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Faculty of Electrical Engineering
and Communication

BACHELOR'S THESIS

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VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ

FACULTY OF ELECTRICAL ENGINEERING AND COMMUNICATION

FAKULTA ELEKTROTECHNIKY
A KOMUNIKAČNÍCH TECHNOLOGIÍ

DEPARTMENT OF FOREIGN LANGUAGES

ÚSTAV JAZYKŮ

COMMENTED TRANSLATION: MEASUREMENTS IN ELECTROTECHNICS AND AUDIOTECHNICS

KOMENTOVANÝ PŘEKLAD: MĚŘENÍ V ELEKTROTECHNICE, MĚŘENÍ V AUDIOTECHNICE

BACHELOR'S THESIS

BAKALÁŘSKÁ PRÁCE

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Bachelor's Thesis

Bachelor's study field **English in Electrical Engineering and Informatics**

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TITLE OF THESIS:

Commented Translation: Measurements in Electrotechnics and Audiotechnics

INSTRUCTION:

In the Bachelor thesis the student will translate the complete source text, analyze it from the stylistic point of view and point at the main problems connected with the practical part. The student will demonstrate his or her ability to connect theoretical knowledge with translation practice.

RECOMMENDED LITERATURE:

Jan Dušek, Petr Marcoň, Jan Mikulka, Zdeněk Roubal, Zoltán Szabó: Měření v elektrotechnice, Měření v audiotechnice - laboratorní cvičení.

Krhutová: Parameters of professional discourse, Brno 2009

Knittlová a kol: Překlad a překládání, Olomouc 2010

Newmark: A textbook of translation, Prentice Hall Internation 1988

Levý: Umění překladu, Praha 1998

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Bakalářská práce

bakalářský studijní obor **Angličtina v elektrotechnice a informatice**

Ústav jazyků

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NÁZEV TÉMATU:

Komentovaný překlad: Měření v elektrotechnice, Měření v audiotechnice

POKYNY PRO VYPRACOVÁNÍ:

V bakalářské práci student(ka) přeloží kompletní zdrojový text, provede jeho stylovou charakterizaci a pojmenuje hlavní problémy s překladem spojené. Student(ka) poukáže na schopnost propojovat teoretické poznatky s praktickými postupy při překladatelské práci.

DOPORUČENÁ LITERATURA:

Jan Dušek, Petr Marcoň, Jan Mikulka, Zdeněk Roubal, Zoltán Szabó: Měření v elektrotechnice, Měření v audiotechnice - laboratorní cvičení.

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Abstract

The concern of this thesis is a commented translation of an instructional text used in university courses *Measurement in Electrical Engineering* and *Measurement in Audio Engineering*. The translation was created for the use of future foreign students attending said courses. The commentary puts forth the reasoning behind the motivation to carry out the translation, views and theories applied during the translation process, encountered issues and their individual solutions, including specific examples, as well as a brief linguistic study of the text. In addition to the translation, this thesis describes the concept of glossaries that would accompany each set of instructions in the text. The final product of the translation is ready to be assessed to be an official study material.

Keywords

commented translation, electrotechnics, audiotronics, laboratory measurements, instructional text, laboratory exercise, students, English, Czech, study materials

Abstrakt

Předmětem této práce je komentovaný překlad instruktážního textu používaného v univerzitních kurzech *Měření v elektrotechnice* a *Měření v audiotechnice*. Překlad byl vytvořen pro potřeby budoucích zahraničních studentů navštěvujících uvedené kurzy. Komentář uvádí důvody motivace k provedení překladu, překladatelské teorie a pohledy aplikované během překladu, potíže ke kterým v průběhu došlo a jejich individuální řešení, včetně konkrétních příkladů, a stručnou lingvistickou analýzu textu. Kromě samotného překladu tato práce představuje koncept slovníčků které by doprovázely každý laboratorní návod v textu. Finální verze překladu je připravena k posouzení, zda může být použita jako oficiální studijní materiál.

Klíčová slova

komentovaný překlad, elektrotechnika, audiotechnika, laboratorní měření, instruktážní text, laboratorní cvičení, studenti, angličtina, čeština, studijní materiály

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Author's Declaration

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Topic: *Commented Translation:
Measurements in Electrotechnics and Audiotechnics*

I declare that I have written this paper independently, under the guidance of the advisor and using exclusively the technical references and other sources of information cited in the project and listed in the comprehensive bibliography at the end of the project.

As the author I furthermore declare that, with respect to the creation of this paper, I have not infringed any copyright or violated anyone's personal and/or ownership rights. In this context, I am fully aware of the consequences of breaking Regulation S 11 of the Copyright Act No. 121/2000 Coll. of the Czech Republic, as amended, and of any breach of rights related to intellectual property or introduced within amendments to relevant Acts such as the Intellectual Property Act or the Criminal Code, Act No. 40/2009 Coll., Section 2, Head VI, Part 4.

Brno, May 25, 2021

author's signature

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Brno, May 25, 2021

author's signature

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Introduction

Effective communication is crucial worldwide and standing at its core is the language that can be understood and spoken by (almost) all, the current *lingua franca*: English. Brno University of Technology (hereinafter referred to as “BUT”), as an institution of international reach that houses students from abroad, acts accordingly in the form of bilingual website interface, qualified English speaking lecturers, and English study materials.

The instructional text that is the subject of this thesis was requested to be translated by Associate Professor Jan Mikulka, and I started the translation process during the winter term of 2019 in which I completed the course of Measurement in Electrical Engineering myself. The text consists of brief theory segments followed by detailed instructions for the laboratory tasks that are grouped into nineteen sets, each tied to one laboratory task. Each set includes brief theory applied in the exercises, mathematical formulae and equations used, and detailed steps on how to perform said tasks, including a description of instruments used and instructions for their use. So far, the text has been provided in full only in Czech, which is insufficient due to the increasing number of English-speaking students. The main reason behind carrying out this translation was gaining valuable translation experience, creating study material that will be used by future foreign students, as well as the possibility of using it as the topic of my bachelor’s thesis.

