

## COGNITIVE LINGUISTICS FOR TRANSLATION STUDIES AND TRANSLATOR TRAINING

*Elena GHEORGHITĂ*

*Université d'État de Moldova*

The focal topic of the article is the discussion of the links between translation studies and cognitive linguistics and of the applicability of methodology developed for cognitive linguistics in translation studies and translator training, specifically of conceptual analysis of linguistic meaning in general and in translation studies and translator training in particular. Special attention will be paid to the semantics of lingual networks, a method developed by S.Zhabotynska, which may prove helpful both in theoretical and practical studies of terminology.

**Keywords:** *cognitive linguistics, concept, conceptual analysis, ontology, knowledge, translation, translator training.*

### INSTRUMENTARUL LINGVISTICII COGNITIVE ÎN SERVICIUL TRADUCTOLOGIEI ȘI INSTRUIRII TRADUCĂTORILOR

Articolul de față are ca subiect legăturile dintre lingvistica cognitivă și studiul teoretic și practic al traducerii, în vizor fiind luată și aplicabilitatea metodelor elaborate pentru lingvistica cognitivă în traductologie și didactica traducerii. Atenție specială se va acorda metodei numite „semantica rețelelor linguale”, elaborate de cercetătoarea ucraineană S.Zhabotynska. Metoda respectivă poate fi utilă atât pentru cercetări traductologice, cât și pentru instruirea viitorilor traducători practicieni: procesul de studiere a terminologiei de specialitate ar putea fi mai bine organizat.

**Cuvinte-cheie:** *lingvistică cognitivă, concept, analiză conceptuală, ontologie, cunoștințe, traducere, instruirea traducătorilor.*

#### Introduction

The focal topic of the article is the discussion of the links between translation studies and cognitive linguistics and of the applicability of methodology developed for cognitive linguistics in translation studies and translator training, specifically of conceptual analysis of linguistic meaning in general and in translation studies and translator training in particular. Satellite topics are concerned with different ways to understand the term “conceptual analysis”, employed in cognitive linguistics, as well as with ontologies.

Applicability of methodology is illustrated using the terminology of translation studies. Conceptual difficulties here arise from the fact that the relationship between concepts and terms is far from univocal: conceptual similarities are clouded by terminological differences, and conceptual differences lurk beneath apparent synonymy. Both conceptual and terminological practices are often rooted in different national traditions and may be school-specific. These three sets of problems are interrelated and they have not only inward – academic and theoretical – but also outward – social and professional – consequences, as the social projection of professional translators vis-à-vis other professions may depend to a certain extent on their ability to use an acknowledged terminology. The same may be true of the translation scholar community.

#### Translation Studies and Cognitive Linguistics

Translation studies entered the new century with a past background loaded with notions to be redefined, a present full of suggestive ideas to be further developed and a future packed with challenges awaiting to be achieved. The past brought about central issues whose importance still prevails in translation studies, such as the practical notion of equivalence or the importance of cultural and cognitive issues, but it also brought to the attention of translation scholars the need to redefine these issues in order to account for the complexity and dynamism of translation as a communicative process with a markedly cultural character. The present has reinforced the cultural turn of translation studies and initiated the search for new empirical methods based on real usage data, but in its efforts to grant power to cultural approaches it has relegated linguistic models to the background. Cognitive linguistics is one of the disciplines which can help describe translation as a cognitive process by contributing to integrate linguistic aspects with other aspects relating to cognition. The central place attributed to cognition in modern Translation studies does not interfere with the fact that language is still the raw material translators work with; therefore, a deeper understanding of language comprehension and production and of how language fits in with the rest of human cognitive abilities will undoubtedly cast some light on the role language factors play on the translation process.

