# LSP bilingual dictionary compilation: the role of translation stage in communicating the knowledge of different engineering disciplines

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***Abstract***
*This case study attempts to highlight the translation stage, an important step in technical L2-L1 dictionary compilation. It aims to reveal the translation procedures employed by LSP compilers, relying on the distinction between the concepts of foreignization and domestication, known as Venuti's strategies, when searching for LSP dictionary equivalents. Two English-Serbian LSP dictionaries from different disciplines: the traditional one (mechanical engineering) and the new one (information technology) have been examined. Our hypothesis assumes that LSP dictionaries in traditional engineering disciplines primarily use domesticating (TL-oriented equivalent) translation procedures, whereas those in high-tech engineering disciplines tend to use foreignizing (SL-oriented equivalent) translation procedures. The results of the qualitative and quantitative analyses indicated the dominance of domesticating procedures in the bilingual English-Serbian Dictionary of Mechanical Engineering. In contrast, the appearance of foreignizing translation procedures was noticed in the Dictionary for Computer Terms. Hence, in the future, it seems that communicating technical knowledge in modern technical disciplines through LSP dictionaries will increasingly be facilitated by ready-made terms produced by foreignizing or SL-oriented translation procedures.*

***Keywords****: LSP bilingual L2-L1 dictionary, LSP dictionary equivalents, translation procedures, terms, equivalence relation, knowledge communication*

## Introduction

Our time, as an age of science and technology, has imposed the need to make LSP bilingual dictionaries in which English, as the contemporary “lingua franca” of scientific and technological advances, is often the source language. Given the growing need for easier transfer of highly specialized technical knowledge, these reference texts are alternatively called specialized dictionaries, terminological dictionaries, and technical dictionaries or glossaries. Essentially, they are concerned with the terminology of a particular field consisting of selected specialized English terms and their equivalents in other languages. The increased demand for such dictionaries, which register data for scientific and technological developments, is connected to the practical needs of a global society oriented towards knowledge exchange and human welfare.

In terms of compiling such dictionaries, Nielsen (1994: 129-155) focuses on five stages of the lexicographic selection process:

1. method selection (how the data base was compiled, how and why lexical units in the lemma list were chosen; for example, a frequency-based selection method, one based on the frequency of occurrence)
2. field selection (actual subject or theme of the entire dictionary)
3. data selection (the process of selecting particular texts or units of linguistic data as the basis for a lexicographic project)

4. lemma selection from the source language corpus (total number of the existing words and phrases within the vocabulary of the selected LSP field/fields to be included in the dictionary)
5. equivalent selection from the target language data (however, it is not always possible to find equivalents for culture-bound expressions because of the cultural distance between languages).

The final stage, equivalent selection, is intended to provide communicative and functional information in the form of equivalents, indicating a link between the compilation of specialized dictionaries and translation. Briefly, finding proper equivalents is a central issue of debate in LSP lexicography because its main function is precise knowledge transfer. As the terminology of the bilingual technical-scientific dictionary is concerned with the relationship between particular scientific concepts and their language representations (i.e. word forms), LSP lexicographers are initially required to attain conceptual congruence between SL and TL terms and then use various translation procedures and strategies to precisely render the meanings of terms from the source language to the target language.

**Equivalence relations in LSP dictionaries**

Obviously, equivalence plays a pivotal role not only in the field of general bilingual dictionary compilation but also in the design of LSP dictionaries. Therefore, to satisfy the needs of the target users, any bilingual specialized dictionary should effectively treat equivalent relations. The most common types of equivalent relations identified in bilingual dictionaries, including specialized ones, are full equivalence, partial equivalence, and zero equivalence (Svensen 2009). Full equivalence or congruence is mainly employed in the science and technology domain when both lemma and its target language counterpart have identical meanings. In specialized lexicography, the principle of relevance explains that lexicographers must opt for full equivalence, because lexicographic structures should offer very precise meaning, not only because of the true nature of specialized discourse but also because redundancy ought to be dispelled from specialized texts (Fuertes-Olivera 2011: 107). On the other hand, partial equivalence, known as divergence, occurs when the word or expression in the target language does not have the same lexical meaning and/or grammatical category as the word in the source language, but can be used as a translation counterpart. In such cases, the equivalent paradigm for a certain lemma is primarily composed of more than one equivalent. Gouws (2002: 198) explains that there are two types of divergence: lexical divergence, which prevails when the lexicographer has to ascertain whether the translation equivalents are full or partial synonyms, and semantic divergence relating to situations in which the lemma sign represents a polysemous lexical item. According to Fisher (2014), in the case of partial equivalence, there is always the dilemma of whether to use a functional equivalent (if the similarity between the concepts is sufficiently high) or a translation equivalent (if the difference between two concepts is considered to be too great). However, in the case of lexical gaps, that is, when the target language lacks lexical items or expressions as equivalents for the source language items, this relation is called zero equivalence (Gouws 1999: 26). Lexical gaps frequently occur in the English-Serbian language pair within the technical-scientific domain because of the lower scientific development of Serbia in relation to Anglophone countries. In the case of a lexical gap, the lexicographer is obliged to introduce the concept and then explain the meaning (Prinsloo & Zondi 2020: 349), offering a surrogate equivalent to coordinate with the lemma sign (Gouws 2002: 200). The main task is to identify a term that can effectively represent a concept. In this respect, the compiler should employ some available options, “such as loan words, paraphrases of meaning, and pictorial illustrations to guide the users to understand the meaning of a word” (Prinsloo & Zondi 2020: 361).

