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Z á s a d y p r o v y p r a c o v á n í :

Diplomant vyhotoví vlastní český překlad dosud nepublikovaného odborného textu v angličtině o rozsahu cca 10 normostran ze zvoleného oboru (např. lingvistika, teorie literatury, přírodní vědy,) a následně v anglickém jazyce zpracuje kontrastivně-stylistickou analýzu výchozího a cílového textu s ohledem na principy funkčního překladu. V analýze se diplomant zaměří na lingvistické i translátologické aspekty: systémové rozdíly jazyků, terminologické problémy, popis překladatelských strategií, ekvivalence apod. Součástí analýzy je i definování zvoleného funkčního stylu a vymezení používaných teoretických konceptů.

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ANNOTATION

This bachelor thesis deals with various aspects of translating specialized texts from English to Czech. The first chapter contains definitions of stylistics and offers two points of view on the topic as are differently perceived by English and Czech scholars. The third chapter comes with general approaches of translations and their development in the last few decades; the main focus of this chapter is to describe problem of non-equivalence. Chapter 4 is based on the provided theory and contains stylistic analysis of the translated scientific text, while the final chapter is a translation commentary and analyses the translated text on three levels.

KEYWORDS

Translation Commentary, Stylistics Analysis, Non-Equivalence, Scientific Text

NÁZEV

Komentovaný překlad odborného textu

ANOTACE

Práce je věnována rozdílným aspektům souvisejícím s překladem odborného textu z anglického do českého jazyka. Kapitola první definuje obor stylistiky a na dané téma poskytuje dva úhly pohledu, tak, jak je na ně odlišně nahlíženo anglickými a českými autory. Kapitola třetí pak popisuje základní přístupy k překladu a jejich nedávný vývoj, primárně se ale zaměřuje na problematiku neekvivalence. Kapitola čtvrtá vychází z popsané teorie a její součástí je stylistická analýza překládaného odborného textu. Poslední kapitola je pak překladovým komentářem, který poskytuje trojstupňovou analýzu překládaného textu.

KLÍČOVÁ SLOVA

překladatelský komentář, stylistická analýza, neekvivalence, odborný text

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LIST OF ABBREVIATIONS AND ACRONYMS

TT target text

TL target language

ST source text

SL source language

N noun

ADJ adjective

INF. infinitive

hyp. hypothetical

INTRODUCTION

English, in the last few decades, has become world widely spread and so can be referred to as *lingua franca*. With a growing number of non-native English speakers, it is sometimes thought that basically anyone who has the knowledge of English can translate texts. It is, however, not right assumption. Certainly, it is dependent on the purpose of the translated text and its receiver, but, as furtherly described in this bachelor thesis, a translator should be a professional. The expression *professional* does not only mean to be fluent and familiar with all the aspects of both the source language (SL) and the target language (TL) but also to be a specialist in the given field to which a ST belongs.

The first chapter of the thesis deals with problematics of stylistics and takes into consideration both the Czech stylistics conception and the English notion of style, which comes with a different approach than Czech scholars traditionally do.

The second chapter then describes typological differences between Czech and English, which are crucial for a translator to be familiar in order to know what to expect from the text.

The third chapter is the last part of the theoretical framework of the thesis and comes with fundamental translation theories and their development in the last decades. Special attention is paid to a theory of equivalence, which is a cornerstone of every valuable translation. Subsequently, particular translation methods dealing with non-equivalence are described from points of view of a number of authors.

The fourth chapter opens an analysis of the ST. Since the aim of the thesis is to translate a scientific text, stylistic analysis needs to be run in order to define whether the text belongs to the given style or not. The analysis is based on the theoretical aspects which are provided in Chapter 1.

The fifth chapter is a translation commentary where there is a list of examples which were taken from the ST and the TT. Each of the examples is provided with a commentary based on decision making when searching for the best solution for translation. Furthermore, the determining grammatical, lexical, or syntactic factors are explained so that the author's motivation to choose the given solution can be justified. The analysis focuses on two levels – shifts on a lexical level and changes on a morpho-syntactic level.

Since the objective of the thesis is to translate a scientific text, a text concerning phonetics and phonology was chosen as it is most likely to contain specific stylistic properties

of scientific style, which are described in Chapter 1. The aim of the thesis is the application of the obtained knowledge considering different translation approaches.

1. Functional Styles and their Classification

To introduce the topic of functional styles, it must be said that there are differences in their conception in the Czech and Slovak Republic and in British linguistic tradition. Whereas in the firstly mentioned region the distinction can be quite easily defined as presented by most of the authors, the Anglo-Saxons language system comes with a different approach.

1.1. The Notion of Style in British Linguistic Tradition

As Urbanová and Oakland (2002, 9) observe, English literature dealing with stylistics does not employ the term *style* but uses the term *register* instead. Fowler's definition (quoted in Urbanová and Oakland 2002, 9) focuses on the context saying that "varieties of a language according to the use to which it is being put, and the context in which is uttered, are known as registers." Crystal (quoted in Urbanová and Oakland 2002, 9) defines register as "a variety of language defined according to its use in social situations." Baker (2002, 15) shares Crystal's point of view when claiming that register is "a variety of language that a language user considers appropriate to a specific situation."

