

# ТЕОРИЯ И ПРАКТИКА ПЕРЕВОДА TRANSLATION THEORY AND PRACTICE

## FROM FUNCTION TO SYSTEM: ADVANCES IN CHOOSING A MATRIX STRUCTURE OF THE TRANSLATION PROCESS\*

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This article presents the authors' view on the transition towards a new paradigm in the study of the translation process based on synergy, collaboration, networking and the cognitive structure of the translator's mind. In the search for a hypothetical cognitive model of translation, a matrix model is represented to further enrich the interdisciplinary platform through understanding the conglomerate of the many sources involved in the act of translation and focusing on the role of the individual human being in translational cognition. The Map-Matrix Model comprises three levels of the translator's mental space: Neurological, Representational and Conceptual. Each level corresponds to the inheritance relations between mapping patterns, clusters and frames. The model will be presented and interrogated through the results of a practical Think-aloud protocols experiment in order to give a better insight into the translation efficiency in terms of information processing and a clearer assumption of the feasibility of the concept.

**Key words:** translation model, matrix, cognitive, synergy, connectivity, networking

### 1. INTRODUCTION

Over the last few decades there has been a persistent concern on how to apply cognitive linguistic approaches to issues of translation. Most generativist patterns used to explain language categories have been reconsidered following the rise in modern research of an interdisciplinary dimension. The idea of diversity and intercultural com-

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munication issues in translation is referred to in Kaisa Koskinen's works as "super-diversity" and the need of developing skills of "empathy, compassion and flexible decision-making" is highly emphasized (Koskinen, 2015: 176).

From the point of view adopted in this discussion, we are witnessing an era of synergy and heterogeneity in the evolutionary attempts of researchers to build a bridge between language, translation and other sciences. This is signaling new advancements in connecting the study of translation to the study of the mind as well as making further contributions to the discussion of the possibilities to elaborate a new framework for modelling the translation process.

### **1.1. The synergetic approach**

The notion of openness, dynamics and interaction of the system with the external world lies at the basis of the synergetic approach. Synergetics was first introduced as an interdisciplinary science explaining the formation and self-organization of patterns and structures in open systems. As noted in work by R.F. Buckminster, "The phenomenon synergy is one of the family of generalized principles that only co-operates amongst the myriad of special-case experiences. Mind alone discerns the complex behavioral relationships to be cooperative between and not consisting in any one of, the myriad of brain-identified special-case experiences" (Buckminster, 1982: 59). As an interdisciplinary notion, synergy is generally defined with the concept of massive entity, integrity and attraction (connectivity).

In modern scientific studies the concept of synergy is widely applied in language research and practice, as well as materials development and cross-cultural capabilities. The idea of interaction and self-forming patterns as the main constituent of the synergetic approach has been developed by scholars of various disciplines. For example, Prof. T.P. Berseneva emphasizes that "the main meaning that defines the notion of synergy is not only 'energy', but also 'congruity'. Therefore, in open systems studied in synergetics, there will be questions concerning the joint, harmonized, synergetic interaction of the inner and outer energies" (Berseneva, 2013:44).

A vivid practical example of a synergetic interaction in the area of translation methodology and curriculum development is shown in a recent European two-year project entitled 'Promoting Intercultural Competence in Translators', abbreviated as 'PICT', commenced in 2011 and described in Robin Cranmer's paper. The project implied coordinated efforts of six universities and an international language association that "came together with the shared perception that intercultural aspects of translation were not being taught as effectively as they could be". As a result they produced "a form of syllabus, termed a 'curriculum framework', for the teaching of Intercultural Competence to translators, materials to teach it and assessment materials for evaluating students' intercultural skills" (Cranmer, 2015:156)

According to the Russian cognitive linguist L.V. Kushnina, "the fundamental principle of synergetics has an inherent potential for self-structuring at all levels when mapping our real existence. Non-equilibrium systems imply certain conditions and sources to create order". L.V. Kushnina articulates the idea of using synergy within the framework of the translator's mental space. She argues that "as a result of the development of the original text in the translator's mental space, there may appear a multitude

of new texts as single entities that are capable of functioning in other cultures” (Kushnina, 2005:27—28). In later research L.V. Kushnina elaborates further on the translator’s mental space as some “meaningful structure containing a few heterogenic fields which generate manifold meanings, both explicit and implicit” (Kushnina, 2015, URL).

