COMPUTATIONAL LINGUISTICS AND PRAGMATICS IN SPECIALISED TRANSLATION

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Abstract: *The present article emphasizes several points of convergence between three distinct, yet inter-related, fields of research – computational linguistics, its subfield computational pragmatics and specialised translation and stresses the importance and benefits of interdisciplinary approaches for a more rigorous description and proliferation of the disciplines mentioned above.*

Keywords: *computational linguistics, computational pragmatics, specialised translation.*

Within current research, disciplines can no longer be considered closed monads and it becomes more and more obvious that they are not characterised by relations of opposition, nor need they follow parallel directions. On the contrary, they may complete one another and may, at the same time, gain depth through interdisciplinarity. It is only by establishing relations among the various fields of knowledge that we can build systems which could answer, as comprehensively and coherently as possible, to the questions about the world, or the particular and the universal. Besides, most current research recommends interdisciplinary and inter-related approach in the case of close or similar domains or disciplines, such as the ones involved in the present study: computational linguistics, pragmatics and specialised translation.

Computational linguistics, a discipline related to mathematics, computer science and linguistics is commonly defined as "the study of computer systems for understanding and generating natural language" (Ralph Grishman, 1986: 556). Or as "an approach to linguistics that employs methods and techniques of computer science. A formal, rigorous, computationally based investigation of questions that are traditionally addressed by linguistics: What do people know when they know a natural language? What do they do when they use this knowledge? How do they acquire this knowledge in the first place?"

(Shuly Wintner, http://cs.haifa.ac.il/~shuly/teaching/08/nlp/intro.pdf accessed on July 11, 2016).

Computational linguistics follows three different perspectives of research:

1. Human cognitive architecture, which focuses on how brain interprets and produces language;
2. The linguistic perspective, which emphasizes the study of linguistic phenomena across various languages;
3. The engineering approach, focused on building computerized systems capable to use human language.

Machine translation (MT), natural language interfaces, information extraction (IE), speech recognition, text-to-speech generation, automatic summarization, e-mail filtering, chat rooms, intelligent search engines (Web/IR), text categorization, clustering, text segmentation, part-of-speech tagging, parsing, word-sense disambiguation (WSD), anaphora resolution, spelling correction,

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plagiarism detection, etc., are among the most common applications and processes of computational linguistics while the infrastructure for language processing includes, among others, lexicons, dictionaries, shallow parsers, syntactic and morphological analyzers and generators, computational grammars (*cf*. R. Mitkov (Ed.) 2003).

The linguistic knowledge necessary to the application areas mentioned above are: phonetics and phonology, morphology, syntax, semantics, pragmatics, first/second language acquisition, discourse analysis, language in synchrony and diachrony, social, cultural and regional variations of language (*cf*. G. Yule, 2008).

In order to produce language in an engineered system, one cannot neglect the purpose-oriented behaviour of language, the relation established between emitter and receiver, therefore the pragmatic dimension of language. Ideally, computerised systems, both language understanding programs and language generators, must recognize the emitter's (speaker, writer) *intentionality* and must use *strategic language* in order to achieve the desired goals and influence the receiver (hearer, reader).

Ever since the first half of the last century, pragmatics has been a privileged domain for the study of linguistic phenomena, pragmatic concepts and theories being often called upon in various types of analyses. However, the discipline, which is in connection with other interrelated philological fields of research such as semiotics, philosophy of language, discourse analysis, conversation analysis, theory of argumentation, the studies in communication, sociolinguistics, psycholinguistics, etc., continues to offer new exploitation possibilities, especially in interdisciplinary investigations.

Irrespective of the multitude of theories and concepts implied[1], pragmatics is defined by a few specific features:

- the central position of the context in generating meaning;
- the relation emitter – receiver;
- the intentional, rational and strategical character of communication; inferential mechanism.