Different types of translation procedures must be used to treat these relationships in technical-scientific dictionaries. From a conceptual point of view, translation procedures are regarded as tools for textual analysis to establish semantic and formal relations arising between the original and the target text, influencing not only sentences but also parts thereof, enabling us to understand how translation

equivalence operates (Gibová 2011: 162). However, translation procedures depend on the choice of translation strategy, which refers to the global method of translating selected text structures. In this respect, two opposing translation strategies, domestication, and foreignization were introduced by American translation theorist Lawrence Venuti. According to his view, domestication refers to "an ethnocentric reduction of the foreign text to target-language cultural values, bringing the author back home," whereas foreignization is "an ethnodeviant pressure on those (cultural) values to register the linguistic and cultural difference of the foreign text, sending the reader abroad." (Venuti 1995: 20). Briefly, the former insists on source text-oriented translation by minimizing the strangeness of the foreign text, whereas the latter emphasizes the target text-oriented translation. Venuti preferred foreignization, considering that this strategy retains the linguistic and cultural differences in the original text instead of eliminating them. Hatim (2013: 16) uses a triangle to represent the equivalence paradigm which is in line with Venuti's view, explaining that loyalty to the source text or target text can be presented by the baseline of the triangle: "those on the left-hand side would display source text orientation, those on the right-hand side a predominantly target text orientation".

Although Venuti's bipolar principle of translation equivalence is mostly applied in literary text rendition analysis to reveal underpinned translation strategies, a few successful attempts have been made to investigate the translation strategies adopted when translating brand names in advertising (Bouziane 2013), cosmetic products (Bouziane 2020), or business-to-consumer advertisements (Halimah and Aljaroudi 2019 ) from English into Arabic, confirming that this principle may also be used in applied linguistics for investigation purposes. This inspired the authors to start LSP lexicography research using the same starting point, aiming to reveal translation procedures together with a foreign language or target language-oriented strategies and predict future trends in LSP dictionary equivalent selection in the field of engineering.

The authors hypothesized that LSP dictionaries in traditional engineering disciplines primarily use domesticating (TL-oriented equivalent) translation procedures, such as literal translation, paraphrasing, transposition, or descriptive equivalents, and rarely employ foreignizing ones such as calques, whereas those in high-tech engineering disciplines tend to apply foreignizing (SL-oriented equivalent) translation procedures, such as calque, naturalization, or transliteration, although they still utilize domesticating ones. The pilot study is done in order to evaluate the potential for future large-scale projects.

**Review of recent publications on case studies of translation procedures**

Translation studies, as a special discipline, rapidly developed in the second half of the 20th century and at the beginning of the new millennium, aiming, among other things, to highlight the role of translation procedures as translation tools for specialized terminology. According to Gibová (2012: 7), some linguists have enabled deeper consideration of practical issues and further directions for translation development through case studies on translation procedures. In this respect, she outlined the contribution of Salki (2001), Molina and Hurtado (2002), Klaudi and Karoli (2005), Pim (2005), Kamenicka (2007), Ordudari (2007), Zakir (2008), Garnier (2009), and Gibová, 2011, (2012: 7). These authors highlighted this topic by addressing clarity in translation, reassessment, and the redefinition of translation procedures, illustrating how translators cope with real translation problems. Regarding specialized translation, Schäffner and Wiesemann (2001) recognized the growing need for translation from English to German, revealing the relevant translation decision-making processes regarding applied translation strategies and procedures. Hatam and Shafiei (2012) examined the relationship between the technical English proficiency of Mechanical Engineering students and their technical translation proficiency when translating mechanics technical texts from English into Persian. Hosseinimanesh and Dastjerdi (2013) examined translations of an academic technical text, focusing on the notion of lexical and syntactic interference in translation with the objective of specifying the ways in which interference

