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THE MACHINE METAPHOR IN TRANSLATION FROM ENGLISH TO SERBIAN

This study explores the MACHINE metaphors in English to Serbian translation of scientific writing. It has already been demonstrated that the metaphors based on the source domain of MACHINES structure identical target domains in English and Serbian producing a strikingly similar set of correspondences. However, the translatability of metaphors based on the source domain of MACHINES has not been examined so far. Consequently, the aim of this study is to explore the amount of overlap between English and Serbian when it comes to translation of MACHINE-based conceptual mappings in scientific writing. The analysis was conducted on the corpus of several hundred examples of metaphorical conceptualizations based on this source domain in English and their counterparts in Serbian translation. The illustrations extracted from the corpus were grouped according to whether the source language (English) metaphors were: a) retained; b) removed; c) entirely eliminated, or c) added in the target text (Serbian). The results show that MACHINE metaphors are remarkably stable in translation, and that even when translation modifications are introduced, they are mainly limited to the selection of a different representative within the same source domain.

Key words: conceptual metaphor, metaphor in translation, English to Serbian metaphor translation, metaphor stability, scientific writing

1. INTRODUCTION

This study examines the stability of MACHINE metaphors in English to Serbian translation. More precisely, it explores whether the translator's decisions when rendering MACHINE-based source-text metaphors into Serbian as the target language affect the distribution and configuration of metaphors in scientific writing. For the analysis of metaphors in English to Serbian translation the Lakoff and Johnson's (1980) Conceptual Metaphor Theory (CMT) is applied. This theoretical framework postulates that metaphor exemplifies the innate ability of the human mind to see and interpret one concept in terms of another and the study of conceptual metaphor has for decades remained a propulsive field in contemporary linguistic, continuously developed both by its founders (Johnson 1987, 2007; Lakoff 1987, 1993; Lakoff & Turner 1989; Lakoff & Johnson 1999) and other metaphor scholars (Turner 1991, 1997; Fauconnier 1994; Gibbs 1994; Fauconnier & Turner 2002; Kövecses 2002, 2005, 2006, 2010).

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Within the theoretical framework of cognitive linguistics, a metaphor is not an isolated figurative expression in a text, but a mapping from one domain of human experience (typically referred to as the source domain) to another (the target domain). Metaphors establish and reflect mental connections made between two unrelated concepts or areas of experience, and these connections in turn allow humans to think and consequently talk about the target domain in terms reserved for the source (Lakoff 1993: 203; Evans & Green 2006: 295). The metaphorical mappings are necessarily partial, which allows a single target domain to be structured by a whole spectrum of source domains. The starting point of Conceptual Metaphor Theory is the claim that humans think in metaphors, which implies that metaphors are what makes abstract thought possible (Lakoff & Johnson 1980; Kövecses 2002). In other words, according to CMT, metaphors operate by mapping well-understood, concrete source domains onto more abstract target domains. To illustrate, the sentence below metaphorically structures the target domain of HUMANS by means of the source domain of MACHINES, and the mapping between the two domains is conventionally formulated as HUMANS ARE MACHINES. Such structuring enables additional metaphorical mappings between MUSCLES and ENGINES (*engine, internal combustion engine*), as well as between the ENERGY which the muscles need and the FUEL that allows the machine to operate.

Muscles are engines which, like the steam engine and the internal combustion engine, use energy stored in chemical fuel to generate mechanical movements.

It is obvious that, contrary to traditional studies of rhetoric, where metaphor is seen as a decorative figure of speech, metaphors in cognitive linguistics are perceived as operating on the level of human conceptualization. This raises a whole set of questions pertaining to metaphor translation problems, as the metaphorical patterns may vary from one language to another due to linguistic and cultural factors. The research conducted so far suggests that some major metaphors are present in a large number of languages (such as HAPPY IS UP OR ARGUMENT IS WAR), but their different components can be involved in variation across languages and cultures (Kövecses 2005, 2006). In culture, metaphor exists at the interface between universality and variation: universality because of the cognitive source of much metaphor (Kövecses 2005: 17–64) and variation because of the alternative metaphors that exist in different cultures (*ibid.*: 67–87). Grujić (2018) has demonstrated that English and Serbian cultures are relatively similar when it comes to MACHINE metaphors, as they share the same underlying mechanistic world view. Considering that the earlier studies (Grujić 2014, 2018, 2019, 2021) have established that MACHINE metaphor in English and Serbian structures the identical range of target domains in a strikingly similar set of correspondences, it is the aim of this study to explore the amount of overlap between English and Serbian when it comes to the translation of MACHINE-based conceptual mappings in scientific writ-

ing, or to analyze metaphors used in the source and target texts to gain an insight into MACHINE metaphor stability and retention during transfer from one language to the other.