During the translation process, it was important to keep the final recipient in mind – in this case, the future English speaking students of the courses *Measurement in Electrical Engineering* and *Measurement in Audio Engineering*. As the text is of instructional nature, and thus its semantics and grammar are not complicated, the translation has a certain freedom of informality that manifests itself throughout the text in wording that is clear and understandable, both vital characteristics for the instructional nature of the text.

Equally important, however, are the text's authors, consisting of staff from the *Faculty of Electrical Engineering and Communication*. Several field-specific English expressions take on different meaning in practice in comparison with those we would find in technical literature or a dictionary. This specific word usage was maintained to provide students better understanding of report texts, textbooks, and articles that they may encounter during their studies, and should therefore not be neglected. The use of such terms will be demonstrated in the *Translation process* chapter.

The translation aims at meeting the standards of official study materials that may be used by students in practical laboratory measurements in the future, as well as discuss the utilization of English study materials. Both the English translation and its source Czech text play vital roles in the translation process and will be analysed in this thesis.

This commentary will discuss the nature and context of the original text, introduce and establish the use of Skopos theory in the translation, present a brief pragmatics and structure analysis

of the text, and describe the translation process. As an addition to the translation, brief Czech-English glossaries for the electro-technical terms used in the laboratory exercises is provided.

Any examples provided are identified by the number of the exercise they appear in (in both the Czech text and the translated English text), or, more specifically, by either the Czech or English document via its Appendix letter and a page and line number. Lines on each page of Appendices A and B were numbered for the purpose of referencing.

1 Bilingual study materials

While many study programmes at BUT offer English courses designed for the given programme, such as Business English, for example, full scripts and study texts are provided only for courses aimed at exchange students and those who study in English. With a significant portion of the student body as well as the teaching staff consisting of foreigners, it can be argued whether it should not be commonplace for students to have English translations of all materials at their disposal.

While speaking English is encouraged and to a degree demanded in schools, many students end up turning away from English and settling on language level of B2 or lower according to CEFR¹. (Jarošová, 2019) The prevalent reason for such behaviour is simple disinterest in further foreign language learning because their further studies and career practice do not demand it. These students can converse in English and recognize key terms of their fields but may find it difficult to read technical texts or published papers. And while such knowledge may be sufficient for a nation-wide job market, once a worker wants to venture outside the borders, foreign language knowledge may pose an issue.

¹ “The common European Framework of Reference for Languages (CEFR) is an international standard for describing language ability in the form of a six-point scale, from A1 for beginners, up to C2 for those who have mastered a language.” (*International Language Standards*, 2021)

It is important to note that – ironically – the practical English, such as international company communication or project negotiations used in technological fields like electrical engineering or IT, very rarely sticks to grammar or employs complex sentence structures. International companies often communicate either by email, phone or in person quite informally, using simple spelling and sentence structure to avoid any confusion or miscommunication between the parties.

While English in practice may not be as demanding, it can be considered advantageous for students to make effort to learn it properly and thoroughly, especially in their field of study. The premise of knowing a language on a professional level as well as understanding, reading, and writing technical texts puts students into an advantageous position, as it can be assumed that they can learn and study on their own, as well as communicate effectively. Such a student may find it easier to find employment within his or her field.

Due to reasons stated above, working with study materials in English may help with building up language skills side by side with the knowledge of the subject. The translated text commented on in this thesis presents students with a study material that represents a showcase of practical use of English in the context of electrical engineering and audio engineering, giving students the opportunity to become confident in its usage in practical setting.

1.1 Demand and practical use

Advantages of study materials in English go beyond satisfying the need for *lingua franca* among students from abroad. With the language being the world's most widely spoken, as stated by *Busuu Blog* in the article *Most spoken languages in the world 2020* (Klappenbach, 2019), speaking the language means having more opportunities and potentially offers its speakers confidence and efficiency in navigating today's world of international cooperation, summits, business trips and conventions. To rephrase: to understand means to be able to learn, and it would be only wise to use that potential to the fullest.

Especially in technological fields such as electrical engineering or audio engineering, the knowledge of English tends to be considered indispensable. The reasons are manifold: many instruments and tools used in the field being imported from abroad, with instruction manuals and labels not provided in Czech; as well as many standards within the industry being named and described in English and used worldwide without translation. For this reason, many Czech textbooks include English glossary for the terms used in their bodies of text.

The implementation of study materials in English into university (faculty) courses in general, not only those aimed at exchange students and those who chose a course accredited in English, could be advantageous for students. Teaching them how to navigate in and comprehend English papers, articles and research

studies enables students to take active part in international discourse of their field. This can be beneficial for their studies or future careers.

1.2 English-speaking students at BUT

According to the Study department at the *Faculty of Electrical Engineering and Communication*, on average, the university hosts 50–80 students under the Erasmus Programme¹ each term, and there are 22 students enrolled in English-only full-time programmes as of winter term 2020/2021. The numbers are relatively small when compared to the total number of students, which is more than 3 500 according to the faculty’s website (Dědková, 2005), but not negligible. Due to present globalization situation, the numbers can be expected to only rise with coming years.

¹ A European student exchange programme.

2 Defining the original text

The subject of my translation is an instructional text belonging to materials of faculty courses *Measurement in Electrical Engineering* and *Measurement in Audio Engineering*. It was created by teachers at the *Department of Theoretical and Experimental Electrical Engineering* at BUT, namely Ing. Jan Dušek, Ing. Petr Marcoň, Ph.D., doc. Ing. Jan Mikulka, Ph.D., Ing. Zdeněk Roubal, Ph.D. and Ing. Zoltán Szabó, Ph.D.