affects comprehensibility. Zaytsev (2016) attracted attention by considering translation procedures in non-literary texts when translating from English to Russian, and vice versa. Generally, translation procedures have been limited to examining literary and non-literary text translation but have rarely been investigated from the perspective of bilingual technical dictionary compilation, where technical terms are regarded as uncontextualized terminological units. In Serbian linguistic literature, translation procedures were first examined theoretically (Ivir 1985). However, some studies addressing complex lexical problems in different areas that directly or indirectly relate to translation procedures have emerged in the new millennium (Vasić et al. 2001,, Prćić 2001, Jovanović 2001, Prćić 2005, Filipović 2005, Panić-Kavgić 2006, Hlebec 2009, Silaški 2012, Milić 2015a, 2015b, Katić and Šafranj 2015, Jagrović and Jagrović 2017). Nonetheless, a clear gap remains in the English-Serbian language pair concerning the investigation of translation procedures in bilingual technical dictionaries/glossaries in old and modern engineering disciplines.

**LSP dictionaries of different technical disciplines: A case study of translation procedures**

For the purpose of this research, a pilot study was conducted on two English-Serbian LSP dictionaries from different disciplines, namely from the traditional field, with a focus on mechanical engineering, and from the contemporary field, concentrating on information technology. In this respect, the authors analyzed *Rečnik mašinske tehnike englesko-srpski* (2002) (in English: *English-Serbian Dictionary of Mechanical Engineering*, in further text DME), intended for students of mechanical engineering, engineers, and professional translators, and *Kompjuterski rečnik* (2015) (in English: *Dictionary of Computer Terms*, in further text DCT), created for a wide circle of beginners to expert users in the field. The former (DME) is a result of the mutual effort of LSP lexicographers and experts in the field, as indicated in the preface of the dictionary, owing to the complexity of terminology and difficulties in finding proper Serbian names for English terms, which is in agreement with contemporary trends in LSP lexicography promoting interdisciplinary collaboration between dictionary compilers (Fuertes-Olivera & Tarp 2014: 58-59), whereas the latter (DCT) is obviously prepared by an expert in the field of Information Technology because it lacks additional explanations regarding problems with equivalents and necessary information in terms of dictionary compilation.

In the light of above mentioned, it is worth noting that mechanical engineering is one of the oldest engineering disciplines which began to develop during the Industrial Revolution, with a growing demand for machinery and functional devices in the latter part of the 18$^{th}$ century. In Serbia, Mechanical Engineering mostly evolved under the influence of Germany, one of the world's leading engineering powers in the late 19th century (Rudolf Diesel invented the first diesel engine in Germany in 1896). On the other hand, as a modern discipline, information technology (IT) is associated with the Internet and computers, grouped into five stages or generations, the evolution of which began in the second half of the 20th century. In contrast to mechanical engineering, the field of IT and computer science in Serbia began to develop under the influence of Anglophone countries (the concept of the first programmable computer was created by Charles Babbage in the UK, whereas IBM Corporation introduced the first personalized computer in 1981 in Florida, USA). The DME (consisting of 322 pages) covers terms in the core areas of industrial machinery, engines, motor vehicles, and so on. In contrast, DCT (consisting of 321 pages) comprises terms related to communications, database technologies, computer science, mobile computing, multimedia and networking, operating systems, programming, hardware, software, computer types, and the World Wide Web. The authors assumed that the appearance of foreignizing translation procedures (calque, naturalisation, or transliteration) at a higher frequency in the field of computer science is a consequence of the modern globalisation process associated with innovation and technology, requiring ready-made terms owing to the rapid progress of the domain, whereas the field of Mechanical Engineering began to develop long before the era of modern globalisation, which resulted in

a greater degree of domestication of translation procedures, providing dictionary users with easy-to-understand definitions of technical terms in the form of lengthy explanations and descriptions. Based on this, this pilot study compared two dictionaries from different disciplines.