Subsequently, Baker notes there are variations of the register that differ in three aspects. *Field of discourse* is connected to a situation in which the language is used and is relevant to the speaker's choice of a lexical item. Speakers would choose a different lexical item when engaged in a political speech; for example, or when talking about politics. The second aspect, influencing an individual's way of using language, is *tenor of discourse*. This is represented by interpersonal relationships such as in mother/child. Lastly, it is the *mode of discourse* that influences register and it is "the role that the language is playing (essay, lecture, instructions)" and how it is transmitted (spoken or written form) (Baker 2002, 16).

Following Nida (quoted in Newmark 2003, 13), it can be distinguished between four styles of both literary and non-literary text. Newmark briefly describes them, starting with *narrative* text which is recognized for its dynamic sequence of events. To provide the logical order of a narrative, authors emphasize verbs in English, also "dummy" verbs plus verb-nouns or phrasal verbs. *Descriptive* texts, as the second type, are static, where linking verbs, adjectives and adjectival nouns are emphasized. A treatment of ideas, which is typical for *discussion*, is characterized by the use of abstract nouns and verbs of thought and mental activity. Logical argument and connectives are essential parts of such a text. The last text style is *dialogue*, which is characterized by the frequent use of colloquialisms and phaticisms (Newmark 2003, 13).

1.2. The Notion of Style in Czech Linguistic Tradition

In contrast, Czech or Slovak linguists do not work with the term register but, from their point of view, the notion of style can be described according to the place where the text, written in the given style, occurs.

Knittlová claims that the term *style* in the Czech and Slovak environment is generally defined as an interplay of thoughtful choice, ordering and application of language devices, where context, function and the author's aim must be taken into consideration. Such language devices are especially of lexical, grammatical, and phonological character. Additionally, in written texts, paralinguistic devices such as graphic elements need to be taken into consideration. The character of particular language devices within a style must be perceived by all language users in the same way – therefore it can be assumed that language style and its devices are parts of a complex language system (Knittlová et al. 2010, 135). As Miššíková (2003, 114) suggests, each style is not defined only by language means or stylistic devices themselves, but it is the interplay of both that shapes the particular features of the given style. She defines the style as “a system of co-ordinated, interrelated and interconditioned language means intended to fulfil a specific function of communication and aiming at a definite effect.”

Miššíková (2003, 115) distinguishes between five functional styles as suggested below:

The Belles-Lettres Style also called *the language of literature*, for which the typical linguistic features are figurativeness, imagery and messages encoded “between the lines”. What all of the sub-styles of the belles-lettres have in common is their aesthetico-cognitive function, which aims to evoke “feelings of pleasure”. Authors usually use evaluative vocabulary to show their personal point of view; a vocabulary and syntax selection is individual. Moreover, individuality is one of its most distinctive properties.

Publicistic Style is used mainly for *radio commentary, essays and articles*. The publicistic style is the only one out of the five styles that has spoken varieties – the oratorical sub-style. Authors use strong emotional appeal in combination with logical argumentation in order to persuade readers to accept their ideas, and to influence public opinion. For its logical syntactic structure, connectivity and careful paragraphing; it is in a way similar to scientific prose. Use of emotive words and imagery are the most frequent devices to achieve emotional appeal, however, the individual element is generally toned down. A typical characteristic is also brevity.

Newspaper Style aims to bring accurate, objective and up-to-date information on current affairs without the author's commentary or appeal, therefore, very rarely, contains individual elements as well as emotional expressions.

The Style of Official Documents for which, according to Knittlová (2010, 140), the typical features are clarity, unambiguity and brevity. Texts are poor in terms of lexical devices and syntax, very often are stereotypical due to the frequent use of fixed phrases and clichés. The impersonality of the text is achieved through the anonymity of agent; objectivity then through inexpressive lexical devices.

Scientific Prose Style – see below.

1.3. General Features of Technical and Scientific Texts

Both Knittlová (2010, 149) and Mistrík (1997, 117) claim that the main aim of the scientific style is to convey ideas from different scientific fields, and this should be done accurately, appropriately and completely. Due to its nature, the scientific style can be found mainly in written form, and therefore it is monological. According to Knittlová (2010, 149), the content of scientific text itself might be demanding for its readers, therefore, the text must be clear and obvious, without ambiguity. Due to the repetitive use of fixed syntactic structures and use of poor lexical items (mostly nouns and adjectives), the scientific style is stereotypical; however, both features perfectly fit the needs of the style. As the texts need to avoid any confusion, synonyms are used rarely; instead, repetition of the specific terms is preferred (Knittlová et al. 2010, 149). Use of linkers, referencing, demonstrative elements, and subordinate conjunctions are required to achieve a strict sentence hierarchy which helps readers easily follow the text.