In this study the stability of MACHINE metaphors is deliberately explored on a corpus consisting of a select set of scientific writing, as this type of discourse is 'regulated' by two mutually exclusive approaches to metaphors. The one requires the scientific texts to use precise, clear and unambiguous language so as to reflect the reality of the world directly (see Ortony 1993b: 1), while the other claims that the objective world cannot be accessed directly and consequently must be constructed on the basis of the constraining influences of human knowledge and language (Ortony 1993b: 2). These two different approaches result in two opposing views of metaphor: the former understands it as something characteristic of rhetoric rather than science, as it is 'deviant and parasitic upon normal usage' (Ortony 1993b: 2, see also Leane 2007: 83–84), while the latter considers it an essential component of language creativity, which attitude is in line with modern research into language, cognition and the ability of human beings to process information. In this view, metaphors can have an exegetic function as they serve to facilitate understanding of a difficult topic, and this is exactly how they were predominantly used in both English and Serbian in the corpus of writing on which this study was conducted.

The contemporary view of translation no longer sees it exclusively as 'the replacement of textual material in one language (SL) by equivalent textual material in another language (TL)' (Catford 1965: 20). This view of translation is criticized as showing tendency to reduce translation to purely linguistic phenomenon. A 'cultural turn' in the 1980s (see Malmkjær 2005: 36; Snell-Hornby 2006: 47–68) changed the view of translation, which is now seen as an act of communication 'situated within a particular linguistic and cultural context, and influenced by genre conventions, audience expectations and the translator's own interventions in the text, whether these be unknown or intentional' (Shuttleworth 2017: 40). In comparison with the wealth of studies exploring metaphors in various languages, the translatability of metaphor remains a rather under researched and neglected field, although the number of studies dealing with it grows steadily (Newmark 1985; Toury 1995; Snell-Hornby 1995; Musolff, MacArthur & Pagani 2014; Guldin 2016; Shuttleworth 2017). When it comes to detailed discussions of metaphor in translation by metaphor scholars, the more important works include Knowles and Moon (2006: 61–72), Kövecses (2014) and Steen (2014). Over the years many classifications have been constructed to account for the procedures employed by translators when translating metaphorical expressions. For example, Newmark's well-known classification includes: a) reproducing the same image in TL, 'provided the image has comparable frequency and currency in the appropriate register', b) replacing the image in SL 'with a standard TL image which does not clash with the TL culture, c) translating the metaphor with simile, d) translation

of metaphor (or simile) by simile plus sense (or the addition of explanatory material), e) conversion of metaphor to sense, f) modification of the metaphor, g) deletion, h) using the same metaphor combined with sense (Newmark 1985: 304–311). Toury (1995: 83) adds two more possible scenarios: translating a non-metaphor by a metaphor and adding a metaphor in the target text when there is no 'linguistic motivation' in the source text. For this qualitative study, the various possible translation procedures were grouped into four broad categories: a) retention, b) removal, c) deletion and d) addition, with the initial hypothesis that the retention rate of MACHINE metaphors is high, which would classify it as stable in translation.

2. CORPUS AND METHODOLOGY

The study was conducted on the author's corpus consisting of several hundred examples of MACHINE metaphors excerpted from three pieces of scientific writing by Richard Dawkins and their Serbian translations. The selection of sources was determined by the fact that Dawkins abundantly and consistently uses the MACHINE metaphors when defending his scientific arguments (so much so that one metaphorical mapping is reflected in the very title of one of the source books – *The Blind Watchmaker*). In addition, the translation effort today is almost entirely limited to popular science books and articles, as the other types of scientific writing are rarely translated due to the fact that English has acquired the status of an international language of science.

To identify metaphors in the corpus the 'Metaphor Identification Procedure' (MIP) proposed by the Pragglejaz Group (2007: 3) was applied. Essentially, according to the Pragglejaz approach to metaphor identification, if a lexical unit's usage contrasts with a 'more basic contemporary meaning' – the meaning that is more concrete, related to bodily action, more precise or historically older, even if it is not the lexical unit's most frequent meaning (Pragglejaz Group 2007: 3) – then the expression is considered metaphorical. Metaphorical expressions which were identified in SL text were then compared to their translation equivalents in the corresponding TL sections. They were analyzed according to whether the metaphor in translation was: a) retained (preserved in terms of both the domain and the mapping selection), b) removed (replaced by identifiable non-metaphorical textual material), c) omitted (missing from the target text without any identifiable trace in the translation), or d) added, following the model proposed by Shuttleworth (2017: 67). The examples were accordingly placed into four broad categories, the fourth being the smallest due to the direction in which the research was conducted.