**Methodology**

In this small-scale pilot study, the authors analyzed randomly selected consecutive alphabetical stretches in both LSP dictionaries (R, S, and T in DME from page 216 to page 299 and B, C, and D in DCT from page 21 to page 71) as a sample to detect the translation procedures and strategies employed by their compilers to reach translation equivalence. Both dictionaries are available only in hard copies, not in digital form, which imposes restrictions on larger-scale investigations. Therefore, the authors oriented this research as a pilot study, aiming to check if further investigations would be worth additional efforts. The framework of the study was grounded in Venuti's model, whereas the research methodology relied on qualitative and quantitative analyses, based on a corpus size of 887 lemmas in DME (out of 3600) and 908 lemmas in DCT (out of 4900). First, the authors detected the translation procedures by contrasting English sources and Serbian equivalents. All disputes regarding the identification of translation procedures were resolved through fruitful discussions. Second, all selected lemmas (from both dictionaries) and their Serbian counterparts were examined from the perspective of equivalence relations and divided into different categories: full equivalence or congruence, partial equivalence or divergence, and zero equivalence (Gouws 2002, Gouws & Prinsloo 2005). Third, the identified translation procedures were classified according to Venuti's (1995) principles of domestication and foreignization. Finally, the quantitative dimension of the performed data analyses based on the above-mentioned corpus was expressed through a graphical view of numerical data for foreignization and domestication strategies, including statistical figures for the employment of individual translation procedures and a graphical view of numerical data for different categories of translation equivalence in both dictionaries. The results showed that in DME literal translation procedure was applied 14 times to attain full equivalence or congruence, representing the domestication strategy. In the case of partial equivalence or lexical divergence, descriptive equivalents were applied in 709 cases, synonymy in two, transposition in 29, paraphrasing associated with polysemy in 61, extension in 46, and reduction in 12, as a part of the domestication strategy. In terms of zero equivalence, there were two cases of surrogate equivalents in the form of descriptions and three cases of surrogate equivalents in the form of paraphrasing which belong to the domestication strategy. In contrast, there were only nine cases of equivalents in the form of loans produced by the calque procedure, representing a foreignization strategy. In the DCT, direct equivalents were applied 44 times using a literal translation procedure to attain full equivalence, reflecting a domestication strategy. Next, to attain partial equivalence, the compiler of the dictionary applied a domestication strategy using near-synonyms in eight cases, definitions in 137 cases, paraphrases in 207 cases, transposition in 169 cases, extensions in 29 cases, and reduction in five cases with regard to lexical divergence, whereas semantic divergence associated with polysemy was treated only by a paraphrase in 24 cases. To manage zero equivalence, there were 143 cases of calque, 75 cases of naturalization, and 67 cases of transference as part of the foreignization strategy. This is followed by a detailed qualitative discussion and illustrative examples.

**Qualitative and quantitative analysis**

First, the alphabetical stretches of R, S, and T in DME were examined. Of the 887 lemmas presented, only 14 were offered target language equivalents with identical meanings, attaining full equivalence or congruence. In these relatively rare cases of *full equivalence*, the compilers of the dictionary used a *literal translation procedure* to apply the *domestication strategy*, which "sounds" quite appropriate to the end users, aiming to offer clear and insertable equivalents. For example:

**rail** – vučnica;
**seal** – zaptivka;
**spindle** – vreteno;
**stop** – graničnik;
**strap** – uzengija;

The translation counterparts of the 859 lemmas were grounded in *partial equivalence* or *divergence*, either lexical or semantic, respectively. Namely, *descriptive equivalent*, *synonymy*, *transposition*, *extension*, and reduction as domesticating translation procedures were used in the case of lexical divergence when translating double or triple noun compounds with different grammatical structures in relation to SL, reflecting the richness and adaptability of the target language, whereas paraphrasing as domesticating translation procedure was used in the case of semantic divergence, associated with polysemy. The results showed that descriptive equivalents were applied in 709 cases, synonymy in 2, transposition in 29, paraphrasing associated with polysemy in 61, extension in 46, and reduction in 12, confirming that in these particular cases Serbian counterparts were only partially able to express the meaning of specialized terms.

Let us consider the following examples.

An example of a *descriptive equivalent* is as follows.

**suspension rate** – promena opterećenja točka u središtu kontakta pneumatika po jedinici pomeranja opružne mase vozila.

(English translation: Change in wheel load in the center of the tire contact per unit of vehicle spring mass displacement.)