Based on vocabulary, Peter Newmark (2003, 153) suggests distinguishing between three varieties of *technical language*, which are *academic*, *professional*, and *popular*. The first one is characterized by the use of “transferred Latin and Greek words” and is associated with academic papers. As an example, Newmark offers “phlegmasia alba dolens”. The second of the varieties is mainly used by experts of the particular field. Newmark illustrates the style on examples such as “varicella” or “scarlatina”. The last level is used to explain something in layman's terms, including familiar alternative terms, such as “mumps” or “scarlet fever”.

In contrast, Knittlová (2010, 149), as well as Mistrík (1997, 118) identically define only two varieties of the style – *popular-scientific* and *scientific*. For the purposes of this thesis, Knittlová's division will be used, mainly for its sufficiency as the source text (ST) is expected to be purely scientific.

The firstly mentioned – *popular-scientific style*, is according to Knittlová (2010, 149), characterized by a lower degree of professionalism and can be mixed with devices typical for the publicistic style. Intentions of this style are to spread scientific knowledge in an interesting and easier way to the wide public. Therefore, sentence constructions are simpler as well as the length of the sentences reduced. The amount of specialized expressions is lower, either because they are paraphrased or substituted with richer and detailed phrases. Krhutová (2009, 59) says that also *colloquialism* is used and that the style “establishes a close connection to the reader.”

The second variety of the style is *scientific*. According to Krhutová (2009, 57), an addressee is required to have a greater degree of knowledge of the topic in order to fully comprehend the text. Mistrík (1997, 118) comes up with a different aspect of the text and that is the use of synonyms. While in the popular-scientific style, synonyms are welcomed in order to offer a wider variety of points of view, synonyms in scientific style should be omitted. There should be no space for possible misunderstandings and authors should be strict in using clear and unambiguous terms. Knittlová (2010, 150) points out the basic element of the style and it is impersonality, which is characteristic mainly for exact sciences. The author is usually concealed so that a text focuses strictly on facts. This is effectively achieved by using passive voice. Passive voice can be used either to implicate a general subject:

“It is seen. . .” – “This spectrometer can be use . . .” (Knittlová et al. 2010, 151),

or to avoid mentioning of the author because information about him/her is not important:

“ . . .the corrosion products were removed . . .”

“The amount of Fe was determined . . .” (Knittlová et al. 2010, 151).

On the other hand, active forms also occur, especially in texts of exact sciences. They frequently appear as general subject “we”, which admits the presence of the author, but does not provide more information:

“we deduced, we observe, we define, we can express” (Knittlová et al. 2010, 151).

According to Herbert (quoted in Knittlová et al. 2010,152–153), the basic sentence scheme can be observed in scientific style:

IT IS + ADJ + TO + INF.

Subsequently, he presents possible useful expressions, which might be used as prefabricates:

“It	is	easy
	seems	possible
	appears	necessary
	proves	useful
	becomes	common
		advantageous.”

Another impersonal structure frequently occurring in scientific texts is, according to Herbert (quoted in Knittlová et al. 2010, 153):

IT (IS) + ADJ + THAT...

“It	is	likely
	has been	evident
	can be	desirable
	should be	proved
		noticed.”

Knittlová (2010, 155) also points out causative clauses are being used such as:

MAKE + N + ADJ

“This makes the problem easy”

“This makes/renders the metal hard.” (Knittlová et al. 2010, 155)

As she suggests, when translating such phrases into Czech, use of paraphrase or sentence construction change is required. Other causative structure can be:

“enable, allow, permit, cause, make + INF” (Knittlová et al. 2010, 155),

and in Czech is usually translated using a subordinate clause.

1.3.1. Characteristics of Czech Scientific Texts

However, both English and Czech scientific texts have most of the features in common; the Czech texts come with different approaches. Čmejrková (1999, 28–30) sees the main differences in three aspects as follows: modality, author’s modesty, and compositional freedom.

A higher level of modality, especially epistemic modality, can be found in Czech texts and therefore the texts show a lower degree of persuasiveness and positiveness. Frequency of expressions aiming to weaken the validity of given information is of a high number (Čmejrková

1999, 28). Prokofieva and Hirschberg (2014) perceive this behaviour as “writers’ attempt to distance themselves from the proposition they are communicating; hedge terms include items such as *I think X* or *It is sort of Y*”. Based on the citation, the formerly mentioned approach can be interpreted as an effort to avoid possible complaints of opponents; authors leave space for a discussion and admit text incompleteness. Čmejrková (1999, 29) claims this could be a result of the European conception of the scientific process, where the authors do not compete but cooperate instead.

Author’s discreetness is also apparent in the titles’ formulations. According to Čmejrková, Czech authors incline to employ prepositions such as “On” or “Some notes on” with higher frequency than British writers and so show their work is only a contribution to the given topic (Čmejrková 1999, 29–30).