Cognitive linguistics can provide the solid theoretical framework which translation studies has long demanded to account for the linguistic matters involved in the translation process. Its basic assumption that language is an integrated part of cognition supports the idea that translation is not a mere interchange of linguistics structures, an applied version of the linguistics principles that rule a language and that can be judged in terms of right and wrong, depending on how faithful they can be reproduced from the source language into the target language. Cognitive linguistics supports the cognitive nature of translation as a mediating process between two different conceptual worlds. Moreover, its integrated view of language and cognition together with the crucial role of culture helps to reinforce the link between the translator's behavior and the cognitive strategies which lead to such behavior, strengthening thus the link between the product and process of translation. We should bear in mind that Cognitive Linguistics fully supports the idea that the translator is an intercultural mediator who knows the cultures in which the translation process takes place. The translator, as any other speaker and supported by concepts such as embodiment and motivation, manipulates the texts based on his own knowledge and experience about the world. The translator is no longer viewed just as a "language expert" who has to remain faithful to the source text, he can and should adapt it to the target language and audience, both conceptually – appropriate information – and linguistically – appropriate constructions – and this view is supported by cognitive linguistics. Translation studies, on the other hand, provide a complex model of language functioning since we have a double process of decoding and recoding in a different language, so we can say that it provides a good/more demanding testing field to check whether the assumptions of cognitive linguistics work. For instance, the question of how the translator decides what and how is to be decoded from the source text and recorded in the target text. So far, some of the answers might lie in cognitive linguistics (cf. motivation, embodiment, cognitive process, decision making), but others can be provided by translation studies, which can tell us more about general factors such as genre characteristics or text types as well as particular factors such as the translators' own individual and sometimes ad hoc choices. Cognitive linguistics also provides a set of methodological tools that allow translation studies researchers to analyse in a more rigorous and systematic manner a set of traditional translation phenomena which demanded a more unified and theoretically sound explanation.

We have shown just seen some of the areas of cognitive linguistics that already have some implementation in translation. However, there are still other possible candidates that have not been applied, or not enough applied, to translation, such as construction grammar. Traditional translation, unfortunately, is mainly concerned with translation at word-level, and although cognitive linguistics supports the idea that there is more to translation than just words, it also provides the study of word meaning with a wide array of basic tools that can be helpful such as prototype or basic level categories. Despite the prominent role of context in translation, research on word meaning can still throw some light on how translators establish equivalence between lexical units. Moreover, although cognitive translatology has started to focus on an experimental methodology, the lack of an experimental background of most researchers has resulted in weak experimental designs.

All these being said, we believe that cognitive linguistics has already seen the potential of translation as a testing field for its ideas and assumptions. The establishment of a common framework does not seem to require a radical change in the attitude of the researchers in both areas. It will mostly be a matter of time, good intentions and joint work.

### **Ontology – a Conceptual Model**

At present, researchers in different areas, particularly in artificial intelligence, formal and computational linguistics, and knowledge engineering, have come to realize that a solid foundation for their research calls for serious work in ontology. *Ontology* is understood as: (a) a general theory of the types of entities and their relations that make up the respective domains of inquiry; (b) the phenomenon studied by this theory. In the latter meaning, ontology has two interpretations. In information studies, it is associated with knowledge: ontology is a conceptual (mental) model of some domain of objects – a model that includes a hierarchy of concepts, their relations and rules which this model obeys [11].

Ontology is associated with *knowledge representation*, which is a formal engineering artifact, constituted by a specific vocabulary used to describe a certain reality, plus a set of logical axioms designed to account for the intended meanings of this vocabulary. Two ontologies can be different in the vocabulary while sharing the same conceptualization [4]. Of late, attention has been focused on *knowledge per se*, on the content of information, on conceptual (mental) models rather than on just the formats and languages for representing

information. Scholars who work in different fields realize the need for integrating their research in developing strong principles for building well-founded ontologies - the principles that may provide significant advantages over ad-hoc, case-based solutions [1].