In its current form it is in the form of a .doc file of 105 pages, including the table of contents, the list of literature used, and an introduction. The document comprises of instructions for individual practical measurements, varying in length and difficulty, that students carry out throughout their course. It was first created when the subject *Measurement in Electrical Engineering* was introduced, to guide students through the subject's practical laboratory measurements, and has gradually evolved and changed every year since then. Most notable changes occurred in the academic year 2019/2020, when several laboratory measurement tasks were added while others were significantly altered. This version of the text was used as the source for the translation. Each set of instructions has its own author and has been individually updated and edited throughout the years. The main editor of the text is currently Associate Professor Jan Mikulka, who gave the text the unified look it has today.

As mentioned beforehand, the university houses Erasmus students each term. For their needs, so far only about 5 of the instruction sets, in a simplified form and stripped of supporting text and theories, were offered in English; essentially only as a list of required equations and schematics, while any accompanying theory and explanation meant to be presented by the teacher during the lesson. Due to the small number of measurement tasks covered by this translation and the lack of written theory the students could refer to, this solution was deemed temporary.

2.1 Document structure

The main body of the Czech document is split into 19 parts; each part being structured as a set of instructions bound to a specific measurement exercise. Preceding the exercise instructions are *Introduction* and a chapter offering general instructions aimed at the readers. At the very start of the document, you will find *Table of contents* and at the very end *List of references*. The laboratory exercises all follow an identical structure of numbered subsequent chapters with following headlines: *Goal of exercise*, *Exercise*, *Theoretical background*, *Measurement procedure*, *Processing measured values*, *Conclusion* and *Control questions*. In some instances, the chapters contain subchapters; such partitioning is not additionally numbered. All exercise sets are numbered, as well as lettered (A and B), as some measurement exercises are thematically bound together.

All figures, tables and equations used within the text are numbered, tables and pictures are accompanied by brief descriptions as well. Lists of materials or equipment used are listed in bullet points along with any possible additional information, such as a serial number or the name of the manufacturer.

Individual chapters are written in the form of a coherent text divided into paragraphs. Bold text is used to highlight terms in the text and names of specific devices, files, or programs are written in italics.

I have incorporated line numbering into both Appendices for the purpose of referencing in this thesis, the numbering does not appear in the original document or the final translation.

2.2 Language devices

Different types of texts have their own specific language devices they can be identified by; instructional devices, in the case of this text. Instructional texts incorporate such features in both graphical layout and grammar. The subject of this subchapter is the source Czech document; however, examples are provided side by side in both languages to illustrate the devices' transformation (or lack thereof) during translation.

The main body consists of short and concise sentences, often starting with an imperative verb (such as “Zapojte” – “Wire” or “Zapište si” – “Write down”). The instructions themselves are sequenced in a chronological order, arranged either into bullet points or numbered (or lettered) lists; the sequencing is employed

within the text as well, using words such as “nejdříve” – “first,” “potom” – “then” or “dále” – “next”. The content is split into sections distinguished by either bullet points or numbered headlines. Such partitioning unifies all the instruction sets, visually aiding in keeping the text clear and easy to navigate.

The grammar of the Czech and English versions is quite different. In the Czech text, imperatives are prevailing, with sparse instances of future tense and past tense verbs, the latter appearing in the *Conclusion* section nearly exclusively. Similarly, the English translation is dense with imperatives, while instances of future simple or future continuous are very rare. The few that can be found are in the *Theoretical background* part of the text, describing the actions prior to the instruction sequences. Another exception is the usage of “may/might” and present perfect infinitive, usually in the *Conclusion* part of instructions; prompting readers to evaluate the actions they have done in the measurement, for example: “... identify the influences that *may have affected* the measurement results ...“ (page 52, line 8 in Appendix B).

Another clear sign of an instructional text is the frequent use of figures, tables, graphs and diagrams, often accompanied by detailed descriptions. Specifically figures of equipment and labelling of control elements - such as those in Fig. 56 in exercise 10B for example – serve the purpose of guiding and illustrating, as the labels are mentioned in the following instructions that dictate how to work with said equipment. It can be also observed that the instructions contain a lot of information on *how*, *when*, and *where*,

(e.g., the instances used in the same exercise: “... in the upper right corner of the object ...“, “... After tuning the program ...”, “... using the icon ...”). In exercises that require the students to record the measured values, tables as well as sample graphs are provided so that students may model their own calculations and processing of data accordingly.

A variety of lists is present as well: of used materials, equipment, or desired results and questions. The questions appear at the very end of each instruction set; their function is to test the students’ knowledge after their measurement in order to establish their understanding of the material.

2.3 Comparison with technical texts

The field of academic writing is one of strict rules and guidelines to follow (Leki, 1999, p. iii). Despite the amount of effort needed for writing technical (academic) texts correctly, as it requires a thorough research as well as sticking to strict formatting rules, such texts hold the potential to be a vital knowledge source, as well as a platform for today’s students and future academics. To know how to write a technical text well is to know how to present your argument well and thus be heard, the possible justification behind the academics’ rigid rules establishing what is recognized as a technical text today. While the original document cannot be considered a technical text in the narrow sense of the term, it adopted many of its features that are compared in detail in the following paragraphs:

A distinct tone of formality and objectivity is prevalent in academic writing. It is achieved by avoiding colloquial language devices, such as contractions or informal vocabulary. Academic text contains a vast array of technical terms specific to the text's scientific field and employs complex sentence structures. The tone is objective and impersonal by avoiding the authors' or other people's feelings and choosing to focus on facts, ideas, and data instead. Sentences are usually dense with information and difficult to navigate for a layman in the field.