In Czech works, compositional schemes and text arrangement are relatively free. Contrastive studies came with a finding that Czech authors generally use less metatextual signals; orientation in the text, therefore, becomes harder. The problem is not that the authors would be focused on themselves, but rather it is the content that they focus on. The purpose is to logically set and formulate the text, without any space for possible complaints. (Čmejrková 1999, 30).

2. LANGUAGE TYPOLOGY

Since there are not any two languages sharing the same properties in all grammatical categories, the translator needs to bear in mind the typological differences of source and TL. The practical advantage of the theory of language typology lies, according to Černý (1998, 62), in the fact that it can give the translator an idea about significant differences that can be expected when translating a text.

Language typology as described by Černý (1998, 59) classifies languages on the basis of their grammatical system, especially on the basis of morphemes structure.

Generally, it can be distinguished between two types of language. Those, which do not employ affixes at all and to which is referred as isolating languages. The other type, on the other hand, works with affixation and can be furtherly divided into a group of languages either agglutinative type (typically Turkish, where each affix belongs to only one particular category), or flexive type. The lastly mentioned type has three variations: synthetic, analytic, and polysynthetic.

Synthetic languages, such as Slavic languages, are able to express more grammatical categories with affixes. In Czech, one category can employ more than one affix as in case of nominative of plural nouns such as *muži*, *pánové*, *stroje*; to contrast, one affix can be used to express more categories at once: affix *-e* can point to a feminine gender (*duše*) and also to neuter (*kuře*).

To contrast, analytic language (typically English and French) evolved into a state where there is possible to express different grammatical categories by combining free and bound morphemes. It is because the original endings were reduced, and their grammatical expressivity was lost.

3. TRANSLATION AND TRANSLATING

3.1. Contemporary Translation Theory

In recent history, translations were focused mainly on the literary-aesthetical function of texts. Only from the second half of the twentieth century, the linguistic approach has become significant. Currently, the pragmatic aspect is an inherent feature of any translation. As Knittlová (2010, 7) claims, the role of a translator is to deal with different cultural orientation. J. C. Catford (quoted in Knittlová et al. 2010, 7), the British translation scholar, states that units of SL and TL do not have to have an identical linguistic meaning but need to express the same concept in both source and TL. Even though he did not use the term, this approach is nowadays known as *functional equivalence*. *The functional approach* became the current basic principle of translating.

3.1.1. Functional Approach and Functional Equivalence

According to Knittlová (2010, 7), it is of low importance whether the same or different language devices are employed; what matters is if they function identically in all named aspects: meaning, connotations (expressiveness, associations), and pragmatical aspect. Eugene Nida (quoted in Knittlová et al. 2010, 9) points out that also the character of the message, author's aim, and a type of addressees need to be taken into consideration. The proper translation should, therefore, evoke *equivalent reader's reaction* as the ST. For Nida's type of equivalence, he uses the term *dynamic equivalence*, which can be achieved by the use of appropriate stylistic norms.

Similarly, J. Munday says, based on Holz-Mänttari's skopos theory that "the ST is 'dethroned' and the translation is judged not by the equivalence of meaning but by its adequacy to the functional goal of the target text (TT) situation as defined by the commission" (Munday 2008, 78). Grygová (Knittlová et al. 2010, 14) adds that a good translation should not be perceived by its readers as a translation, but as an original text in the TL and should follow at least the three basic criteria as follows: the final text sounds natural to speakers of the TL; the translation has the same, or very closely related meaning as the original text; and lastly, language dynamics is kept in the TT. What Grygová identifies as a common problem of professional translators is their tendency to popularize the texts, especially scientific texts. This is often caused by an inappropriate choice of lexical items or changes on the stylistic level.

Even though Newmark (2003, 48) see the theory of dynamic equivalence (he himself uses the term *equivalence response*) as valid, he points out that equivalent effect is more likely the "desirable result, rather than the aim of any translation". However, not all the types of

translations would meet with the success if translated using the equivalence effect. Two possible cases might occur and are described by Newmark as:

- (1) “if the purpose of the SL text is to affect and the TL translation is to inform (or vice versa);
- (2) if there is a pronounced cultural gap between the SL and the TL text” (Newmark 2003, 48).

On the other hand, when translating for instance vocative text such as notices, instructions, propaganda or persuasive writing, the equivalent effect is not only desirable, but it is essential. (Newmark 2003, 48)

As Jiří Levý (2012, 21) believes, any translator is required to be a professional speaker of both source and TL and should understand the essence of the translated text. The essence does not contain only what the text is about; the translator should be able to see what is in the background – namely needs to be familiar with realms of the place and history, cultural particularities. In addition, the translator needs to be aware of the original texts author’s specifics in writing and adjust the TT appropriately (Levý 2012, 21). Should the ST be of the scientific style, the translator should have knowledge about the particular field, otherwise, he/she could not fully understand all its features.