Considering the theoretical research done within this study we propose that ‘synergy’ is applicable to the study of the translation process in the following aspects:

- Synergy as an interdisciplinary approach;
- Synergy as the internal interaction of cognitive elements;
- Intellectual synergy as realized in the cooperative efforts of a group working on one text.

## 1.2. The Cognitive Approach

With the advent of the cognitivist paradigm there has been an important shift from observing changes in behavior (a response to behaviorism) to inner mental activities. These activities include thinking, knowing, memorizing and problem solving, which are all considered to be essential for learning. The overall concern of cognitivists has been to open the ‘black box’ of the human mind, viewed by most scholars as an information processor. Therefore, new terminology was introduced, including; ‘schema’, ‘schemata’, ‘information mapping’, ‘information processing’, ‘mental maps and models’ (B. Shank, B-R Sandura, L. Merrill, J. Bruner).

Cognitivism as the study of mental processes focusing specifically on knowledge processing has been widely used in various linguistic theories. Among Russian cognitive linguists there is a particular interest in the processes of categorization and conceptualization within the relationship between language and mind with a focus on knowledge processing and storing from a cultural viewpoint (N.N. Boldyrev, E.S. Kubryakova). It is also important to mention the ground-breaking theoretical work by E. Rosh related to the principles of categorization and the formation of prototypes or prototypical instances that “contain the attributes most representative of items inside and least representative of items outside the category” (Rosh, 1978, URL). This theory enhances the patterns of structuring and organizing our mind and knowledge.

The cognitive theory focusing primarily on information and knowledge processing within various stages and structures tends to be valorized and used successfully in developing the cognitive theory of translation and interpreting. The idea of making a proposal for a cognitive theory of translation and interpreting has been put forward by a group of researchers from the University of Granada, Spain, who worked out three basic stages of language mediation in the translation process.

Considering the translator to be the mediator between the original writer and the target reader, we tend to use the cognitive approach in translation to broaden the focus and to cover a range of linguistic and non-linguistic factors. This integrated and even inter-disciplinary view of translation procedures represents the uniqueness and complexity of the translator’s activities compared to the pure tasks of listening, reading, speaking and writing. In a paper by a group of researchers from the University of Granada, mentioned above, there is a clear explanation of the three language stages of language mediation:

- 1) The communicative function established between the speaker or writer (the first sender) of the source text or discourse and the mediator as first recipient.

2) The mental activity of the mediator processing the message received (either written or spoken).

3) The communicative function established between the mediator as second sender of the target text or discourse and the final recipients of the message (Padilla, 1999, URL).

These three stages basically cover different aspects of mediating, such as pragmatic (first and third stages) and mental or cognitive (second).

The importance of including the cognitive processes in analyzing acts of translation became the trigger for the further construction of psycholinguistic and cognitive models of translation (R. Bell, W. Wills, D. Gile), social and cognitive models (D.C. Kiraly) and cognitive pragmatic models (E.-A. Gutt, D. Sperber & F.C. Willson). It also led to the introduction of new mapping structures and innovative methodologies of research such as: Think-aloud protocols (G.M. Shreve, R. Jääskeläinen, S. Tirkkonen-Condit), Eye Tracking (S. O'Brien, B. Dragsted) and Translog (L. Jakobsen). The tendency for interdisciplinary research is of paramount significance in terms of gaining a deeper insight into the workings of the translator's mind.

### **1.3. Constructionism**

The implementation of the system-structure paradigm continues within the frameworks of constructivism that appeared in the second half of the 20<sup>th</sup> century. It is important to emphasize the historical role of Jean Piaget's "Theory of Instruction" based on the idea that knowledge acquisition is a process of continuous self-construction as applied to the child's mental development (Piaget, 1990).