This is an example of *synonymy.*

**tension rod** – upravljačka vezna poluga **ili** vezna šipka

(English translation: Control link **or** tie rod)

This is an example of *transposition*:

**rocker shaft** – osovina klackalice;
**rear wheel axis** – osa zadnjeg točka;
**slip angle** – ugao proklizavanja

This is an example of *paraphrasing* in case of *lexical divergence*:

**Schrader valve -** tip pneumatskog nepovratnog ventila koji se koristi specijalno za naduvavanje pneumatika. Pritisak na centralni čep otvara ventila da bi se olakšalo naduvavanje i merenje pritiska u pneumatiku.

(English translation: A type of pneumatic non-return valve used specifically for inflating tires. Pressure on the center plug opens the valve to facilitate inflation and measurement of tire pressure).

This is an example of *paraphrasing* used in the case of *semantic divergence*, associated with polysemy.

**torque convertor** (1) hidraulični konvertor koji se sastoji od rotirajućih i statičkih sklopova sa krilcima pomoću kojih se obrtni moment može prenositi, umnožavati i kontrolisati. To je osobina mnogih automatskih transmisija. (2) uredjaj koji prenosi obrtni moment sa jedne osovine na drugu obično pomoću hidraulika i dozvoljava asinhronost između osovina.

(English translation: (1) a hydraulic converter consisting of rotating and static vane assemblies by which torque can be transmitted, multiplied and controlled. This is a feature of many automatic transmissions. (2) a device that transmits torque from one axle to another usually by means of hydraulics and allows asynchrony between axles).

This is an example of *expansion.*

**rubber "o" ring** – gumeni "O" zaptivn iprsten

This is an example of *reduction.*

**sparking plug** – svećica

Where suitable translation equivalents were not available, that is, in the case of zero equivalence relation, surrogate equivalents were created by means of description and paraphrasing, which also belong to the domestication strategy. There were 2 cases of surrogate equivalents in the form of description and 3 cases of surrogate equivalents in the form of paraphrasing.

Here are some examples of surrogate equivalence in the form of domestication strategies.

This is an example of *description*:

**Scotsman's sixth** – praksa da se vozilo kreće nizbrdo bez angažovanja stepena prenosa posebno kod komercijalnih vozila (termin se uglavnom koristi u UK).

(English translation: the practice of moving a vehicle downhill without engaging gears, especially in commercial vehicles (the term is mostly used in the UK)).

In this particular dictionary, there were only nine cases of equivalents in the form of loans produced by the calque procedure, which is considered an efficient tool for foreignization strategies. For example:

**steering worm** – upravljački puž;

**swing shackle** – pomična spojnica;

Second, alphabetical stretches of B, C, and D in the DCT, composed of 908 lemmas, were analyzed. In this connection, 44 lemmas were assigned direct equivalents using a literal translation procedure, reflecting a domestication strategy.

Let us now display some examples of full equivalence using a literal translation procedure that reflects a domestication strategy.

**band** – opseg;

**caddy** – nosač;

**bridge** – most;

**computer** – računar;

**crop** – odsecanje

Next, to make the terms more comprehensible to the reader, *near-synonyms* (eight cases), *definitions* (137 cases), *paraphrases* (207 cases), *transposition* (169 cases), *extension* (29 cases), and *reduction* (five cases) were used as domesticating translation procedures to treat partial equivalence in the cases of lexical divergence. Semantic divergence associated with polysemy (which requires a separate translation equivalent for each polysemous sense) was only treated by *paraphrase* (24 cases) to provide optimal retrieval of information for different types of users.

The following examples illustrate partial equivalence using domesticating procedures, such as *near-synonyms*, *definitions*, *paraphrases*, *transposition*, *extension*, and *reduction* employed in the case of lexical divergence.

These are examples of *near-synonyms*.

**barebase** – osnova ili (or) kostur

**display** – ekran ili (or) monitor

These are examples of *definitions.*

**Bench32** – Sveobuhvatno merenje ukupnih performansi sistema pod Windowsom NT i Windowsom 95 (English translation: Comprehensive measurement of overall system performance under Windows NT and Windows 95)

Let us consider examples of paraphrasing in the case of lexical divergence.

**DiskCopy** – Uslužni program koji se koristi za kreiranje kopije celog flopi diska

(English translation: A utility (program designed to facilitate routine operations) used to create a copy of an entire floppy disk)

Let us display an example of paraphrasing in the case of semantic divergence associated with polysemy.