3. RESULTS AND DISCUSSION

When formulating the metaphorical mappings, the author has strived to place them at the level of generalization that is appropriately high to account for all metaphorical expressions in a given set, yet appropriately low to differentiate between similar but not identical subsets. For example, the most general metaphor structuring nature is the NATURE IS HUMAN metaphor, which involves various levels of specificity, each a metaphor in itself: NATURE IS A DESIGNER, NATURE IS A BLIND DESIGNER OR NATURE IS A SOFTWARE DESIGNER. The following sections will demonstrate that conceptual metaphors based on the source domain of MACHINES are predominantly preserved in Serbian translation, and focus on the differences in terms of the extent and number of source and target text mappings. The corpus evidence indicates that the metaphorical expressions related to the source domain of MACHINES tend to be dealt with systematically and consistently, preserving not just the central mapping but additional entailments as well.

The presentation of results starts with the metaphorical mappings which have been entirely preserved in Serbian translation. The identified metaphors and their Serbian counterparts will be grouped according to the target domain structured by the MACHINE metaphor and the related COMPUTER-based metaphors. The remaining sections will gradually explore the process of modification of MACHINE metaphors, their removal from the target text, where they are replaced by non-metaphorical language, their complete deletion in Serbian translation and their sporadic addition where no corresponding metaphorical mapping can be traced in the source text.

3.1. RETAINED MACHINE-BASED MAPPINGS IN THE CORPUS

The analysis reveals that the overarching metaphor for nature both in the English source text and in its Serbian translation proves to be the NATURE IS A DESIGNER/WATCHMAKER/BLIND WATCHMAKER, with two synonymous lexemes (*часовничар* and *сајција*) as its Serbian linguistic realizations. Furthermore, in an entire web of additional, less central mappings, nature *sets up* (S: *постави*) the *machinery* (S: *машинерија*) of life, which it *controls* (S: *контролиса*) and *makes* (S: *створи*) creatures. This MACHINE-based metaphor informs and pervades the entire narrative, and consequently extends over larger stretches of writing and is frequently repeated, together with its metaphorical entailments. Generally speaking, it remains quite stable in the TL, although some slight modifications introduced by translator's alterations of the ST metaphor have been observed. To illustrate, in the same example below, the translator decided to opt for the noun *творца* as the Serbian equivalent for *designer*. The closer and more neutral correspondents of *designer* in Serbian are *инжењер* or *конструктор* (E: *engineer, designer*), as the lexeme *творца* (E: *the maker, creator*), associated with Genesis and the creation of the world, carries some biblical conno-

tations. The translator's decision to change the source domain turns the example below into a mixed metaphor (combining the metaphor NATURE IS A DESIGNER with NATURE IS A MAKER), thus removing certain aspects of the SL metaphor (namely, the fact that the author is referring to an engineer working at the drawing board), yet adding a new layer of meaning (as the word *творца* can refer to both biblical and real-world maker).

Some people see this as a fundamental flaw in the whole theory of the blind watchmaker. They see it as the ultimate proof that there must originally have been a designer, not a blind watchmaker but a far-sighted supernatural watchmaker. Maybe, it is argued, the Creator does not control the day-to-day succession of evolutionary events; maybe he did not frame the tiger and the lamb, maybe he did not make a tree, but he *did set up* the original machinery of replication and replicator power, the original machinery of DNA and protein that made cumulative selection, and hence all of evolution, possible. Неки ово виде као темељан недостатак у целој теорији о слепом часовничару. За њих је то коначан доказ да мора постојати творца, не *слепо сајција* него далековиди натприродни часовничар. Може бити, веле они, да творац не контролише свакодневно смењивање еволуционих догађаја; можда није подарио лик тигру или јагњету, можда ниј створио дрво, али јесте поставио првобитну машинерију за репликацију, оригиналну машинерију ДНК и протеина а то је омогућило кумулативну селекцију и стога и свеколику еволуцију.

The lower-level metaphors structuring the natural world such as HUMANS ARE MACHINES, ANIMALS ARE MACHINES and ORGANS ARE MACHINES (with THE NATURAL WORLD IS A SET OF MACHINES as the superordinate metaphor) have also proven to be rather resilient in translation to Serbian. These additionally produce even more specific metaphors which map particular kinds of machines, tools and devices to a broad spectrum of target domain elements (entire species, as well as organs of particular species of living beings). As shown below, *radar* is mapped to human *consciousness*, *optical instrument* to an *eye*, *bats* to *technically highly advanced echo-machines*, while bees have *oscillatory motors* which they can *switch on or off*.

The argument of this book is that we, and all other animals, are machines created by our genes.

У овој књизи износим тврдњу да смо ми, и све остале животиње, машине што су их створили гени.

As with language, the principles that make up our moral grammar fly beneath the radar of our awareness.

Као и у случају језика, правила наше моралне граматике нису уочљива на радару наше свесности.

This level of magnification shows the eye as an optical instrument.

Овај ниво повећања приказује око као оптички инструмент.

[...] the smaller bats appear to be technically highly advanced echo-machines.
[...] мање врсте слепих мишева по свој прилици су технички напредније ехо-машине.