Ontologies as conceptual models are also a primary concern of cognitive linguistics that encounters the problem of building conceptual models that arrange information manifested by linguistic expressions. The need of good ontologies is especially obvious in lexicography, which has to propose appropriate ways of organizing linguistically diverse data in thesaurus dictionaries, but also in translator and interpreter training, as a good ontology becomes an excellent tool for mastering terminology of a particular area or areas.

### **Methodology for Building Conceptual Models**

The proposed methodology for creating ontologies of thesaurus dictionaries comprises basic notions of cognitive linguistics, one of which is a domain. Domain is the most generic term for the background knowledge structure [2]. Domains are basic and non-basic. Basic domains are cognitively irreducible, neither derivable from nor analyzable into other conceptions. In and of themselves, basic domains are not concepts or conceptualizations. They are better thought of as realms of experiential potential (e.g. color space, temperature, smell, etc.), within which conceptualization can occur and specific concepts can emerge. Most domains, however, are non-basic, derivable from and analyzable into other concepts. Non-basic domains vary in their degree of conceptual complexity. They range from minimal concepts (e.g. GREEN), to more elaborate concepts (like the configuration of a cat), to entire systems of knowledge (such as everything we know about cakes). To some extent they arrange themselves in hierarchies, such that a concept at a given level presupposes and incorporates one or more lower-level concepts. For instance, the concept PEAR incorporates GREEN, and HAND invokes the overall shape of a body. In cases of this sort, where one conception – asymmetrically – presupposes another part of its own characterization, they are said to occupy higher and lower levels of conceptual organization [5].

Analysis of linguistic data may require specific definitions for different levels of conceptual organization. The definitions suggested in this study are: the conceptual sphere – the total information space of a thesaurus dictionary; a domain – an information focus within the conceptual sphere; a parcel – a domain's information focus manifested with synonyms and antonyms; and a concept – a parcel's constituent notion manifested with an individual word. Provided the analysis has to expose more hierarchical levels, we may introduce such divisions as a hypersphere/sub-sphere, a hyper-domain/sub-domain, and a hyper-parcel/sub-parcel. The conceptual spaces that exist at different levels of conceptual hierarchy evolve in-depth, providing gradual granulation of information. The hierarchical conceptual levels become dimensions of the total information space of a thesaurus dictionary (cf. the levels of division in "logical" thesauruses). It is maintained that at each level of their hierarchy conceptual spaces are structured with a network. This tenet agrees with the observation, according to which the total scope of linguistic and neurophysiologic facts clearly demonstrates that the linguistic structure in the human mind is a network, i.e. a system where information is represented in relations between concepts [17]. In a network, information is concentrated in vertices (nodes, slots) and edges (arcs) that link these vertices. Vertices are "intelligent": each vertex represents information about some entity and its place in the network. The relations between vertices in a network are manifested with propositions [7, p.18]. The network, or web, is also a key idea in the theory of life systems. As F. Capra says, the web of life consists of webs within webs. We try to build the systems of webs integrated into other webs via applying a hierarchy, where the larger webs, located above the smaller ones, resemble a pyramid. However, it is only our human construal. The nature has no "above" and "below" entities, it has no hierarchies. There are only webs inside the other webs [16]. The same holds for a multi-dimensional ontology of a thesaurus dictionary, which is represented by the "networks-in-the-network" conceptual structure: the total conceptual sphere of the thesaurus is a network of domains, each domain is a network of parcels, and each parcel contains synonymous and antonymous concepts whose meanings are structured with a network of properties. The number of constituents at each dimension (level) of the ontology depends on the particular content of the conceptual sphere.