> **duty cycle** – (1) U oblasti štampanja I kopiranja, termin *duty cycle* se odnosi na broj kopija odštampanih stranica koji neki uredjaj može sa dovoljnom pouzdanošću generisati na mesečnom nivou. itd… (2) u oblasti merenja, radni ciklus se definiše kao odnos izmedju trajanja nekog fenomena i ukupnog vremena tokom kojeg je merenje vršeno, pri čemu se radni ciklus označava slovom D. itd… (3) U oblasti emisije radio zračenja, radni ciklus, koji se još naziva i radnim faktorom, predstavlja deo vremena tokom kojeg je neki radar emitovao radio signale.
>
> (English translation: (1) In the field of printing and copying, the term ***duty cycle*** refers to the number of copies of printed pages that a device can reliably generate on a monthly basis. etc... (2) in the field of measurement, the *duty cycle* is defined as the ratio between the duration of a phenomenon and the total time during which the measurement was made, whereby the duty cycle is denoted by the letter D. etc... (3) In the field of radio radiation emission, the *duty cycle*, which is also called the *duty factor*, represents a part of the time during which radar emitted radio signals.)

These are examples of *transposition*.

**buddy list** – lista prijatelja (*Transposition*: noun + noun→ morphological substitution)
**dialog box** – okvir za dijalog (*Transposition:* noun+ noun→ noun+ prepositional phrase)
**capture buffer** – prihvatni buffer (*Transposition*: noun+ noun→ adjective + noun)

These are examples of *extension.*

**banding shaping** – oblikovanje propusnog opsega
**carrier** – noseća frekvencija

These are examples of *reduction*.

**blog search engine** – blog pretraživač

Finally, in 285 cases of zero equivalence (i.e. a lack of suitable translation equivalents in the target language), lemmas were mostly treated through loans (borrowed words) derived from calque (143 cases), naturalization (75 cases), and transference (67 cases) as part of the foreignization strategy. In fact, the authors observed an increased tendency to use foreignizing procedures devoid of redundancy and obscure meaning in the domain of IT engineering compared to those employed in the field of mechanical engineering, marked mainly by extra information that is unneeded or duplicated.

Some examples of loans used in the case of zero equivalence represent a foreignization strategy.

These are examples of *naturalization*.

**compiler** – kompajler
**driver** – drajver
**blogosphere** – blogosfera

These are examples of the *calques.*

**cold boot** – hladno startovanje
**clay animation** – glinena animacija
**cukoo egg** – kukavičije jaje

These are examples of *transliteration*.

**bluebugging** – bluebugging
**bluejacking** – bluejacking
**bluesnarfing** – bluesnarfing

**Discussion**

The analysis of our case study indicates that lexicographers used quite opposed translation strategies, either foreignization or domestication, known as Venuti's strategies, to communicate the knowledge of different engineering disciplines. Regarding the frequency of each method, the results showed that the most dominant translation strategy was the domestication strategy in either the old – mechanical engineering – (873cases) or modern discipline – information technology (623 cases), whereas a conspicuous increase in foreignization strategy (285 cases) was noticed in the field of modern engineering discipline – information technology – when compared with mechanical engineering (14 cases) regarded as old (Figure 1).

In addition, our findings suggest that the most commonly employed equivalent relation in the field of mechanical engineering is partial equivalence. In this regard, the most frequent translation procedure was descriptive equivalent with 80.16%, followed by paraphrase (associated with polysemy), extension, transposition, reduction, and synonymy with 7.22%, 5.19%, 3.27%, 0.23%, and 1.35%, respectively. Zero equivalence was solved by calques with 1.01%, including domesticating procedures – paraphrasing and description – with 0.34% and 0.23%, respectively. Surprisingly, full equivalence was the least-employed equivalent relation treated by the literal translation procedure (1.58%). Finally, 98.99% of the terms were domesticated. The use of translation procedures in the mechanical engineering domain is shown in Figure 2.