Away from empiricism there emerged the theory of "situated cognition" by Jean Lave (Lave 1988), who states that a model of knowledge and learning should be based on cognition that lies in context, people, culture and language. Storing or accumulating conceptual knowledge is ineffective compared to retrieving it directly from the context which provides real knowledge of the world.

In Russian Philosophical theory constructionism is defined by I.P. Farman as a "synthesis of construction and knowledge". One of the general principles elaborated in Farman's work is that "the perception of reality in itself is changed with the constructionist approach, implying new forms of representations through models, structures, and projects" (Farman, 2008: 90).

### **1.4. Networking and connectivity**

Another theory that demonstrates the transition from a function-based to a system-based approach is connectionism, which postulates a dialectic tendency to synthesis and dynamics placing the human being at the heart of the knowledge accumulation and structuring process. The key concept developed within the connectionist approach is the network, specifically, the neural network. The neural network consists of a large number of units joined together in a framework of connections. Units in a network are usually segregated into three classes: input units, which receive information to be processed, output units where the results of the processing are found, and units in between, which are called hidden units (Fig. 1) (Connectionism: URL).

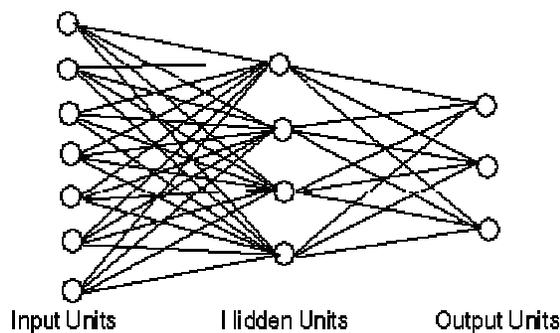


Fig. 1. Illustration of a simple neural network

As the illustration shows, the network comprises both static and dynamic parameters. This develops the connection between stability, dynamics and interaction.

The importance of these factors is built on S. Dawson's research on connective knowledge. This research focuses on the connectivity value of knowledge processing in terms of knowledge distribution using online platforms. However, the most important implication, apart from distinguishing properties of different types of network, is the statement that "if a human mind can come to 'know' if a human mind is, essentially, a network, then any network can come to 'know', and for that matter, so can a society" (Dawnes, 2005, URL).

Applying the observations and theoretical assumptions of the connectivity approach to the sphere of cognitive translation studies, we argue that the major principles of modelling translation are grounded in the notion of interpretation, interaction, networking, associationism, salience, organization and context-based analysis.

## 2. RESEARCH DESIGN AND METHODOLOGY

The major hypothesis of our work is drawn from a set of observations with the focus on the relationship between translation theory, research and a set of practical experiences of translating specialized texts and psychological experiments of the 'Think-aloud protocols'.

*Hypothesis.* In this research we argue that the 'Map-Matrix Model' of the translation process is a theoretical framework to present a cumulative concept of translation procedures based on advanced ideas of cognitive science and other related disciplines. The graphic representation of the model has a certain explanatory potential of the process-based strategic and integrated character as well as methodological value to apply in Cognitive Translation Studies.

*Sample group and content.* The Think-aloud protocols experiment used to valorize the hypothesis mentioned above was conducted with a sample group of 12 student-translators of the University of Bath. The subjects were chosen through the main concern that verbalization produced by non-professionals should be more informative than those of professionals. The students were asked to produce a spoken translation of a written text taken from a BBC news source with a high level of information consistency. The translation was supposed to be made while thinking aloud without using any dictionaries.

This was considered to be a conscious procedure to find out the solution of translation problems they may face which are interpreted with the help of translation processing markings and strategies that we take into account during the analysis as most reliable, generalizable and applicable to the Map-Matrix Model presented in the research.

### 2.1. Why matrix?

Among various definitions of matrix existing in research primarily in the natural, computer and social sciences we derived the core meaning that is seen as most applicable to the translation process as a system of correlation and self-structuring elements organized at various levels of the translator’s mind. Thus, in this research, matrix is defined as a cognitive network of embedded elements and correlations between input and output data.