While the instructional text that is translated can be considered quite dense with technical terms, its sentence structure refrains from complexity. But like academic texts, the instructional text avoids contractions and informal vocabulary. It is worth noting that while the sentence structure may be often simple, the sentences appear "crowded" due to many adjectives and modifiers, such as in the sentence "Nominal impedance of speaker is important for the design of amplifier output stage." (page 35, line 7-8, Appendix B) for example.

In terms of technical texts' structure, one of the most common to follow is the IMRaD norm (*The Structure of Academic Texts*, 2020) - typical for scientific journal articles or research papers. The name itself is an acronym for *Introduction, Method, Results and Discussion*; the structure that a technical text should follow. In *Introduction*, the main topic of the paper is introduced, along with its reasoning, theory and aim, and how said aim will be fulfilled. The *Method* part of the text describes the steps that were taken,

and presents all equipment, materials and conditions under which the study was conducted. In *Results*, the author presents and sums up the outputs and results of their actions without yet evaluating them. The *Discussion* part of the text is perhaps the most crucial, as it is where the author analyses their results and states their arguments by their further comparison and discussion. While passive voice is at domain in technical texts overall, sections such as *Introduction* or similar may employ active voice to utilize persuasion in stating the author's intent and motivation.

While the instructional text does not strictly follow the IMRaD norm, it can be observed that its sectioning exhibits a pattern similar to IMRaD, only ordered and named differently. What does not comply with academic texts' structure is the sequencing of the sections' content. While academic texts do not avoid lists, they are hardly used to such extent. Excessive use of lists, usually distinguished by numbers, letters or bullet points is typical for instructional texts or textbooks and has no place in academic writing.

When talking about syntax, it can be observed that passive voice, while generously used in the text, appears side by side with active voice (imperatives). Imperative verbs are perhaps the most striking difference between a text of instructional nature and an academic text; the direct call to action being non-existent in technical text and omnipresent in the instructional text.

As stated by the Learning Centre at the University of Sydney (*Types of academic writing – The University of Sydney, 2019*),

academic writing can be further divided into four types: *Descriptive*, *Analytical*, *Persuasive* and *Critical*. The *Descriptive* style is used to present facts and is mostly used in reports, it can be ranked as the simplest style. *Analytical* writing is most typical for academic writing, as it not only describes the facts and data but submits them to an analysis by comparing and categorizing. *Persuasive* writing introduces the authors' own point of view and argumentation based on evidence and valid assumptions. The last type, *Critical* writing, can be considered as the most advanced, as it utilizes not only the author's own point of view but a counter argument as well. *Critical* writing requires thorough research on the topic at hand and clear evidence for both sides of the argument.

The instructional text does not fit the description of *Critical* or *Persuasive* writing, as the text does not introduce anyone's opinion or any type of argument. The content is quite dense with information and descriptions and thus does share similarities with the *Descriptive* type of academic writing, but the instructional nature is an extra feature usually not included in *Descriptive* writing. While the theory preceding the instructions can be used as the basis for a laboratory measurement report, the text does not contain any actual results or data – the main objective of *Descriptive* writing, it only contains information on how to obtain them. It can be argued that the text prompts readers towards *Analytical* writing of their own with instructions such as “Based on the obtained results, assess the suitability of individual methods for measuring resistances of various sizes, the achieved measurement uncertainty, and their

laboriousness.” (page 27, line 4-5 in Appendix B). For as the text states in the *General instructions for laboratory exercises* chapter, the students are required to create a measurement report at the end of each exercise.

3 Translation process

I started the process with a rough translation of the original text in full, using dictionaries and thesauruses, with terms and sentences that posed a challenge highlighted. These terms were then further researched in order to verify the correctness of the translation. Then I reassessed the translated text as a whole to identify errors in sentence structure or reading fluidity. Once reedited, the work was submitted to be commented on by my thesis’ advisor and a language consultant at BUT. Their feedback revealed imperfections within the text that were subsequently corrected.

An important step of the process was to submit the translation to be read through by volunteers with different degrees of electrical engineering background and knowledge of the English language. My intention was to receive feedback on the text’s comprehension and flow that I then incorporated into the translation. While the intended demographic of the document is clearly (and quite narrowly) defined, feedback from volunteers with little to no electrical engineering knowledge proved quite helpful. Their comprehension of the text revealed parts that were difficult to understand and trivial grammatical mistakes, while the feedback from people in the field

concentrated on the technical terms and their use, both of which were valuable. The text was reedited multiple times after the read-throughs. Changes included switching the word order, finding synonyms, and rephrasing sentences and paragraphs that suffered from overuse of certain terms.

It is worth mentioning that English texts do not have a unified form; only style manuals, of which there are many of all over the world, and so it may never completely unite in style. The best a translator can do is strive for intelligibility and consistency in their translations. An example of such consistency can be the use of British spelling in the translation. I decided for the British variant both because the United Kingdom lies relatively close to Czech Republic geographically, and because most of Europe uses British English, as well as the most popular language certificates, such as the Cambridge English exam. (Sluis, 2020) It can be therefore expected that most students from abroad are already accustomed to British English spelling.