[...] bees send an instruction to switch on (or switch off) the oscillatory motor.
[...] пчеле шаљу наредбу осцилаторном мотору да се укључи (или искључи).

Apart from the above mentioned metaphor HUMAN CONSCIOUSNESS IS A RADAR, the human thought is conceptualized as *apparatus* (S: *апарат*), which can be *tuned* (S: *погешен*), or *well-tuned* (S: *добро погешен*) to *work* (S: *рагу*).

Our well-tuned apparatus of skepticism and subjective probability-theory misfires by huge margins, because it is tuned – ironically, by evolution itself – to work within a lifetime of a few decades.

Наш добро подешен апарат за скептицизам и пристрасну теорију вероватноће грдно греша зато што је подешен – а иронија је да се за то побринула сама еволуција – тако да ради унутар животног века од неколико деценија.

MACHINE-based metaphors are also applied to the lowest structural elements of the body: CELLS ARE MACHINES. Additional mappings entailed by this metaphorical conceptualization include CELL ACTIVITY IS (MASS) PRODUCTION and THE RESULT OF CELL ACTIVITY IS A PRODUCT (E: *mass-produced, manufacture, product*; S: *масовно се производе, израђују, производ*).

These slightly altered protein molecules are mass-produced by the protein-making machines that manufacture other compounds in the cells, the gene products.

Незнатно промењени молекули протеина масовно се производе у ћелијама мозга који се развија. Они делују као ензими, машине које израђују друга једињења у ћелији, то јест производе гена. [...]

The metaphor AN ORGANISM IS A SET OF MACHINERY structures specific organs, as well as cells and genes. Lower level mappings between machinery and parts of the body are realized as *machinery of life* (S: *машинерија животиња*). Cells are conceptualized as a separate machinery (A CELL IS A MACHINERY, with linguistic realizations E: *machinery of the cell*, S: *машинерија ћелије*), which entails additional mappings between genes and machinery elements (GENES ARE PART OF THE MACHINERY, realized as E: *part* and S: *део*).

[...] of the dissected machinery of life, beginning with the human eye [...].
[...] сециране машинерије живота, почевши од људског ока [...].

DNA molecules replicate in the complicated machinery of the cell [...].
Молекули ДНК репликују се у компликованој машинерији ћелије [...].

[...] while the replicators – now known as genes – were seen as part of the machinery used by individual organisms.

[...] гледало као на део машинерије коју употребљавају поједини организми.

Structured by the MACHINE metaphor, cells are also conceptualized and discussed as *working units* belonging to the *chemical industries of the genes*, in themselves *pharmaceutical factories* consisting of *protein machines*. Consequently, they use *raw materials*, have *production lines*, *end products*, *chemical products*, which they *churn out*, while *mitochondria* are *chemical factories*. This entire set of SL mappings has been preserved in the TL text: *радна јединица, хемијска индустрија гена, фармацеушка фабрика, митохондријске машине, сирови материјали, производна линија, стварашти, хемијске фабрике.*

I prefer to think of the body as a colony of genes, and of the cell as a convenient working unit for the chemical industries of the genes.

Ја више волим да о телу мислим као о колонији гена, а о ћелији као о погодној радној јединици хемијске индустрије гена.

The mitochondria are chemical factories, responsible for providing most of the energy we need.

Митохондрије су хемијске фабрике које нам дају највећи део потребне енергије.

In a human pharmaceutical factory the synthesis of a useful chemical needs a production line. The starting chemical cannot be transformed directly into the desired end-product.

У људској фармацеутској фабрици, за синтезу употребљивих хемијских супстанци потребна је производна линија. Почетна хемијска супстанца не може се непосредно претворити у крајњи производ.

Each kind of protein machine churns out its own particular chemical product. To do this it uses raw materials that are drifting around in the cell, being, very probably, the products of other protein machines.

Свака врста протеинске машине ствара властити хемијски производ. За то користи сирове материјале расуте по ћелији који су вероватно производи других протеинских машина.

Similar mappings are observable when it comes to entirely different yet equally unobservable aspects of natural activity. Geological processes, for example, are structured by the GEOLOGICAL PROCESSES ARE MACHINES metaphor: *radioactive elements* are thought of and discussed as *stopwatches* (S: *штоперице*), which *buzz* (S: *ошкучава*) and operate by means of *springs* (S: *опруга*) that can be *wound down* (S: *огвије се*).

[...] particular radioactive elements decay at precisely known rates. It is as though precision-made miniature stopwatches had been conveniently buried in the rocks.

[...] да се тачно зна брзина полураспада одређених радиоактивних елемената, То је као да сте минијатурне швајцарске штоперице подесно уметнули у стене.

The radiocarbon stopwatch buzzes round at a great rate, so fast that, after some thousands of years, its spring is almost wound down and the watch is no longer reliable.