All the three requirements, referred to as *trivium*, are simplified by Levý; he says that they are a basis for most of the resourceful definitions. Sometimes, especially for translations of belles-lettres style, theorists extend the trivium and use the term *quadrivium* that, except the three conditions, contain one extra aspect saying that the TT should function as a piece of art (Levý2012, 21).

3.1.2. The Problem of Non-equivalence

As Baker (2002, 17) implies, “the choice of a suitable equivalent in a given context depends on a wide variety of factors; some of these factors may be strictly linguistic (collocations, idioms), other may be extra-linguistics.” Therefore, it is impossible to come up with standardised rules for dealing with non-equivalence. The choice will always be dependent on the translator and his/her preferred procedure as well as the TL system. In case of absence of an equivalent, the translator must employ some of the translation strategies to find a solution.

Non-equivalence at word level is the lowest level where a translator can meet with difficulties when searching for an appropriate word in the TL. Baker (2002, 20–26) describes

in details a number of non-equivalence kinds and, subsequently, offers a way to deal with them. Their specifics can be seen below.

The first of the common types of non-equivalence at word level is *a culture-specific concept*. Such a concept may relate to religious belief, a social custom, or even a type of food; which all is unknown in the culture of TL. As an example, Baker gives a concept *airing cupboard*, which, even in the Czech culture, people are unfamiliar with. On the contrary, the concept may be known in the culture of TL, but simply is not lexicalized; that means the TL does not have a word to express it. The adjective *standard*, for instance, expresses an easily understandable concept, however, there is no equivalent for the word in Arabic, as Baker suggests. The third type can be characterized by semantical complexity of a word in SL. A single morpheme can sometimes be more complex in meaning than a whole sentence, such as in case of a Brazilian word *arruação*, which means “clearing the ground under coffee trees of rubbish . . .” (Baker 2002, 22). Problems with translating might also occur when TL lacks either a hypernym or a specific term (hyponym). In English, for instance, there can be found several hyponyms for the verb *jump*, such as *clear*, *plunge* or *plummet* (Baker 2002, 23). SL and TL could also differ in physical or interpersonal perspective, as in verbs *go/come* or *take/bring* (Baker 2002, 23). Other but less frequent issues are differences in expressive meaning, in form, or in frequency and purpose of using specific forms (namely –ing form).

According to Baker, “it is neither possible nor desirable to reproduce every aspect of meaning for every word in a ST”. Instead, the translator should focus mainly on the words that are significant and that might carry an implication in the given context and avoid “distracting the reader by looking at every word in isolation”. Based on the formerly described types of non-equivalence, Baker suggests a few strategies that are used by professional translators. The strategies are described as follows:

- (1) Semantic fields, as presented by Baker (2002, 18), can be useful when searching for the adequate equivalent. They are abstract concepts of language vocabulary and refer to sets of words that are in the same division and/or subdivision, depending on the continuum of experience of the linguistic community. Baker uses examples of semantic fields such as “speech”, “plants”, or “vehicles”. Most of the semantic fields can be found in a vast majority of languages; mainly the most obvious ones – such as fields of “distance”, “size”, or “time” are common for almost all languages. Each of the semantic fields has its sub-division, referred to as *lexical sets*, containing further sub-divisions. To illustrate

the division, Baker uses an example of the word “speech” as the semantic field, “verbs of speech” as its sub-division, which is furtherly divided into more specific verbs such as “mumble” or “whisper”. To sum up, it is expected that most of the languages have the general terms in common; subsequently, the more specific ones are more likely not to have a full equivalent. (Baker 2002, 18)

Having presented the idea of the semantic fields, it is necessary to describe how to use them. On their bases, Baker comes with a specific method on how to deal with the absence of an equivalent. Similarly as in relation semantic fields–sub-division, the term *hypernym* is superordinate to the term *hyponym*. While Baker does not employ the term “hypernym” but works with the word “superordinate” instead, it has been decided to use the term “hypernym” only, according to currently preferred terminology. The existence of hypernymy can be a contribution for a translator and it lies in the fact that any meaning carried by a hypernym is logically part of the meaning of its hyponyms, but not vice versa. If a semantic gap in the TL occurs, Baker suggests modifying a superordinate word. Here, to avoid any confusion, it must be said what is meant by the term “modify”. Rather than modification as usually understood in linguistics, the term refers to a word substitution. To conclude, the described strategy is not always applicable or straightforward. It is also important to mention, and the translator should be aware of the fact that the semantic fields are always changing, as new words are coined, or other words are being dropped. (Baker 2002, 20)

Chesterman (1997, 102), similarly as Baker, comes with the same approach when talking about hypernymy. In principle, he describes the strategy in the three subclasses:

- (a) “ST superordinate → TT hyponym
- (b) ST hyponym → TT superordinate
- (c) ST hyponym X → TT hyponym Y (of the same superordinate)”.