3.1 The Skopos theory

The general goal of translation could be defined intuitively as “being faithful” or “being equivalent”; taking the original information from one language and translating it into another so that the information stays intact. But such statement can be interpreted in more ways: should the translation be faithful to the information only? Or should it strive for keeping the style providing this information, or the function of the style? Whether there is a single correct answer

to that questions has been discussed by a number of linguists, as demonstrated by A. B. As-Safi in his book *Translation Theories Strategies and basic Theoretical Issues* (2011, p. 5-9). Translation studies were always split into schools of different theoretical concepts, some of which may prioritize the function of the language providing the information, some of which may prioritize the information itself. Different schools of thought strived for different definitions of the term “equivalence” in translation. As summed by Despoina Panou in her paper *Equivalence in Translation Theories: A Critical Evaluation* (2013): the Russian theory by Roman Jakobson wanted to achieve equivalence with the use of authorized technical terms or phrases that individually corresponded with the original, while the French school of thought, defined by Vinay and Darbelnet, strived for equivalence in function of the original information which often required changes in form. Both schools acknowledged that absolute equivalence between two languages was not possible. And while the views on how to achieve equivalence were slightly different, both schools set it as their priority in the translation process. It was desired for translations to be faithful to the original: an imaginary pedestal from where the original looked down upon the translation, deciding whether it was deemed faithful enough to be considered equal.

According to Hans J. Vermeer, faithfulness was stereotyped and too over-simplified to consider it of the highest importance. In his Skopos theory, which he first mentioned in his article “Ein Rahmen für eine allgemeine Translationstheorie” published in *Lebende Sprachen* in Germany in 1978. Vermeer introduces a new

perspective on translation: one that looks upon translation as an action with purpose, which is different for every translation and so the strategies for translation differ from case to case.

Skopos is a Greek word for “purpose”. As an objection to traditional equivalence-based theories, Skopos theory claims that the purpose of the text determines the translation strategies, and in the process of finding the purpose of the translation, we look beyond the source text being the only factor involved (Du, 2012, p. 2190). Vermeer suggests that all problems in translation cannot be solved by linguistic means alone. His theory is one of purposeful action, where reader is one of the most important factors, determining the purpose of the translation. He states that the action of translation means creating a text in a target setting for a target purpose and target addressees in target circumstances .

The Skopos theory does not think of the source text as “above” the translation, it serves as an "offer of information" that is then adapted to the idea of its purpose, and knowledge, and cultural and social environment of the recipient. The final translation is a text created specifically for its purpose and readers that does not seek to achieve “equivalence” with the original text but instead stands on its own.

3.1.1 Application

Good example to demonstrate the theory’s application within the translation is the English term “*slew rate*”, present in the exercise 5AB. It is not necessary for the translation to keep the note of the English alternative to the Czech term “*rychlost přeběhu*”,

because the target demography of the translation already speaks English. In exchange, it was decided to include Czech expression for some keywords in the English translation, as some programs, tables, or equations that the students work with are produced only in Czech. An example of this is “*výstup*” on page 56, line 12 of Appendix B. Shortened version of the word appears as an identifier for variables in equation (5) on the same page and thus could potentially pose a difficulty for English-speaking students, were it not translated for them.

As per the theory, translation differs from source text because of its purpose, which in this case is to serve as a reliable instructional text for laboratory tasks aimed at English speaking students. The translation strategy differed from one that could have been chosen if the goal of the translation were to be simply “faithful” to the source text.

3.2 Pragmatics

The text was subjected to a pragmatic analysis as well. The social and cultural context plays an important role in production and reception of texts and should be therefore transferred to the final translation.

As an instructional text, this document’s clear intent was to instruct and offer theoretical background on specific topics including formulae and mathematical expressions and describe individual steps of specific measurements and how to arrive at desired results. It can be assumed that the authors kept any subtext meanings

to a minimum because their intent was to confuse the readers as little as possible; the goal here was to pass information and be understood by the reader. Even without this knowledge, the sentences in the text can be hardly considered pragmatically ambiguous, as practically all of them include electrotechnical terms and specific descriptions – their co-text – which place them within their context. Implicatures are omitted from the text.

For example, sentence “Odvoďte vztahy pro určení modulu a fáze impedance při měření metodou tří voltmetrů.” (line 9 on page 34 of Appendix A) could be hardly explained any different than as a task concerning itself with electrotechnical components. It can be argued that without the context it is unclear who is giving the task and in what setting; is it a laboratory task ordered by a teacher or a work assignment given by the head of a laboratory? But these assumptions would hardly go beyond the border of electrotechnical tasks. The recipient of the message is clear: the task is given to the student. Considering the use of terms such as “metodou tří voltmetrů”, the addressee expects that the reader is someone at least partially knowledgeable in the field and would therefore understand the term and know what it means; a student or someone working in an electrotechnical field. Taking in consideration that the text was written by university teachers and staff specifically for their students, and is not freely accessible by public, the context of the text is difficult to misinterpret for the designated reader: students who would understand the sentence as a task related to their specific laboratory measurement.

On the other hand, the example given is a request that the reader is expected to carry out. This implies a certain power of the authors of this document over the readers: students. Considering the exclusivity of the document – with only students of BUT having access to it – we can assume that the power dynamic at play is legitimate, as the reader is a student, and the authors of the request (teachers) are in the context of the university on a higher level of power. Expert power is present as well, as it can be assumed that the teachers hold knowledge that the students wish to acquire. Power dynamic is a variable associated with *politeness theory*, as defined by Brown and Levinson (1987), or more specifically *face-threatening acts*. Such acts are those that can be potentially threatening to the face of a “hearer” or a “speaker”. According to *politeness theory*, everyone has a positive face, which they use when they want to be liked and appreciated, and *negative face*, which is in use when they want to express their freedom or not be imposed upon. In our culture, students obey and treat their teachers with respect to maintain their positive face, as disrespecting a highly educated person, especially if they are in the position of one’s teacher, is greatly frowned upon. In order to be taught and learn new skills and information, students are expected to carry out requests and orders of their teachers and be attentive and respectful – actions generally used to describe politeness. Teachers, on the other hand, while they are expected to treat students with the same level of respect, do have a power over them and can therefore order them

to carry out exercise tasks, for example. To maintain positive face, the students should obey such orders.