Further, building the networks at any conceptual level employs a universal tool – the limited set of propositions that belong to the five basic frames. Frame semantics defines a frame as "a system of categories structured in accordance with some motivating context" [3]. To extend this idea, we can suggest that the very foundation of our information system is structured by several highly abstract basic frames, where the most fundamental categories of thought are arranged in accordance with the way we perceive things of the expe-

rential world. Analysis of multiple lexical, derivational, and syntactic data [8-10; 12-15] makes it possible to presume that the basic frames are five in number. These frames – the Thing Frame, the Action Frame, the Possession Frame, the Identification Frame, and the Comparison Frame – include a limited number of most abstract propositional schemas whose type is defined by the frame they belong to.

It is impossible to characterize any concept without relating it to other concepts. If one considers object-type concepts, the categories they evoke have common properties (e.g. dogs are pets, mammals, within certain size, etc.) that define the category, and therefore the concept is defined by its relations to these other concepts. So a concept does not exist by itself, it is part of a conceptual system in which elements are related to each other.

More abstract concepts however cannot be described as having a cognitive representation as a category. For example, what classes of entities are grouped together to define "rate of change" as a category? Thus concepts may not be categories. In fact, most people may have difficulty giving an example for abstract concepts such as "intelligence", "motivation", "personality", and "social dilemma", just to name a few. People also have a hard time describing patterns or regularities in abstract terms such as "evolution", or "constructivism".

Now there is one more thing that needs to be clarified at this stage: what is conceptual analysis. This IS NOT an analysis of the content of a concept. In conceptual analysis, a concept is chosen for examination and the number of its occurrences within the text recorded. Because terms may be implicit as well as explicit, it is important to clearly define implicit terms before the beginning of the counting process. To limit the subjectivity in the definitions of concepts, specialized dictionaries are used.

As with most other research methods, conceptual analysis begins with identifying research questions and choosing a sample or samples. Once chosen, the text must be coded into manageable content categories. The process of coding is basically one of selective reduction, which is the central idea in content analysis. By breaking down the contents of materials into meaningful and pertinent units of information, certain characteristics of the message may be analyzed and interpreted.

An example of a conceptual analysis would be to examine a text and to code it for the existence of certain words. In looking at this text, the research question might involve examining the number of positive words used to describe an argument, as opposed to the number of negative words used to describe a current status or opposing argument. The researcher would be interested only in quantifying these words, not in examining how they are related, which is a function of relational analysis. In conceptual analysis, the researcher simply wants to examine presence with respect to his/her research question, i.e. whether there is a stronger presence of positive or negative words used with respect to a specific argument or respective arguments.

Thus, conceptual analysis is the method that includes the key concepts and techniques of analysis developed by various schools of cognitive linguistics (semantics frame construction grammar, cognitive grammar, conceptual metaphor theory, conceptual integration theory). An excellent technique in this sense has been proposed by a Ukrainian researcher S.Zhabotynska. She calls her technique: Semantics of language networks [15].

Conceptual networks are built on the basis of the simplest proposals that have the highest level of schematicity and represent the initial categories of thought, and the types of relationships between them.

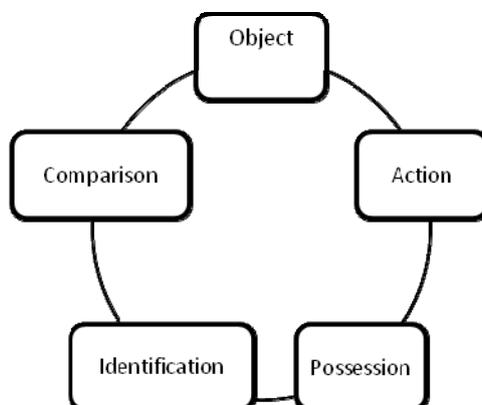


Fig.1 Basic Frames

The OBJECT frame includes the following schemes:

- Quantitative → X is AMOUNT
- Qualitative → X is QUALITY

- Locative → X exists THERE/LC-locative (début, chemin ou place, fin)
- Temporal → X exists WHEN/TM-temporal (début, période ou un moment dans le temps, fin)
- Way of being → X exists AS ...