### 2.2. The map-matrix translation model explained

The idea of connectivity and the cognitive structures of mental spaces is emphasized in G. Fauconnier’s paper “Mental spaces, language modalities, and conceptual integration” in which he states that “mental spaces are small conceptual packets constructed as we think and talk, for purposes of local understanding and action. They are very partial assemblies containing elements, and structured by frames and cognitive models. They are interconnected and can be modified as thought and discourse unfold” (Fauconnier, 1995:253).

In the Map-Matrix Model of translation presented in this paper, there are three levels of the translator’s mental space, each corresponding to the inheritance relations between mapping patterns, clusters and frames: Neurological, Representational and Conceptual (Fig. 2).

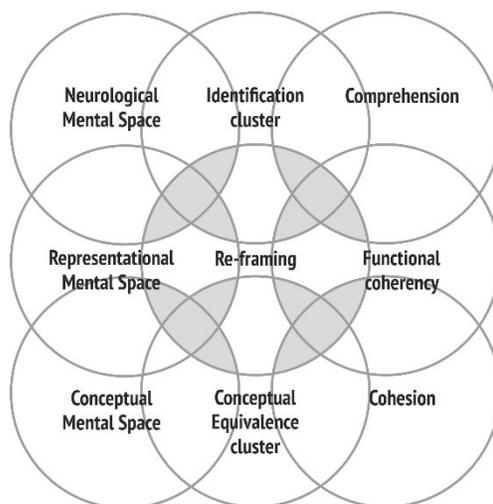


Fig. 2. The Map-Matrix Model of Translation

The Neurological Mental Space of the Map-Matrix Model represents the interrelation between cognitive and neurophysiological processes in terms of sensation of symbol, word or action, perception of recognition of symbol, word or action and verbal

working memory. The recognition implies an identification cluster that relates to phonological and word decoding and language comprehension. Recognizing and decoding written information make up the main cognitive elements involved in the translation process.

Representational Mental Space is positioned as central because of the core functions applied within certain frame structures. In this part of the model we allocate translation procedures and strategies that are implemented through mental processing and frames of various kinds. Our earlier research showed that frame structures can be subdivided into situational, classifying, dynamic and prototypic to represent syntactic and semantic structures of the source text (ST) as “a means of organizing the translator’s linguistic and non-linguistic knowledge, which can predetermine the choice of a cognitive strategy and enhance the translator’s competence” (Nefedova, 2014:240).

The space concept of the Representational Mental Space literally presents a particular representation of a translation problem that consists of various states for solving it. According to the information-processing approach, the states of a problem consist of various stages in problem solving, such as 1. Identifying and Understanding the Problem 2. Devising and Selecting a strategy 3. Performing the strategy 4. Checking whether the strategy actually worked (Byrne, 2006:142).

Within the Map-Matrix Model of translation we presume that the translation problems or tasks we encounter are framed-based on the knowledge applied to comprehend, recognize and interpret the data. Therefore, at the point of understanding the text it is important to consider 4 types of knowledge involved (Table 1) (Byrne, 2006, 143).

Table 1

**Types of knowledge affecting the understanding of problems**

Factual knowledge	Consists of rules, categories and representations of the problem
Semantic knowledge	Conceptual understanding of the problem
Schematic knowledge	Provides an infrastructural understanding of the problem; the various related issues and factors and how they relate to each other
Strategic knowledge	An understanding of how to build strategies for solving problems within the overall problem area

Re-framing as shown on the model takes the central part of the scheme as a transition of the types of knowledge mentioned above from ST to TT (translation text). The procedures implied here can presumably be identified with frame mapping patterns based on prototypical and dynamic frame elements at both the linguistic and metalinguistic levels.

By the functional coherence discussed in the Map-Matrix Model we mean “functional relations between sentences and between speech acts in a coherent discourse” shown in earlier works by Teun A. van Dijk (Van Dijk, 1980:49). In written translation semantic relations of functional coherence are in close interaction with syntax and lexis as cohesive elements and create the so-called textual unity.

Conceptual Mental Space presupposes conceptual integration of the author’s and the translator’s mental spaces when the information is processed and decoded. Thus, at the transition point we have a conceptual equivalence cluster maintained through conceptual mapping when the translator is retrieving meaning from the text. Conceptual equivalence is translated through the underlying meaning that lies in the context as well as the pragmatic and communicative message of the text.

