structure, and finally of speech, in the context (i.e. Common Ground (Stalnaker 1999)). In

contrast, at the core of its conception L-AcT focuses on the subjective initiative of the speaker toward the addressee, who reacts to the context but does not depend on it.

L-AcT was also used to ground the cross-linguistic comparison of Information Structure in spontaneous speech. For this, the IPIC database was created by LABLITA (Panunzi & Gregori 2012) and applied to comparable Italian and Brazilian-Portuguese mini-corpora, that were tagged according to L-AcT criteria (Mittmann-Malvessi & Raso 2012; Panunzi & Mittmann-Malvessi 2014). Quantitative data for the comparison between Italian and Brazilian Portuguese can be found in Panunzi & Mittmann- Malvessi (2014) and in Moneglia & Cresti (2015). The database was also extended to compare information structure for an American English selection taken from the S. Barbara corpus (Du Bois et al., 2000) by the LEEL laboratory in Belo Horizonte (Cavalcante & Ramos 2016). A Spanish selection from Cor-DiAL (Nicolas 2013) is forthcoming.

5. Repertory of illocutionary activities in spontaneous speech

Within L-AcT, the pragmatic analysis of speech is grounded in illocution, defined briefly as a "mental/affective reaction to an external input which is transformed into a conventional linguistic action towards the addressee" (Cresti 2018). Realistically, the classification of an illocution has always been a challenge (Kempson, 1977; Sbisà, 1989; Sbisà & Turner, 2013; Leech 2014). Beyond the well-known illocutionary types such as assertion, order, question - reducing the illocutionary variety to the syntactic typologies of the sentence: declarative, jussive, interrogative (Fava, 1995) - many other new illocutionary types may be envisaged. Over the past twenty years the LABLITA team has carried out empirical research on corpora to identify illocutionary types and their prosodic profiles, following a corpus-based

methodology (Cresti & Firenzuoli 1999; Firenzuoli 2003; Cresti et al. 2003; Cresti 2005, forthcoming ; Rocha 2016). The systematic analysis of entire spoken texts allowed the recognition of several illocutionary types that were not considered in the standard taxonomy (Searle 1969), but which recur within dia-phasic and dia-stratic variations of Romance corpora. Correlations between specific illocutionary types and sets of communicative, pragmatic, cognitive features have been discovered and hypotheses on models of prosodic units conveying illocution are in development. The value for an utterance depends on the speaker's affective activation toward the addressee.

LABLITA's corpus-based research has led to an initial repertory of almost 90 illocutionary types which are grouped into 5 illocutionary classes; i.e *representation*, *direction*, *expression*, *ritual*, which record a variation among types, and *refusal*, which does not record a variation among types. In turn, the illocutionary classes can be divided into 14 sub-classes which present intermediate pragmatic levels within each class. This repertory is a working set of concepts which have been induced from corpus based analysis, although at present no corresponding operational criteria for speech acts annotation has been defined into L-AcT.

Table 2 shows that for instance the assertive class, which is the most common in speech, presents speech act types that have not been dealt with in the literature before, since they could only be observed in corpora. Assertion foresee an intermediate level of categorization composed of two sub-classes: weak assertion and strong assertion. Sub-classes can be distinguished for the degree of relevance of the semantic content in the utterance, the (speaker's) commitment to the content's truth, and the degree of the speaker's involvement with respect to the addressee. So far, within the weak sub-class, self-conclusion and assertion taken for granted types are high frequency in corpora. When the speaker accomplishes a self-conclusion, he seems to suddenly become distant from the flow of the exchange and rather unconcerned with the addressee's involvement, so without looking at the latter, he performs the utterance with a low or even whispered voice, executing it through a prosodic unit with a falling f0 movement. Conversely, assertion taken for granted type is fully integrated in the speaker / addressee exchange. The speaker reports information already known or expected, presupposing the agreement of the addressee. In this case, he performs the utterance with a long ascending f0 movement ending at top values (Cresti forthcoming).

The L-AcT repertory of illocutionary types has been compared with other systems, among which we would like to cite that proposed by Yuki, Abe & Lin (2005) for Usage Based Linguistic Informatics, which is one of the few based on different language corpora. The UBLI taxonomy is composed of 50 substantive functions in the conversation which are strictly dependent on the most frequent content of the linguistic action performed (asking price, time, number, existence, place, …). Beyond the differing theoretical assumptions, it is interesting to observe how a corpus-based approach brings to light some interesting points of agreement (Cresti 2006; Moneglia 2011).

Assertion	Direction		Expression	Rituals	Refusal
WEAK Self-conclusion On-going comment Confirmation Explanation Assertion taken for granted Literal citation	**COMMUNICATIVE INVOLVEMENT** Distal recall (visible / non-visible addressee) Proximal recall Functional recall	**LINGUISTIC BEHAVIOUR** Partial question Polar question Alternative question Confirmation request	**BELIEF** Contrast Softening Obviousness Irony Doubt Admission Waiver Rhetorical question	**COURTESY** Thanks Greetings Welcome Excuses Wishes Congratulations Condolences Compliments	
STRONG Answer Ascertainment Assertion of evidence Hypothesis	**CHANGE OF THE ATTENTION** Distal deixis (still / moving object) Proximal deixis Prompt Event presentation	**NON LINGUISTIC BEHAVIOUR** Order Interdiction Prohibition Invite Offer Agreement	**FEELINGS AND MOODS** Protest Complain Grumbling Imprecation Surprise Wish Easement	**SOCIAL** Legal declarations Convictions Judgments Penalties Examination Diagnoses Dedications Religious rites	
	MENTAL TRANSFORMATION Instruction Person introducing Agreement request Self-correction Reported speech Warning	**ENDORSEMENT** Committeemen (bet, promise) Proposal Authorization	**SPEAKER ADDRESSEE RELATION** Approval Disapproval Derision Challenge Reproach Hint Concession	**DIALOGIC MOVES** Assent Repetition request Request of stop Request of waiting	

Table 2: Repertory of illocutionary types

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