The ACTION frame includes the following schemes:

- State/process → AG-agent acts
- Action contact → AG-agent acts on PT-patient
- Causative → CR-cause makes FT-factitive
- Locative → AG-agent acts WHERE/LC-locative
- Temporal → AG-agent acts WHEN/TM-temporal

Argumentative roles can also be added here:

- Circumstantial (AT-company, AD-assistant, CG – counter agent, IN-instrument, MD-mediator)
- Stimulus (GL-goal, CS-cause)
- Precondition (CD-condition, CS-concession)
- Recipient (AD-addressee, BN-benefactor, ML-malefactor)

The schemes of POSSESSION frame are the following:

- Partition → WH-whole has a PR/part
- Inclusion → CR-container has a CT-content / CT-content has a CR-container
- Propriety → OW-owner has OD-property / OD-property has OW-owner

The schemes of IDENTIFICATION frame are the following:

- Personification → ID-individual is PS-personifier (proper name)
- Classification → ID-individual / type is CL-classifier: type / species
- Characterisation → ID-individual is CH-characteristic

The schemes of COMPARISON frame are the following:

- Identity / metamorphosis → CV-comparative is / is as MS-correlative
- Resemblance / analogy → CV-comparative is like AN-correlate
- Similitude / metaphor → CV-comparative is as if MT-correlate

The network model can easily be transformed into a matrix if the connections between nodes are implicit or are not expressly indicated.

An example of describing a concept using such a method is also provided by its author.

An example of object locative scheme is given by S.Zhabotynska: «JOY is WHERE-place»: place = human being as a whole: *joy is in smb; people of joy; inward, inner joy*; place = soul, heart: *spiritual joy, joy in one's heart*; place = body: *joy in body; physical, biological joy* [15].

The ontology of a thesaurus dictionary is a multi-dimensional conceptual model, where each dimension has its network built by propositions of the basic frames. The types of propositions and their number required at each dimension depend on the particular content of the semantic field on which a thesaurus grounds. Propositions of the basic frames and their clusters iterate at different levels of a multi-dimensional conceptual model, and thus exhibit the properties of fractals defined by mathematics as irregular shapes that tend to be identical at all scales.

### **Some Practical and Theoretical Implications for Translation studies and Translator and Interpreter Training**

Currently multi-dimensional ontologies for bilingual and multilingual thesauruses of different nature are being developed. Among them are thesauruses of particular parts of speech, a thesaurus of English idioms, and thesauruses of set expressions applied in professional spheres. These will certainly be of great practical use both for translator and interpreter training and translation studies in general.

Contemporary information technologies, along with emphasizing the role of ontologies for organizing the data, come up with the idea of "hyperbolic self-organizing maps". The author of this idea, H. Ritter [6], says that human attention can link a focused item with the items from a "conceptual neighborhood" that is much richer than a two-dimensional Euclidean surrounding. Hyperbolic space with its exponential growth neighborhood volume can provide a much better approximation to this structure and thus should offer a better substrate for creating visual "concept maps" of data of various kinds. Self-organizing maps can be created on regular discretization of the hyperbolic plane. Hyperbolic Self-Organizing Maps can develop conceptually ordered document maps that combine conceptual clustering, good visualization and ease of browsing in a very

appealing way. However, representation of exponential growth of a hyperbolic conceptual space requires some methodological instrument that demonstrates regular (algorithmic) discretization of information, and provides its conceptually ordered granulation represented in conceptual clusters [14]. Presumably, in a hyperbolic conceptual space, the exponential growth of the neighborhood data volume can be manifested with the hierarchy of conceptual domains; and regular, algorithmic discretization and granulation of information can employ a limited set of propositional schemas that belong to the five basic frames.

Translation studies and teaching of translation should not and must not be limited to mere analysis of parallel texts, as there is much more lurking behind the result of the process. The study of the infinite game of incomplete information, which is translation in the broad sense of the term, is only at its beginnings.

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