In this discussion of the cognitive approach applied to the Map-Matrix Model of translation and with the help of the Think-aloud protocols as an experiment to verify the practical value of the model, we follow the distinction between the “cognitive conscious” and “cognitive unconscious” proposed by J. Raskin (Raskin, 2000:11). Since we do not intend to give a deeper insight into the cognitive unconscious within the current research, there are still certain presumptions of the ways the information is processed in the cognitive conscious of the translator’s mind, including universals, limitations and strategies which should be investigated and explained within the common matrix framework.

### 2.3. Translation strategy. The integrated approach

According to the definition provided by W. Lörscher, a translation strategy is “a potentially conscious procedure for the solution of a problem which an individual is faced with when translating a text segment from one language into another” (Lörscher, 1991:76). Think-aloud protocols provide the basis for problem identification in terms of choosing translation strategies. A list of such problems has been suggested by various researchers, such as H. Krings (Krings, 1986:268), P. Gerloff (Gerloff, 1986:252), A. Chesterman (Chesterman, 1998), and others. Let us summarize the main translation strategies proposed by researchers, including classification shown in one of our earlier studies.

Gerloff (1986)
<ol style="list-style-type: none"> <li>1. Problem identification</li> <li>2. Linguistic analysis</li> <li>3. Storage and retrieval</li> <li>4. General search and selection</li> <li>5. Text inferencing and reasoning</li> <li>6. Text contextualization</li> <li>7. Task monitoring</li> </ol>
Jääskeläinen (1993)
<ol style="list-style-type: none"> <li>1. Global strategies (as applied to the whole task, including style, leadership, etc.)</li> <li>2. Local strategies (specific items, such as lexical searches)</li> </ol>
Séguinot (1996)
<ol style="list-style-type: none"> <li>1. Interpersonal strategies (brainstorming, correction, phatic function)</li> <li>2. Search strategies (dictionaries, world knowledge, words)</li> <li>3. Inferencing strategies (rereading ST and TT, consulting)</li> <li>4. Monitoring strategies (rereading ST and TT, consulting, comparing units)</li> </ol>
Mondhal and Jensen (1996)
<ol style="list-style-type: none"> <li>1. Production strategies               <ol style="list-style-type: none"> <li>a) achievement (spontaneous association and reformulation)</li> <li>b) reduction (avoidance and unmarked rendering of marked items)</li> </ol> </li> <li>2. Evaluation strategies (adequacy and acceptability of translation replacements)</li> </ol>
Nefedova L.A., Remkhe I.N. (2014)
<ol style="list-style-type: none"> <li>1. Prototypical strategy (syntactic and semantic structures in the form of frame patterns that are syntactically restricted)</li> <li>2. Adaptive strategy (a broader analysis of the context and compensation varieties in the translation process, including pragmatic, communicative and intra-textual relationship)</li> </ol>

Viewing the translation process mainly as a cognitive activity, we consider processing strategies in terms of metalinguistic and cognitive elements used as problem-solving techniques. The categories suggested by P. Gerloff are seen as mainly process-oriented and focused on text decoding and rendering. The other researchers listed above made advanced attempts to have a broader look at categorizing translation strategies involving metalinguistic elements, such as reflecting on the adequacy and acceptability of translation replacements in M. Modhal and K.A. Jensen (1996) or a certain level of environmental validity and non-linear interaction in the case of group work on translation, as in C. Séguinot (1996). Following this trend in the current research we identify two major strategy types, such as the prototypical and adaptive strategy depending on the test type and the level of the translator's competence.

## 2.4. Discussion

As a result of the Think-aloud protocols experiment aimed at observing the efficiency of information processing, the Map-Matrix model is used as an explanatory tool to define translation problems and to work out strategies to solve them. To interpret the findings we identified two levels of the subjects' performance into high level of processing and low level of processing. Thus, a selection of the specific features that occurred during the experiment was made. They are represented in Table 2.