- (2) Should the ST include a culture-specific item or expression, Baker suggests their replacing with a TL item which does not necessarily have the same propositional meaning but carry the same concept. Such an expression then leaves the same appeal on the target reader as he/she can identify it and is familiar with it. Additionally, the word choice should reflect “the norms of translation prevailing in a given community” (Baker 2002, 31). Baker illustrates its usage for the English word *bitch* and its Italian equivalent *porca*, which, according to Trevelyan (quoted in Baker 2002, 33–34), “when applied to a woman, . . . indicates unchastity, harlotry.” Even though the literal meanings

of both words are different, their expressive value in the given context is appropriate and corresponding.

- (3) Another presented strategy is connected to the form of an item. Although the particular form is lexicalized in both TL and SL, its high frequency in SL text does not have to be natural for TL. Then, as Baker suggests, it is advisable to employ a paraphrase using a related form. It can be illustrated on example *terrace gardens*. As a result, the back-translation of French *implantés en terrasse* would be *created in a terrace* (Baker 2002, 38).
- (4) If, on the other hand, a source item is not lexicalized in TL, the same strategy as in (3) can be used in some context. If not possible, translation can be done by paraphrase using an unrelated word. To illustrate, “a totally *integrated* operation” would look like (after being back-translated) *carries out all steps of production in its factories* (Baker 2002, 39). That strategy, however, cannot be used when translating expressive or evoked meaning, as those are conveyed only by stable lexical items with a history in a specific context, not by a longer paraphrase. On the other hand, the high level of its precision in specifying propositional meaning is its main advantage.
- (5) Last of the strategies is an omission of the item that does not convey an essential meaning. Instead of distracting the reader with wordy explanations, it is advisable to simply omit the word or expression. (Baker 2002, 38–41)

3.1.3. Traditional Methods of Translation by Vinay and Darbelnet

As Knittlová (2010, 18–19) points out, there are various ways to translate a text, however, their naming differs across their authors. Former theorists such as Fedorov, Levý, or Catford did not use any established terminology; instead, they called them simply as *shifts*. The first authors to name these shifts were Vinay and Darbelnet, whose seven basic ways of dealing with a lack of equivalent later became a basis for modern scholars (Knittlová et al. 2010, 18–19).

Generally, according to Vinay and Darbelnet (1995, 31), there are two methods of translating. *Literal* (or direct) translation, where there are parallel categories and parallel concepts in both SL and TL so that the SL message can be transposed to TL. But if any gap occurs, also referred to as *lacunae*, “the TL message need to be filled with corresponding elements so that the overall impression is the same for the two messages” (Vinay, Darbelnet 1995, 31). In that case, it is referred to as *oblique* translation.

Vinay and Darbelnet describe the procedures as follow:

(1) Borrowing

Is the simplest of the translation methods, which overcomes the problem of lacuna, and is used to create the flavour of SL culture in the translation. It can be illustrated in the Spanish word *tequila* or American English *party*, which carry the same stylistic effect as in SL. It also happens, when being used repeatedly in TL, that borrowed expressions are no longer considered as borrowing but become a part of TL lexicon.

(2) Calque

A calque can be considered as a kind of borrowing where the form of source expression is kept but each of its elements is literally translated. The English term *skyscraper* is a compound noun as well as its Czech calque *mrakodrap*; in other words, the form remains the same. But both parts are literally translated. As in (1), some calques, after a period of time can become an integral part of the language. What translators should be aware of, however, is their possible semantic change in TL, which would turn them into *faux amis* (also referred to as false friends).

(3) Literal Translation

Also called word for word translation, which is “the direct transfer of a SL text into a grammatically and idiomatically appropriate TL text.” This procedure is mostly used when translating between languages of the same language family (e.g. French and Italian).

(4) Transposition

Transposed expressions are characterized by a change in a word class without a meaning shift. Although Vinay and Darbelnet do not mention the reason for transposition to be used, Knittlová (2010, 19) suggests that such a change is required because of systemic differences in the given languages.

(5) Modulation

Modulation is a change in a point of view required when the translated expression is grammatically correct, however, is not suitable in the TL but unidiomatic or awkward. Knittlová (2010, 19) as an example, offers the English expression *elbow of the pipe*, which was modulated to *koleno potrubí*.

(6) Equivalence

Knittlová (2010, 19) correctly points out that the term *equivalence* is not appropriate as it might cause confusion since today’s understanding of the term is different. What Vinay and Darbelnet mean by equivalence is the use of different stylistic and structural

methods than in ST, which is employed mostly for onomatopoeic expressions (such as *kykyryký* – cock-a-doodle-do (Vinay, Darbelnet 1995, 38)), idioms, or proverbs.

(7) Adaptation

Adaptation is the last and most extreme method of translation and could be considered as a special kind of equivalence. Translators employ this method where there is missing the given situation in TL culture and they use an existing one which is familiar for the readers of TT. (Vinay, Darbelnet 1995, 31–40)

3.2. Types of Translations

Since the term *translation* is one of the main themes of this bachelor thesis, it is important to clearly define what it means. Later in this chapter, different kinds of translation, as well as traditional ways of translating, are to be described.