Штоперица са радиоактивним угљеником откуцава врло брзо, заправо толико брзо да се после неколико хиљада година њена опруга скоро потпуно одвије и сат више није поуздан.

3.2. RETAINED COMPUTER-BASED MAPPINGS IN THE CORPUS

A substantive subset of metaphorical expressions in the corpus was based on one specific type of machines – computing devices. Generally, metaphors of this kind structured the conceptualization of the human mind: THE BRAIN IS A COMPUTER, and this metaphor was predominantly retained in Serbian translation together with the additional mappings (BRAIN ACTIVITY IS OPERATION OF A COMPUTER, PATTERNS OF THOUGHT ARE COMPUTER PROGRAMS, NERVES ARE COMPUTER CABLES, GENES ARE COMPUTER PROGRAMMERS). The linguistic realizations in both languages include *electronic computer, operation, programmed, cables, programmer, set up, information technology* (S: *електронски компјутер, операција, програмирана, каблови, програмер, погесити, информациска технологија*).

The apparatus they use for timing their movements has more in common with an electronic computer, although it is strictly different in fundamental operation.

Апаратура којом се користе да би временски ускладиле своје покрете има много више заједничког са електронским компјутером, премда се по основној операцији оштро разликује од њега.

We shall continue to treat the individual as a selfish machine, programmed to do whatever is best for its genes as a whole.

Наставићемо да о јединки говоримо као о себичној машини, програмираној да чини оно што је најбоље за њене гене као целину.

The brain is connected to the sense organs – eyes, ears, taste-buds, etc. – by means of cables called sensory nerves.

Мозак је са чулним органима – очима, ушима, квржицама за укус и тако даље – повезан кабловима који се зову сензорни нерви.

The genes, too, control the behavior of their survival machines, not directly with their fingers on puppet strings, but indirectly like the computer programmer. All they can do is to set it up beforehand; then the survival machine is on its own, and the genes can only sit passively inside.

Гени такође контролишу понашање својих машина за опстанак, не непосредно повлачећи марионетске конце, него посредно, као компјутерски

програмер. Они могу само да унапред подесе своју машину; потом је она препуштена сама себи, а гени само пасивно седе у њој.

We have seen that DNA molecules are the centre of a spectacular information technology.

Видели смо да су молекули ДНК центар спектакуларне информацијске технологије.

3.3. RETAINED AND SLIGHTLY MODIFIED MAPPINGS IN THE CORPUS

Although the MACHINE metaphors show significant resilience in translation to Serbian, as demonstrated above, several forms of their alteration have been observed. To be precise, in a number of cases where the metaphorical mappings between MACHINES and various target domains have been preserved, the Serbian translations display certain modifications of the TL mappings which radiate in three directions: a) TL mappings are established at a higher (more general) level within the same source domain; b) TL mappings are established at the same level but exploit a different representative of the source domain; c) TL mappings are established at a lower (more specific) level of the same source domain.

The generalization of the metaphorical mapping in translation is illustrated below. As can be seen, although retained, the TL MACHINE metaphor involves a different, more general mapping: instead of a specific part of the machine (S: *мотор*, E: *engine*) the translator opted for the lexeme with a broader meaning (S: *машина*, E: *machine*). The identical generalization occurs when the SL metaphor MUSCLES ARE ENGINES/STEAM ENGINES/INTERNAL COMBUSTION ENGINES is modified to the more comprehensive MUSCLES ARE MACHINES (realized in Serbian as *машина* and *мотор*, E: *machine* and *engine*): although it preserves the basic metaphorical mappings (E: *steam engine, fuel, generate*; S: *парна машина, гориво, произвeсти*), it at the same time to some extent impoverishes the idea of movement in the TL text.

Once we are allowed simply to postulate organized complexity, if only the organized complexity of the DNA/protein replicating engine it is relatively easy to invoke it as a generator of yet more organized complexity.

Уколико нам је дозвољено да постулирамо организовану сложеност, па макар то била само организована сложеност машине за репликацију ДНК или протеина, релативно ју је лако замислити као генератор још веће количине организоване сложености.

Muscles are engines which, like the steam engine and the internal combustion engine, use energy stored in chemical fuel to generate mechanical movements. Мишићи су машине које, попут парне машине и машине са унутрашњим сагоревањем, користе енергију ускладиштену у хемијском гориву како би произвеле механичко кретање.

The similar modification is observed in examples where the MACHINE metaphor is realized through the lexeme *machinery*, while the corresponding Serbian translation bases the imagery on a more prototypical representative of the source domain, thus again shifting the translation choice to a more general level (S: *машина*; E: *machine*).

This reason is that we animals are the most complicated and perfectly-designed pieces of machinery in the known universe.

Тај се разлог крије у чињеници да смо ми, животиње, најсложеније и најсавршеније пројектоване машине у познатоме свемиру.