If we looked at the given example sentence as a face-threatening act, it would have negative impact upon the hearer's (student's) face to ignore the order to carry out the task at hand – in this case: to derive relations in the exercise. To maintain his or her face, the student is expected to read the document and carry out the exercise tasks when prompted to. Not doing so would result in negative impact upon the student's face, and it can be therefore assumed that a student that wishes to learn and successfully complete the course would carry out the tasks.

The strategies on how to deal with face-threatening acts are affected by three factors: power, distance, and imposition. With power already discussed, the social distance between the speaker and the hearer can be also found in the text. The document is hardly something a friend would write to a friend, as it uses proper technical terms and lacks colloquial expressions. It is neither an official document that one would write to a supervisor. The social distance between the teachers, who are the party with the power, and their students, manifests in the way the document is written: explanatory sentences, polite but direct addressing of the readers and lack of indirectness in the text.

The factor of imposition presents the level of inconvenience the act represents. For the student, not obeying orders and subsequently falling behind in the course would pose relatively big inconvenience and eventual consequence of possible failure.

It is therefore logical that all factors considered, the student should employ a positive face redress and perform the tasks listed in the exercises.

3.3 Tools and resources

The text was translated sentence by sentence. First step was a rough translation utilizing a free online translation system Google Translate (2006). I chose this route to save time, as the entire document is quite lengthy, and the machine translation could translate simple sentences much faster than myself with a dictionary at hand. The system employs artificial intelligence technology and machine learning and produces translations of considerable quality. In spite of this, it cannot be considered a proper translation of more complex sentence structures as the system staggers with multiple clauses and does not recognize technical terms specific to electrical or audio engineering, or sticks to consistency with interchangeable terms, among other flaws. This meant that each sentence was also manually inspected and corrected if needed. For the search of technical terms and expressions, online application Sketchengine (2003) was used, especially for its Word Sketch function that searches for collocations and word combinations. Other applications that were used in the process were Linguee (2007), Oxford Learner's Dictionaries (n.d.), Cambridge Dictionary (n.d.) and Thesaurus (1995).

Various literature sources were used as well, all of which are listed in the reference list at the end of this thesis, with their corresponding in-text citations present.

3.4 Translation examples

3.4.1 Denotation differences

Perhaps one of the first things that became very clear during my translation was to what extent can English be specific in comparison with rather general Czech, which is very true to their analytic – synthetic nature. While in Czech, “připojit” can be said with ease about any component and any wire, English differentiates between the type of connection you can make. In English, one can connect wires, but a cable is plugged into an oscilloscope, and two devices are coupled together, or paired, or components are be wired together. It is important to know what exact action will take place and what two things are to be connected and in what manner in order to choose the correct word. Graphs pose a similar challenge: in Czech, the term “průběh” can be used to describe the course of any type of graph, while English differentiates between a course and a run, or whether the graph depicts a waveform or a pattern. When encountered with such terms, it was important to visualize the laboratory workplace the students would be working at to choose the correct word to use, utilizing specification.

3.4.2 Figures and tables

The terms and expressions that students learn from dictionaries may sometimes take a form completely different in practice.

For example, the labelling of figures and diagrams within the text; “obr. X” in the Czech source text and “Fig. X” in the English translation. At first, one could translate the “obr.” as “img.”,

an abbreviation of “image”. However, simply translating the word is wrong, as technical texts and documents label diagrams and pictures as “Figure”; the abbreviation of which is “Fig.” and it is always referred in text with the first letter capitalized. The same applies for table descriptions within the text: “Table”. Educational documents, research papers, and manuals have certain formatting rules, as described, for example, by Suzan Last in her open textbook *Technical Writing Essentials: Introduction to Professional Communications in the Technical Fields* (2019), that should be respected and taken in consideration when translating.

3.4.3 Active voice

An interesting question arose during the process: whether to use active voice in first person plural in the text, as it is in Czech, or omit first person as much as possible and replace the active voice with passive. A feasible explanation on why translators tend to replace first person with passive, which is regularly used in such texts in Czech, when translating to English, could be that passive voice may be considered as emphasizing the processes themselves and putting imaginary distance between the author and the reader, making the text sound more professional; while active voice offers more emphasis and verve, and first person suggests a personal bond with the reader, which may be undesirable in technical writing. Nevertheless, sticking only to passive voice leaves the translator with little space to maneuver the sentences and may make them unnecessarily complicated (*Active versus passive voice*, n.d.). Especially in the case of instructional text, such as the one

in question, active voice in first person plural offers a way how to speak to the reader directly and clearly, leaving little room to confusion or misinterpretation as to what actions should be performed. It was decided not to omit first person, as it proved more direct and fitting with the text's purpose. Using this logic, it can be said that the Skopos theory is at use here, as well.

3.4.4 False friends

Many aspects of the translation had to be taken in consideration; word order, articles, and difficulties with translating technical terms, for example. Abbreviations were particularly challenging to translate; any abbreviations and shortened terms had to be double checked to make sure they are internationally used, or their English counterpart had to be researched while avoiding “false friends” – a pair of words that look the same in two languages while having different meaning in each (*Cambridge Dictionary*). Good example is the abbreviation “resp.” (on page 31, line 29 in Appendix A), meaning “respektive” in Czech and “respectively” in English. The two words sound alike and can be considered close enough in meaning that the option of translating “respektive” as “respectively” and keeping the abbreviation; their abbreviations are both “resp.” after all, seemed to be correct. Upon closer inspection, however, it has been discovered that “resp.” is never used in the context of a research papers or articles. Upon further investigation, it was found out that “respectively” means in English “in a way that relates or belongs to each of the separate people or things you have just mentioned” as defined by Cambridge Dictionary, unlike the meaning in Czech

which can be translated as “or rather” or “or more precisely”. While the abbreviation was in use in both languages, the word took on a different meaning in English. In the end, “or” was used in place of “resp.” in the translation.