As Munday (2008, 5) points out, the term translation can refer to more than one denotation. It can be either understood as the *product* of translating – the text that has been translated or as the *process* – the act of producing the translation, in other words translating. Generally, the process of translating involves the translator changing the original text in the original language referred to as the SL into a different verbal language – the TL (Munday 2008, 5). Translating, however, does not have to necessarily be considered as transferring a ST into a TT. R. Jakobson (1959, 233) describes the three categories of translation, which are:

- (1) intralingual translation or “rewording” is a kind of synonymy, when an expression is rephrased or otherwise rewritten within the same language;
- (2) interlingual translation or “translation proper” is the translation as is it perceived by the laic public. In other words, it is an interpretation of the ST information by means of some other language;
- (3) intersemiotic translation or “transmutation” is a transformation of verbal signs into a system of non-verbal signs. Knittlová (2010, 15) explains this kind of translation in examples such as reading of mathematical symbols or chemical formulas.

Since the aim of this thesis is to translate the ST in English to the TT in Czech, only two of the translation types will be employed. The vast majority of the ST will be transferred using the interlingual translation. Additionally, as the ST contains a number of figures, such as tables, diagrams, etc., the intersemiotic translation will be employed as well. Use of intralingual translation is not expected at all.

Another translation distinction can be done based on the translations' focus. Grygová (Knittlová et al. 2010, 16) distinguishes between two basic types: translations oriented on a form (form-based), and on meaning (meaning-oriented). By *formal equivalence*, which is used for form-based translation, it is understood a high rate of similarities of content and form in SL and TL. Such types of translations are useful for linguistics analysis; offering an insight into lexical, grammatical and structural forms of SL. Subsequently, for the meaning-oriented translation, *dynamic equivalence* is used, focusing on leaving the same impact on the addressee of TL.

The first two of the following translation types can be classified as form-based, while the last two are rather meaning-based:

- (1) *interlinear translation* does not respect any grammatical system of TL, even though it precisely transfers all the units; therefore, is considered as an extreme case of a literal translation. For its preservation of linguistic information, it is used in descriptive linguistics. This type of translation, however, can be useful and easily understandable, particularly when the SL and TL are closely related and so their grammatical structures are very often similar;
- (2) *literal translation* (by laic public sometimes referred to as *slavish*) respects the grammatical system of TL but transfers lexical units without considering their contextual features (it does not take into account e.g. collocations or idiomatic phrases). As a result, the final text is grammatically correct, however, the lexical combinations might sound strange and unnatural;
- (3) *a free translation* is a direct opposite of the firstly specified type. It only marginally relates to the original text; it frequently omits its features such as register, stylistic properties, or connotative parts of the text. Thus, the final translation loses its aesthetical qualities; moreover, the factual side of the text does not correspond to the original text properly;
- (4) *a Communicative/idiomatic translation* is closely connected to a pragmatological aspect of a translation and is used when translating conventional expressions (such as greetings), proverb, idioms, and other conversational clichés. (Knittlová et al. 2010, 16–17)

As can be seen from the preview, none of the translation types are flawless by themselves. It is always about thoughtful usage of the types and their combination to achieve a desirable outcome. Grygová (Knittlová et al. 2010, 17) employs terms such as *communicative*, *dynamic*, and *idiomatic* translation for a translation that focuses on meaning in the first place.

Such a translation then uses both lexical units and grammatical structures which are natural for the particular language.

To conclude, as similarly presented by Grygová (Knittlová et al. 2010, 17) and Levý (2012, 44), a proper translation should not be perceived by its addressees as a translation, but should seem like an original piece created in the given TL.

3.3. Machine Translation

With the unstoppable increase of modern technologies and their widespread among laic and professional public, automatic *Computer Aided Translation* (CAT), (sometimes also called as *Computer-assisted Translations*) tools are being increasingly employed. Such tools offer software for *translation memory* (TM) and *machine translation* (MT), but in most of the cases, it is a combination of both functions built-in one programme. What CAT systems do is split a ST into smaller units called *segments*. Those segments are subsequently translated using the tool's memory, which is based on previous translations. Such a memory can be created in two ways. Firstly, it can be the translator himself who "teaches" the system how to translate through adding his own translation equivalents into the system's glossary. Secondly, the system can use online shared data from other users, which increases its efficiency. Pym (2013, 488) in his research observes the two main features that the resulting systems have as can be seen below:

1. "the more you use them (well), the better they get. This would be the "learning" dimension of TM/MT,
2. the more they are online ("in the cloud" or on databases external to the user), the more they become accessible to a wide range of public users, and the more they will be used" (Pym 2013, 488).