Most interesting cases were those where the translator decided to preserve the metaphor and utilize the identical source domain, but selected a different representative of the category. To illustrate, in the example below *machinery* (a set of machines) was substituted by *апаратура* (E: apparatus), and *механизам* (E: mechanism), which both belong to the category of MACHINES, but are by no means identical to the element selected for the SL mapping (*machinery*). The reason probably lies in the fact that the lexeme *machinery* is metaphorically used to suggest robustness and relentlessness (as shown in Grujić 2018), which are typically not the qualities associated with sex organs or sexual behaviour in Serbian, so the translator decided to substitute the SL mapping with the less intimidating two in the TL.

The machinery of sexuality, sex organs, sexual behavior, the cellular machinery of sexual cell division, all these must have been put together by standard, low-level Darwinian cumulative selection, not by species selection.

Апаратура за полно размножавање, полни органи, полно понашање, механизам деобе полних ћелија, све то мора бити успостављено стандардним дарвинистичким кумулативним одабирањем ниског нивоа.

Another similar situation occurs with the SL metaphor IDEAS ARE VEHICLES, where the mapping between the domains of MACHINES and HUMAN MIND was once again preserved, yet modified by an altered choice of the TL lexeme (i.e. domain representative): instead of *возило* (the Serbian lexeme that shows no MACHINE-based metaphorical extensions of meaning) the term *замајац* (E: flywheel) was used to better convey the sense of movement implied by the English lexeme *vehicle*.

When I discovered that members of the society were using the motion as a vehicle for playing arguing games, I resolved to decline future invitations from debating societies that encourage insincere advocacy on issues where scientific truth is at stake.

Кад сам открио да чланови друштва користе идеју као замајац у својим дебатним играма, решио сам да надаље одбијам позиве дебатних друштава која су подстицала неискрено заступање ставова.

The third form of retention with modification occurs when the TL metaphor involves a more specific mapping than that in the SL. For example, the SL metaphor in the illustration below structures *INSTINCTS AS MACHINE FUNCTIONS* (realized in English as *engineered*), while the TL metaphor employs *COMPUTER PROGRAMMING* for the metaphorical mapping (S: *програмиран*; E: programmed)

An example of a deliberately engineered misfiring of the maternal instinct is provided by cuckoos, and other 'brood parasites' – birds that lay their eggs in somebody else's nest.

Један пример намерно програмираног затајивања материнског инстинкта дају нам кукавице и остали „паразити легла” – птице које носе јаја у туђе гнездо.

A special case of retention occurs in examples similar to the illustration below, where the SL metaphor is replaced by the TL metaphor that utilizes a different source domain. To be precise, the metaphorical verb *built* was given a modified metaphorical interpretation in the TL (S: *саграђен*, which is a linguistic realization of the metaphor *HUMANS ARE BUILDINGS* rather than *HUMANS ARE MACHINES*), as this TL verb mainly collocates with nouns denoting larger constructions (houses and buildings).

We were built as gene machines, created to pass on our genes.

Саграђени смо као генске машине, створени да даље предајемо своје гене.

3.4. REMOVAL OF METAPHORICAL MAPPINGS IN THE CORPUS

Occasionally the metaphorical mappings between *MACHINES* and target domains have been removed, as can be observed in the illustrations below. The removal of *MACHINE* metaphors (e.g. *living machinery* below) denotes cases where the metaphorical expression was converted to sense in the TT (in Newmark's terms), or more precisely substituted with the equivalent non-metaphorical expression (S: *живи организам* [E: living organism]). However, it should be noted that the underlying metaphorical mapping *THE ACTIVITY OF ORGANISMS IS FUNCTIONING OF A MACHINE* was fully retained in the translation (E: the workings, S: *функционисање* [E: functioning]).

This idea is directly transferable to the workings of living machinery.

Та замисао директно је преносива на функционисање живих организама.

The SL metaphorical conceptualization of humans as *robot vehicles* (S: *роботизована возила*) was also removed and replaced with partially metaphorical expression *механички преносиоци* (E: mechanical carriers) and *носиоци* (E: carriers). Admittedly, it is little wonder that the metaphorical expression *vehicle* presents a translation challenge since, as noted

above, its Serbian equivalent (S: *возило*) shows no similar metaphorical extension of meaning, which makes the vehicle-based metaphors impossible to retain in Serbian. Another metaphor removal is observed where TL *effective*, realizing the mapping between the SUCCESS OF HUMAN ACTIVITIES and the EFFECTIVENESS OF MACHINE WORK, was replaced by the non-metaphorical adjective *успешан* (E: successful).

We are survival machines – robot vehicles blindly programmed to preserve the selfish molecules known as genes.

Ми смо машине за опстанак – механички преносиоци слепо програмирани да очувамо себичне молекуле познате као гене.

Animals have become active go-getting gene vehicles: gene machines.