3.4.5 Influence of Czech

Translating the Czech term “CD nosiče” (on page 53, line 22 in Appendix A) functions as a good example of the difficulties the translator’s native language may impose in the translation process. At first, it was translated to English as “CD carriers”, which to the eyes of a native Czech speaker may seem correct. Later, the translation was reassessed, as in English, “a CD carrier” refers to a literal carrier of CDs: cases and wallets that store CDs, and not the discs themselves. The correct English translation is simply “CDs” or “compact discs”; the former being no longer used. Terms such as this proved the importance of verifying every translation and comparing it to examples found in thesauruses or in technical texts online.

3.4.6 Word order and Oxford comma

The original text employs many possessives and adjectives which may make the English sentences very long and hard to read when the proper word order is disregarded. Even then, the translated sentences get crowded with not only words, but commas and semicolons as well, in attempts of keeping the sentences meaning concise. After turning to the American style of punctuation, as it seemed more logical and structured and thus more suitable

for the instructional nature of the text, the *Oxford comma* was incorporated. The use of a comma after the penultimate item of a list kept the sentences clear and aided in avoiding undesirable confusion. Its implementation into the translated text proved helpful when listing out multiple articles, such as parameters of components.

3.4.7 Relative clauses

A frequent setback in my translation process was the excessive use of the pronoun “which” in the many defining and non-defining relative clauses in the text. The frequent occurrence made the reading experience repetitive and the text hard to navigate – the issue was corrected by replacing “which” with “that” when possible or rewriting the sentence structure so that the pronoun was not needed. To give an example: the sentence “Nejjednodušší metodou pro určení impedance je Ohmova metoda, která je popsána např. v kapitole 8.2.2 [1].“ (page 31, line 25-26 in Appendix A) was translated as „The simplest method for determining impedance is Ohm’s method, described for example in Chapter 8.2.2 [1].“ (page 33, line 25-26 in Appendix B); omitting the pronoun entirely in the process of changing the non-defining relative clause into a past participle clause.

3.4.8 Human factor

A notable issue encountered during the process was “blindness” that came with writing/translating long bodies of text. Often, errors in translation became more difficult to spot once I had been translating for a long period of time. The issue was solved by ceasing

action for a moderate amount of time, as well as inviting a third party to read the translated text and find mistakes that were invisible during translation.

The translating process itself took on average an hour per one set of instructions, which can be considered quite lengthy. Editing time as well as time spent researching terms and verifying their thesaurus use is taken in consideration. Such actions were not needed at every set, due to several of the laboratory measurements being closely connected and using the same, or very similar, terms. On the contrary, other measurement tasks included terms or phrases that required consultations and took up more time. It can be argued that with experience in both the field of expertise and translation, the process would be faster.

3.4.9 Honorifics

It is important to note that most of Czech honorifics are different to those of English speaking countries (American and British rules differ slightly.) Higher academic titles such as Associate Professor and Professor are in English used only in the context of a given university or college, unlike in Czech Republic, where the title of Professor is given for life (Dulík, 2002).

English academic titles are considerably more specific. For example, while in Czech the title of “Ing.” is applicable across different science fields, English specifies the studied field and calls the title “Master”; for example: Master of Science in Electrical Engineering, abbreviated to M.S.E.E. Another difference is that unlike Czech, in which most titles are written preceding the name,

English places the honorifics after, for example: Jan Novák, M.S.E.E., Ph.D. The translated text contains only a few instances of Czech honorifics when listing out the authors, which I decided not to translate to their English equivalents. My decision was based on the belief that the titles themselves hold little informational value to the subject of the instructional text, and due to the context of the text being used in Czech Republic, at a Czech university, where the usage of Czech titles is prevalent.

3.5 Czech-English glossary

Due to many technical terms, some of which are specific to electrical engineering or audio engineering, that may pose difficulties for an average student of the course, a short glossary for each laboratory exercise was created. The goal of the glossaries is to help Czech students familiarize themselves with the terms and for foreign students to broaden their language knowledge, as well as being a helpful dictionary tool in case of any provided programs or instruments being only in Czech.

In the glossaries, the chosen terms were the most frequently used throughout the task, as well as those that differed greatly in spelling and sound from their Czech counterparts. The latter were chosen because such terms may be considered harder to memorise, and thus their summarization may work as a learning aid to students having difficulties.

I would suggest for the individual glossaries to be located at the end of each laboratory. The created glossaries are enclosed in Appendix C of this thesis.

4 Conclusion

The instructional text was fully translated to English. To summarize the experience with the translation, following conclusions can be drawn: The translator should be knowledgeable in the field the text is concerned with to correctly translate field-specific terms and phrases. Practical use of English experience is required as well, especially for the correct use of articles or encounters with homonyms known as “false friends” that may be hard to assess for unexperienced translators. With texts having specific purpose, such as instructional texts, it proved suitable to consider employing the Skopos theory and creating a translation with a target purpose tailored to the text target’s needs. Lastly, the length of the translation process is considerably dependable on the translator’s experience and knowledge. In its final form, the translation is ready to be evaluated as a standard study material and be used by future foreign students.

Extended Czech abstract

Tato práce se zabývá komentovaným překladem instruktážního textu využívaného v univerzitních kurzech *Měření v elektrotechnice* a *Měření v audiotechnice* na Vysokém technickém učení v Brně. Tento text byl doposud studentům k dispozici pouze v češtině, s výjimkou pár laboratorních cvičení částečně přeložených do angličtiny pro potřeby studentů z programu ERASMUS. V budoucnu se předpokládá nárůst počtů zahraničních studentů, a proto bylo toto řešení pouze dočasné. Tato práce vznikla na podnět vyučujícího předmětu *Měření v elektrotechnice* doc. Ing. Jana Mikulku, Ph.D., který inicioval vytvoření plnohodnotné anglické verze.