**Figure 1.** Employment of domestication and foreignization strategies in the mechanical engineering and it domains

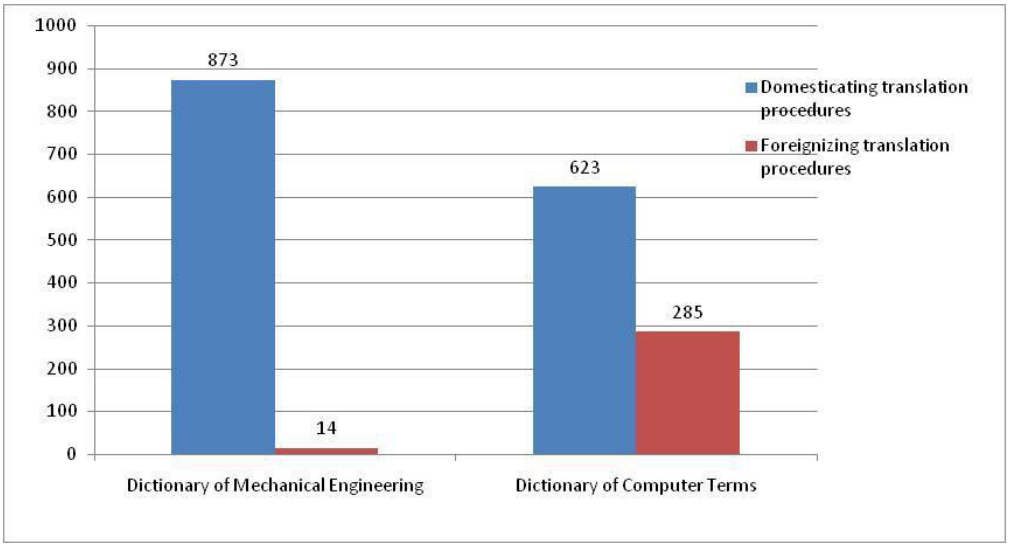
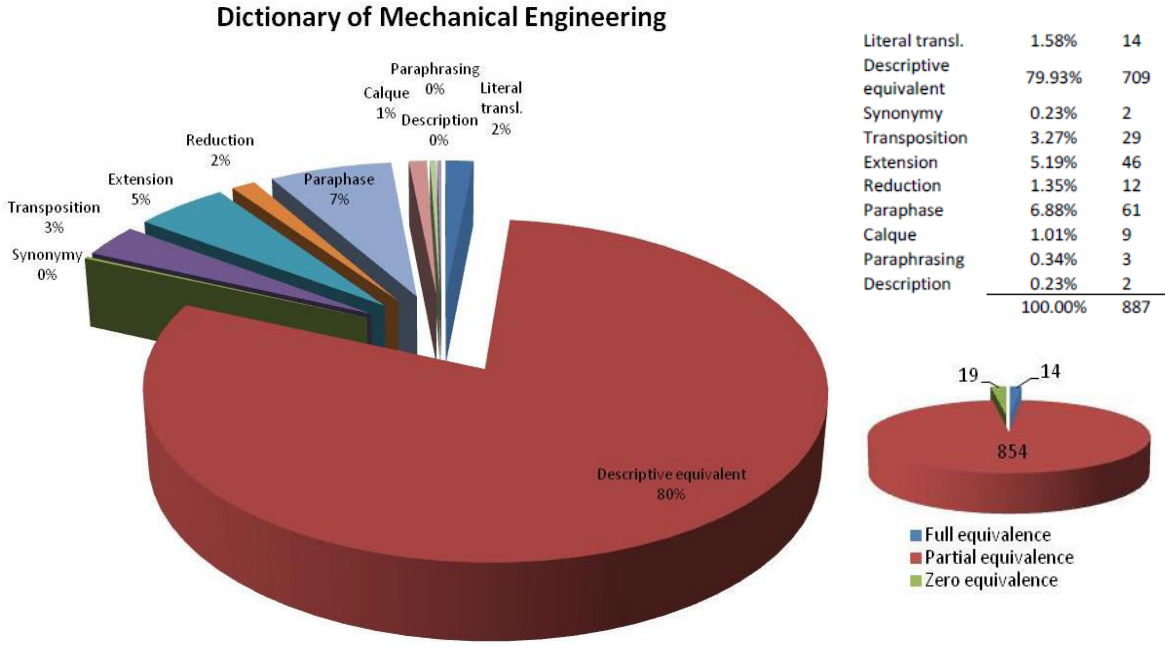