ивотиње су постале активни, предузетнички носиоци гена: генске машине.

But making a living got steadily harder as new rivals arose with better and more effective survival machines.

Али са искрсавањем нових противника, са бољим и успешнијим машинама за опстанак, било је све теже одржати се у животу.

The metaphorical conceptualization of humans as machines below involves a rich web of interdomain mappings between DESIGN (S: *пројектовани*) and CREATION, the DRAWING BOARD (S: *цртаћи сто*) and EVOLUTION, ASSEMBLING (S: *монтирају*) and DEVELOPMENT. However, one of the additional mappings between organs and machine parts in the SL text fails to occur in the Serbian translation, which partially alleviates the intense underlying mechanistic worldview produced by a single sentence (S: *нас* [us] instead of *наши делови* [our parts]). Similarly, metaphorical mapping between GENES and COMPUTER ENGINEERS is entirely missing in Serbian non-metaphorical translation by means of the verb *уорганизирају* (E: organize).

Were we designed on a drawing board, too, and were our parts assembled by a skilled engineer?

Јесмо ли и ми пројектовани на некаквом цртаћем столу и јесу ли нас монтирали искусни инжењери?

[...] both the beetle genes and the bacterial genes will take whatever steps lie in their power to engineer the same future events.

[...] предузимати све што је у њиховој моћи да уприличи иста будућа збивања.

3.5. DELETION OF METAPHORICAL MAPPINGS IN THE CORPUS

When metaphors are deleted, they leave no trace in translation. In our corpus the Serbian translator opted to do away with certain metaphorical mappings on several occasions, which was stylistically quite justified.

To illustrate, in the example below the HUMAN MIND is conceptualized as MACHINE. The additional mappings in the ST occur between the MACHINE PRODUCTION and MENTAL ACTIVITY (*produce*) as well as between the BY-PRODUCT and the RESULT OF MENTAL ACTIVITY. The deletion of the former mapping in the TT allows the translator to avoid the unnecessary repetition of two almost identical Serbian lexemes (the verb *производи*, and the noun *производ*).

Even though conventional Darwinian selection of genes might have favoured psychological predispositions that produce religion as by-product, it is unlikely to have shaped the details.

Чак иако је конвенционална дарвинистичка селекција гена можда давала предност психолошким предиспозицијама чији је споредни (0) производ религија, мало је вероватно да је уобличио детаље религија.

As shown above, computer-based metaphors preserve well in translation to Serbian, where it is possible to retain both central and additional mappings between source and target domains. However, in some cases, the translators had difficulties rendering all the shades of meaning of this metaphor, which is why some generalizations can be observed. For example, a specific type of device, *the on-board computer*, that is installed on mobile objects such as an aircraft, a submarine or a car, was translated by means of a hypernym (S: *комјутер*, E: computer), thus modifying and slightly depleting the metaphor, since the mapping between humans and means of transportation was deleted.

DNA replicators built 'survival machines' for themselves – the bodies of living organisms including ourselves. As part of their equipment, bodies evolved on-board computers – brains.

ДНК репликатори саградили су себи машине за преживљавање – тела живих организама, укључујући и наша. Као део своје опреме, тела су развила (0) рачунар – мозак.

In other cases, some additional mappings between MACHINES and LIVING ORGANISMS were entirely lost, due to the translator's decision to delete the metaphorical SL expression (E: *assembled*) and preserve its non-metaphorical collocates (S: *рођење*; E: *birth*) at the same time retaining the basic metaphor in the sentence (DNA IS ROM; S: ДНК ЈЕ РОМ МЕМОРИЈА).

DNA is ROM. It can be read millions of times over, but only written to once – when it is first assembled at the birth of the cell in which it resides.

ДНК је РОМ меморија. Може да се чита милионима пута, али у њу само једном може да се упише – приликом (0) рођења ћелије у којој је смештена.

3.6. ADDITION OF METAPHORS IN THE CORPUS

Due to the focus and direction of this study, where MACHINE metaphors were first identified in English and then paired with their Serbian equivalents, the number of singled-out metaphor additions was predictably low (under 10 instances). Generally speaking, the TT additions were introduced predominantly for the purpose of clarity. For example, the phrase *by means* could have been translated more closely as *на начин* (E: in the manner), but the translator probably opted for the lexeme *механизам* (E: mechanism) to enrich the imagery in the manner consistent with the dominant metaphors in the book. Similarly, there were no linguistic reasons to introduce the MACHINE-related word *постројење* (E: manufacture, production plant) in the description of nature's factories.

Some 1,000 million of these are transmitted every second, by means that are not properly understood, to brain which then takes appropriate action. Отприлике милијарду импулса се сваке секунде, механизмом који још увек потпуно не разумемо, преносе до мозга а он даље предузима потребну акцију.