Jednou z hlavních motivací pro překlad byla důležitost anglických studijních materiálů. Vzhledem k rozšířenosti angličtiny jako tzv. *lingua franca* může její znalost pozitivně přispět k vytvoření budoucích příležitostí jak ve studijním, tak profesním životě studentů, např. schopností zapojit se do mezinárodního diskurzu nebo porozuměním anglických článků a studií.

Samotný text je v práci podrobně stylisticky definován a je popsána jeho zběžná historie. Do detailu je rozebrána struktura dokumentu i jazykové prostředky a jejich názorné příklady, které text definují jako instruktážní.

Podoba textu, jeho gramatika a jazykové prostředky jsou následně porovnávány s odpovídajícími parametry odborných textů, se kterými sdílí velké množství atributů. Práce upozorňuje na fakt,

že i přes značnou podobnost se text neřadí mezi odborné a toto tvrzení řádně podkládá.

Celý text byl nejdříve „nahrubo“ přeložen a následně revidován větu po větě. Zvýšená pozornost byla věnována technickým výrazům, u kterých musela být prověřena správnost použití. Překlad byl následně revidován vedoucím práce a jazykovým konzultantem, kteří poskytli cennou zpětnou vazbu, dle které byly následně opraveny chyby. Přeložený text byl předložen ke čtení i dobrovolníkům, kteří se lišili v úrovni znalosti elektrotechniky i angličtiny a jejich zpětná vazba vedla zejména k úpravám ve slovosledu a větné struktuře za účelem zlepšení srozumitelnosti.

Práce dále popisuje překladatelskou teorii zvanou *Skopos*, která považuje původní text za převážně inspirativní a staví finální překlad na úroveň jemu rovnou jako samostatnou entitu. Velký důraz je kladen na cílovou skupinu překladu a samotný cíl textu, dle kterých následně může být zvolena překladatelská strategie. Aplikace *Skopos* teorie v překladu je následně demonstrována na příkladu z textu.

Popsána je i pragmatická analýza textu. Akademický i sociální kontext textu je určen a text je dle analýzy označen za relativně jednoznačný. V rámci této analýzy práce uvádí *teorii zdvořilosti*, která se zabývá tváře ohrožujícími jednáními a pracuje s konceptem pozitivní a negativní tváře. Tato teorie byla aplikována na příkladnou větu a pokyny v textu byly definovány jako tato tváře ohrožující jednání, která staví člověka před možnost volby mezi jednání, která ho ovlivní pozitivně nebo negativně. Pragmaticky může být řečeno,

že je v zájmu studenta zachovat si pozitivní tvář, aby následoval pokyny v textu.

Následuje detailní popis jednotlivých příkladů překladu a problémů, které během jeho vypracování bylo nutné řešit.

Práce analyzuje rozdíly v denotaci mezi analytickou povahou angličtiny a syntetickým stylem češtiny, a jak tyto rozdíly ovlivňují možnosti překladu. Problematika dodržování stylu značení u obrázků a tabulek v textu je popsána i představena na příkladech. Do detailu se práce věnuje problematice anglického pasivního nebo aktivního hlasu. Během překladu bylo rozhodnuto o zachování aktivního hlasu, vzhledem k instruktážní povaze textu. Během překladu se vyskytly i příklady tzv. *false friends*, které bylo nutné detailně prověřit za pomoci slovníků nebo bylo nutné věty přepsat a problematickému termínu se tak vyhnout. Vliv češtiny jakožto mateřského jazyka je identifikován jako negativní faktor při překladu, neboť u některých termínů nabádal ke slovním spojením bez ekvivalentu v angličtině. Práce mimo jiné poukazuje na častý vznik nevhodných komplexních vět ve vzniklém překladu, díky kterým byl přeložený text hůře čitelný. Z těchto důvodů bylo použito tzv. *Oxford comma*, které bylo využito zejména u seznamů a výčtu komponentů. Díky velkému počtu vztahných vět v překladu docházelo k nadměrnému užívání příslušných zájmen. Toto bylo vyřešeno přepisem vět či využitím alternativních zájmen, kde to bylo možné. Lidský faktor byl důvodem k revizím a značné časové náročnosti překladu. Je argumentováno, že podrobná znalost překladatele v oboru elektrotechniky by tento proces značně urychlila. Práce také popisuje používání titulů

a odlišnost českých titulů od těch anglických, včetně rozdílnosti ve způsobu jejich používání. Ve finálním překladu byly české tituly zachovány, neboť se text vyskytuje exkluzivně na české univerzitě, kde se využívá českých titulů.

Práce mimo jiné zavádí i koncept krátkých slovníčků, které byly vypracovány při překladu – jejich navrhovaným umístěním je konec každého laboratorní cvičení v textu. Cílem slovníčků je poskytnout studentům učební pomůcku pro zapamatování výrazů, které se v angličtině značně liší od svých českých ekvivalentů, nebo mohou být hůře zapamatovatelné.

V závěru práce je vyhodnocení volby překladatelských teorií a shrnutí problémů při překladu společně s jejich řešením. Dále jsou uvedeny vlastnosti, které byly shledány jako zásadní pro kvalitu překladu. Finální verze překladu je připravena k posouzení, zda odpovídá oficiálním studijním materiálům.

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List of appendices

Appendix A: Czech source text.

Appendix B: English translation of the source text.

Appendix C: Czech-English glossaries.