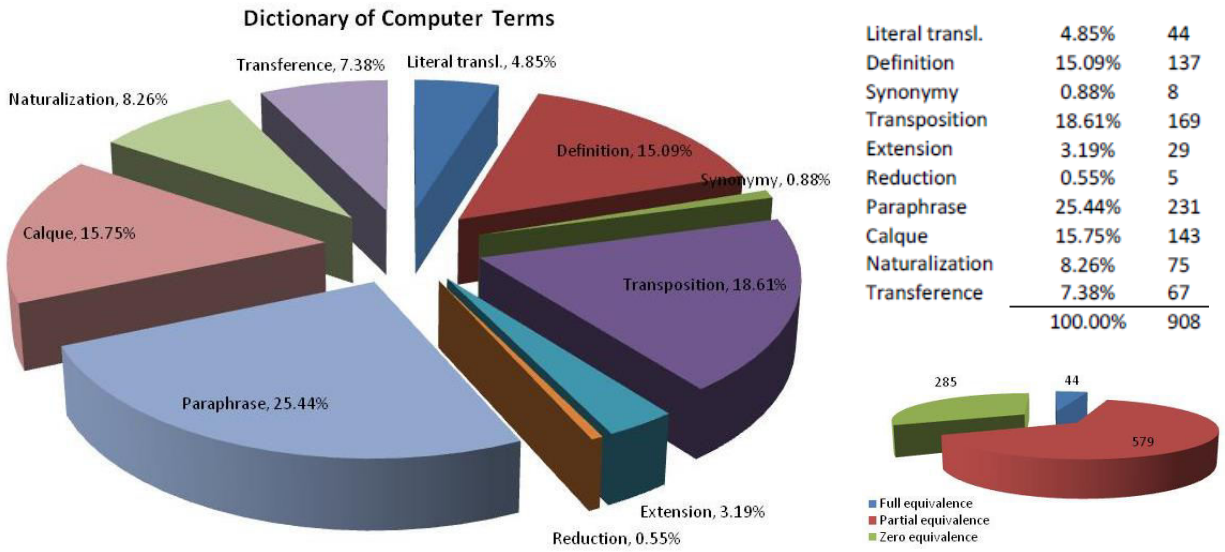
**Figure 2.** Employment of translation procedures in the mechanical engineering domain




It is interesting to note that the problem of zero equivalence in the mechanical engineering discipline was not only solved by calque (considered to be a foreignizing procedure), but also by domesticating procedures such as paraphrasing and description, indicating a reluctance of LSP lexicographers to use "foreign words". Similar to mechanical engineering, partial equivalence prevails in the field of information technology, as shown in Figure 3. In this respect, the most employed translation procedures were paraphrases, transposition, definitions, extension, near-synonyms, and reduction, used by LSP lexicographers with 0.55%, 25.44%, 18.61%, 15.09%, 3.19%, 0.88%, and 0.55%, respectively. Full equivalence was achieved by a literal translation procedure with 4.85%, whereas zero equivalence was achieved by calques, naturalization, and transference at 15.75%, 8.26%, and 7.38%, respectively. It can be concluded that 31.39% of the terms were foreignized in the translation process. The use of translation procedures in the IT domain is shown in Figure 3.

In Figure 3, the accent is on foreignizing translation procedures – naturalization and transliteration – which, according to our observation, was additionally applied in the domain of information technology (apart from calques), but totally omitted in the domain of mechanical engineering. This is an indication that Serbian lexicographers have become increasingly open to foreign influence in contemporary disciplines, aiming to avoid ambiguity in meaning as much as possible and to make the terms more economical and precise for end users.

**Figure 3.** Employment of Translation Procedures in the IT Domain




The authors also observed that in the LSP Dictionary of the IT domain, a certain number of lemmas lacking direct translation equivalents in Serbian were assigned not only borrowed words, but also a clear interpretation of meaning in the form of comprehensive definitions or descriptions. The authors suppose that this was done because borrowed words without clear semantic explanations were purposeless for specialized dictionary users. However, in the near future, after frequent use of the newly coined terms, it is expected that these "foreign" words will be established in general use as independent i.e. self-sufficient words, "released from" any additional unnecessary information.

**Conclusion**

Interestingly, lexicographers of both examined dictionaries used almost the same domesticating translation procedures when searching for equivalent relations, known as full and partial equivalence. However, there is a difference between the dictionaries of mechanical engineering, as a representative of old engineering disciplines, and the IT domain, as a representative of modern engineering disciplines, in terms of zero equivalence relations. This is reflected in the appearance of additional foreignizing translation procedures in the latter discipline, namely, naturalization and transliteration. These foreignizing translation procedures, as part of the foreignizing strategy advocated by Venuti, are used to facilitate and speed up communication in the IT domain's professional world owing to its dynamic development, aiming to make specialized discourse more functional for end users. Our case study results confirmed our hypothesis that domesticating (TL-oriented equivalent) translation procedures prevail in LSP dictionaries of traditional engineering disciplines, although foreignizing procedures are not completely excluded. On the other hand, dictionaries in high-tech, that is, modern engineering disciplines, show a growing tendency towards foreignizing (SL-oriented equivalent) translation procedures, but they still utilize domesticating ones.

Briefly, our case study revealed that both domesticating and foreignizing translation procedures played a vital role in communicating the knowledge of different technical disciplines, complementing each other to achieve the goals and intentions of LSP lexicographers.

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