Green plants have been called nature's 'factories' – beautiful, quiet, nonpolluting, ---producing oxygen, recycling water and feeding the world. Зелене биљке се називају природним „фабрикама” – дивним, тихим, чистим постројењима која производе кисеоник, прочишћавају воду и хране свет.

An all-encompassing metaphorical picture of the cell emerges when the source-domain elements band together. In the example below, the cell is simultaneously conceptualized as *machinery*, the *apparatus*, a *machine*, or a *device*. As can be seen, both the imagery and the selection of source-domain elements of the metaphor THE CELL IS A MACHINERY/APPARATUS/MACHINE/DEVICE is consistently retained in the Serbian translation (S: *машинерија*, *апарат*, *машина*, *уређај*). However, it should be noted that the translator did not just retain the MACHINE metaphor, but he/she further strengthened and expanded it by adding the engineering-related verb *конструисан* (E: designed) as the equivalent for *evolved*.

Certainly the modern cellular machinery, the apparatus of DNA replication and protein synthesis, has all the hallmarks of a highly evolved, specially fashioned machine. We have seen how staggeringly impressive it is as an accurate data storage device.

Сигурно је да модерна хелијска машинерија, апарат за репликацију ДНК и синтезу протеина, има све карактеристике посебно конструисане и добро развијене машине. Видели смо колико је она запањујуће импресивна као прецизан уређај за чување података.

4. CONCLUSION

This study explores the behaviour of MACHINE-based scientific English metaphors in Serbian translation, for which aim the Conceptual Metaphor Theory is applied. This theoretical framework, which was not originally designed for translation studies research, and was consequently criticized both for downplaying the extent of interlingual and intercultural variation in metaphor and for its notorious disregard for the importance of authentic rather than made-up, idealized examples, actually provides a robust starting point for research into metaphor in translation. The results suggest that metaphors that exploit the source domain of MACHINES show a high level of retention in the TL. In other words, the majority of metaphorical mappings between MACHINES and a whole spectrum of various target domains are preserved in translation to Serbian. The study finds that occasionally the metaphorical mappings, though retained, undergo slight modifications in terms of level (or generality), as they are established at: a) a more general level in the TL; b) the identical level but select a different source domain representative in the TL; c) a more specific level in the TL. Our analysis shows that MACHINE metaphors are only occasionally removed and rarely deleted, mainly for stylistic (to avoid repetition) or linguistic reasons (because the corresponding TL lexeme shows no suitable metaphorical extensions of meaning). Additions of MACHINE metaphors in the TT were few and primarily motivated by the translator's wish to preserve the clarity of the picture.

Apart from clarity, there were other arguments guiding the translator's motivation for modifications, removals and deletions of MACHINE metaphors. The imagery and ideology produced by the mappings based on this source domain, mechanistic as they necessarily are, have been shown to primarily highlight the target domain in terms of stability, efficiency and productivity, thus in turn producing a rather dehumanizing, bleak and gloomy depiction of the domains which they structure (Grujić 2018). It is our conclusion that the Serbian translators were guided by the wish to slightly soften the edges of such harsh metaphorical mappings when they decided to reduce either their frequency (by removing and deleting them) or their potency (by selecting a less intimidating member of the category, e.g. mechanism instead of machinery). However, the true causes of metaphor removal, deletion and addition can only be established by further studies of metaphor in translation, a complex but fast growing topic. This will contribute not just to our understanding of metaphor in translation and to translation studies research, but to our comprehension of translation in general.

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Татјана С. Грујић / МЕТАФОРА МАШИНЕ У ПРЕВОДУ СА ЕНГЛЕСКОГ НА СРПСКИ

Резиме / Ова студија, користећи теоретски оквир когнитивне лингвистике, односно теорије појмовних метафора, испитује метафоре засноване на изворном домену машине у преводу са енглеског на српски језик. Претходне студије показале су да постоји изузетно висок степен сличности у погледу распона појмовних домена које метафора машине структурира у ова два језика, као и у погледу међудоменских пресликавања која се одвијају између машине и других појмовних домена. Ова студија представља следећи корак у испитивању на машини заснованих метафора у два језика јер испитује њихову преводивост, односно преводну постојаност, користећи више стотина примера ексцерпираних из корпуса научно-популарних текстова. Резултати потврђују почетно очекивање да је у питању метафора високог степена стабилности, која се у највећем броју случајева задржава у циљном тексту. Одређене модификације при задржавању, које су запажене у једном мањем броју примера, могу се свести на генерализацију, конкретизацију и замену представника изворног домена у циљном језику, док је до брисања метафоре машине или њеног потпуног уклањања долазило ретко. Такође се бележи спорадично додавање на машини заснованих метафора у преводу, односно јављање метафоричких преводних израза које у изворнику није могуће идентификовати.

Кључне речи: појмовна метафора, превођење метафоре, стабилност метафоре, научно-популарни функционални стил

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