Table 2

**The distribution of translation features  
through the high and low point of processing the subjects**

	Identification cluster		Comprehension	
Neurological Mental Space	High level of processing	Low level of processing	High level of processing	Low level of processing
	Full sensation of symbol, word or action High perception of recognition of symbol, word or action and verbal working memory	Difficulty of symbol or word recognition No sense of internal associative connections	Fully achieved phonological and word decoding and language comprehension	Difficulty in phonological and word decoding
Representational Mental Space	Reframing		Coherence	
	High level of processing	Low level of processing	High level of processing	Low level of processing
	Immediate execution of necessary associative connections Less cognitive effort on performing the reframing	Difficulty of retrieving word meaning from the context Lack of factual background knowledge	High level of conformity with the receiver's situation Full rendering of the source text with the correct text pattern	Lack of conceptual connectivity Loose text rendering Not reaching the target reader
Conceptual Mental Space	Conceptual equivalence cluster		Cohesion	
	High level of processing	Low level of processing	High level of processing	Low level of processing
	Instant retrieval and transformation of meaning across ST and TT based on activating semantic and schematic knowledge networks Achieving pragmatic and communicative function of the text	Lack of semantic and schematic knowledge Difficulty of realizing the pragmatic and communicative function of the text	Appropriate use of cohesives Adequate text interpretation at the macro and micro level of text and discourse organization	Difficulty using cohesives such as reference, ellipsis, substitution, lexical cohesion and conjunction

### 3. CONCLUSIONS

The Map Matrix Model reflects the translation process as a conglomerate of various modelling tools depending on the peculiarities of the translation scheme and the translator's mental activities, i.e. identification, simultaneous or successive processing, re-framing, finding conceptual correlations and reaching pragmatic and communicative goals. The overlapping parts signify connections and interaction between the elements that are activated due to the synergetic and dynamic potential of the system.

The theoretical interdisciplinary research and empirical investigations revealed valuable features contributing to a new and justifiable matrix format of the translation process. Using the methodology of analytical thought and introspective analysis of written translations, when applying the Map-Matrix Model, we came to some major new conclusions:

- ◆ The synergetic approach in translation lies in the possibilities for interdisciplinary work between translation studies and other sciences. It may also be applied to the translation process itself in the sense of the interaction of the multiplicity of working patterns and connections set up together for a common purpose;
- ◆ The representational level of mental processing during translation tasks is implemented by mental frames that constitute the translator's cognitive space;
- ◆ The translation process is a networking system that consists of various mapping patterns and frame elements connected at different levels;
- ◆ Connectivity is key to understanding the translation process. The effective connectivity between acts of translation and techniques is made explicit through mapping;
- ◆ The efficiency of information processing reflects the result of translation at various levels of the translator's mental space.

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## **ОТ ФУНКЦИИ К СИСТЕМЕ: НОВАЯ ПАРАДИГМА МАТРИЧНОЙ СТРУКТУРЫ ПЕРЕВОДЧЕСКОГО ПРОЦЕССА**

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В статье представлено авторское видение переводческого процесса в рамках новой парадигмы развития когнитивного переводоведения на основе понятий синергии, кооперации, взаимодействия, взаимозависимости и когнитивных структур сознания переводчика. Представленная матричная модель перевода является результатом тщательного анализа возможностей, назревшей необходимости междисциплинарного подхода в переводоведении и поиска нового научно-теоретического основания для представления когнитивной сущности переводческого процесса. Матричная платформа, предложенная авторами исследования, выступает конгломератом фреймовых элементов, когнитивных функций и процедур, которые выстраиваются в виде трех ментальных пространств (нейрологического, репрезентационного и концептуального). При

этом центральную роль занимает переводчик как мыслящий объект, способный оперировать познавательными структурами своего сознания. Практическая значимость модели верифицируется посредством психолингвистического эксперимента «Думай вслух». Результаты эксперимента представлены в виде уровней эффективности решаемых переводческих задач на основе ментальных пространств матричной модели перевода.

**Ключевые слова:** переводческая модель, матрица, когнитивный, синергия, коннективный, сетевая взаимозависимость

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