Computational pragmatics is "concerned with the [...] relations between utterances and context [...] from an explicitly computational point of view" (Bunt, Black, 2000: 3). According to Bunt and Black , " this implies in the first place a concern for how to compute the relations between linguistic aspects and context aspects. There are, evidently, two sides to this. On the one hand, given a linguistic

[1] The theory of enunciation (Benveniste [1966, 1974] 2000; Kerbrat-Orecchioni 1980; Ducrot 1984), the speech acts theory (Austin [1962] 2000; Searle [1969] 1970; Bach & Harnish 1979), the conversational principles and maxims/the laws of discourse (Grice [1975] 1996; Kerbrat-Orecchioni 1986; Sperber & Wilson [1986] 1995) – the main sources of pragmatics; the most important concepts: deictisation, modalisation (Parret 1983; Charaudeau 1992), enunciative heterogeneity (Authier-Revuz 1984), dialogism and polyphony (Bahtin [1963] 1970; Ducrot 1984), point of view (Ducrot 1984; ScaPoLine 2000, 2001, 2004; Rabatel 2007), direct and indirect speech acts (Searle 1975), implicatures (Grice [1975] 1996, [1975, 1978] 2001; Ducrot 1984; Récanati 1981), linguistic politeness (Brown & Levinson 1978; Kerbrat-Orecchioni 1992, 1996), etc.

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expression, the question is how to effectively decode those aspects of it that encode context information, i.e. how to compute the relevant properties of the context. [...] On the other hand, when we consider language generation, where the task is to construct a linguisic expression that encodes the context information that the speaker (or writer) wants to convey, the question is how to compute the relevant properties of the linguistic expression to be generated given the relevant properties of the context". Researchers in the field of computational pragmatics emphasize that computational pragmatics, like general pragmatics, focuses on *indexicality*, the relation between *utterances and action* or *utterances and discourse*, between *utterances and situational context*, *inferential mechanisms* especially on *reference resolution*, the *interpretation and generation of speech acts*, the *interpretation and generation of discourse*, *coherence* and *abduction* (cf. *supra* and Jurafsky 2006: 578). Bunt and Black describe several of the most used systems which introduce the pragmatic dimension to computational linguistics applications (LUNAR, the SHRDLU system, PHLIQA, TENDUM, SPICOS, CLE, dialogue systems such as SUNDIAL and TRAINS, or the pragmatic-based language understanding systems – PLUS *cf. supra*, pp.25-31). It must be stated that computation applications have managed to insert contextual information only in part, the design of context represenations being a very difficult and long-term task.

According to Susan Bassnett (2014: 3, 15, 12), translation is placed "at the heart of global communication and has played a central role in the transmission of ideas [...] over the centuries", with "great changes in international communication" taking place in the contemporary world, especially in news gathering and websites, leading to an "increasing demand for translation".

Specialised translation, the last domain under discussion, "is the translation of content which presents a high or very high level of specialisation in a specific area of knowledge" (Gotti, Sarcevic, 2006: 9). To come closer to our interest, specialised language pragmatics focuses mainly on the production (generation)/ reception (interpretation) of specialised discourse (oral or written) in different types of formal communication contexts. The generation and the interpretation of a specialised text, therefore its translation also, "is a communicative act that takes place within a given setting, which can be defined in terms of a set of context-related pragmatic parameters linked to a set of inferential processes. Such texts thus can be said to have depth/vertical extension as well as width/horizontal extension" (P. Faber, 2009: 64).

Instead of a conclusion and in order to highlight the relation between computational pragmatics and specialised translation, as well as its possible practical applications, we must mention a few important aspects (*cf*. Bunt, Black, 2000: 22-25[1]):

1. Despite the large number and the complexity of computing, the meanings of an utterance, the specific setting (i.e. context) and the

[1] According to Bunt and Black (2000: 23), the semantic machinery for computation of sentence meaning is a three stage process: "1. Compute the possible meanings of S (sentence) from the linguistic utterance information; 2. Apply physical utterance information to filter out unintended readings of S and to add pragmatic meaning aspects; 3. Use context information to select the most plausible and relevant readings of S, allowed by and enriched in step 2".

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domain of specialised discourse (which are quite restrictive) permit avoiding ambiguity and inserting nonlinguistic contextual information at the beginning of the process, that is knowledge of the specialised field, in order to limit the meaning of lexical items and facilitate the task of translation. Moreover, in specialised terminology, lexical units, frequently, though not always, have one linguistic designation only;

2. The quite restrictive setting of specialised translation and specialised communication, in general, also restricts the number of contextual variables and the possible inferences which makes the design of computational pragmatic representations easier;
3. In specialized communication and specialized translation, the attitudinal context (belief, intent, fear, etc.) is restricted, *representative speech acts*, (*cf.* Searle's classification) which predominate, being easier to generate computationally.

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Web resources

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