As Lagoudaki says, it has been generally thought for a long time that MT technology should be kept separate from professional translators for its aspiration to create a translation of the same quality as a human translator. However, this seems to be currently changing. According to authors such as Champollion or O'Hagan and Ashworth, professional translators now tend to use the translation tools. It can make the job easier as the translator has a rough draft of a translation and his job then is to post-edit the text before creating a final translation (Lagoudaki 2008, 262).

Even though MT systems can do a large part of the job, the presence of a translator is still required. What the systems do very often is an incorrect division into segments; those are then translated independently of each other and do not respect the context of the text as a whole.

As Lagoudaki suggests, another weak point is the application of rules. In any language, a vast majority of grammatical categories has fixed rules; but not all of them. Those aspects such as irregularities in grammar, complementation, or use of figurative language, in order to be transferred properly, still need human's logic, semantic information, and factual knowledge of the translator (Lagoudaki 2008, 267).

Moreover, according to Lagoudaki, any automatic tool can never "predict accurately the aims, purposes, intentions, complex strategies, changing tactics and fine choices required by the creative character of a high-quality translation". Translator's creativity, as well as his linguistic choices, are the factors that only human translator can benefit from, therefore his presence is still inevitable (2008, 268).

To conclude, let me share my own opinion on the given topic in the words of Domingo, Peris, and Casacuberta, who have led an experiment improving machine translation ability in finding corresponding source word. They say that "machine translation technology is still far away from automatically obtaining high-quality translations" and the presence of a human agent to supervise the MT hypotheses, in the post-editing stage, is still required (2017, 164).

In the practical part of the thesis, the use of the MT programme will be described in more details, after obtaining personal experience when translating the analysed text. Even though there is a large amount of professional and highly efficient MT software available on the internet, *Wordfast Anywhere* has been chosen as it offers user-friendly and simple web-based platform available from anywhere. Moreover, the software is offered to all translators free of charge.

4. FEATURES OF THE SCIENTIFIC STYLE IN THE SOURCE TEXT

For the translation and analysis, the text “*The Perception of the /æ/ - /ɛ/ Vowel Continuum in British and United States English Speakers*” (Hall, 2016) has been chosen. In fact, the original text is a research paper written by Chad Hall in June 2016 at University of Oxford. In his research, he focuses on both different pronunciation and perception of *short -a vowel* by speakers of British and American English. He runs a word identification task experiment aiming to examine possible correlation between production and perception of vowels and, at the same time, to find differences between English speakers from the United States of America and the United Kingdom.

For the purposes of this theses a scientific text should have been chosen. That the ST is of a scientific style can be assumed immediately from its title:

The Perception of the /æ/-/ɛ/ Vowel Continuum in British and United States English Speakers.

It is not only the topic of the text that indicates a high level of professionalism since it might be crucial for a laic public to even imagine what the text deals with, but also the use of lexical devices. The noun phrase *Vowel Continuum* can be considered as an abstract term, which is further specified by phonemic symbols /æ/ and /ɛ/, which can lead us to an opinion that the text describes very specific scientific field.

Another feature that might prove the text is of a scientific style is a presence of an initial abstract, a final discussion, a conclusion and a list of references. Not all of them, however, were included in the translation and analysis; namely discussion, conclusion and bibliography were due to extent constraints omitted.

Should be looked at the text from point of view of language variety being used, to which Baker (2002) refers as a register, it can be noticed that specific and specialised terminology is employed. This can be illustrated on examples such as *nasal codas*, *reaction time*, or *stimulus value* with all of them belonging to a particular scientific field – namely phonology.

As formerly mentioned in the theoretical part, scientific texts are characteristic for their frequent use of passive voice. Throughout the text, passive voice where an agent, similarly as its agency are for their irrelevancy frequently omitted (Knittlová et al. 2010, 152) as can be seen in sentences like:

SL (177): *These parameter files were then converted back to . . .*

SL (139): *If previous literature is to be assumed true, . . .*

SL (189): *. . . each participant was required to fill out a questionnaire . . .*

Use of passive voice is connected to another property of scientific style which is impersonality. In the text, there is a zero occurrence of personal pronouns *I* or *We* which would refer to the author of the paper; his hypothesis and findings are frequently based on passive voice and, therefore, are impersonal, such in:

SL (139): *. . . participants in this study would be expected to show . . .*

SL (121): *It was found that in an identification task, . . .*

The second sentence also implies a general subject. It is not important who did the findings, what really matters are the facts. Mentioning the author could only disrupt a reader and shift his attention from the matter of a text.

The last of significant properties of scientific texts is its multimodality and interactivity which is provided by use of graphic material such as screenshots, tables, diagrams, or graphs. Such graphic elements can be understood, according to Grygová (Knittlová et al. 2010, 211) as a kind of intersemiotic translation (also transmutation), where a message is transmuted from purely language system into a system of signs. Interactivity, however, should not be perceived as something that aims to attract readers or that makes a text more interesting but as feature that allows the author to order data, to make them easier to comprehend for readers. The ST contains in total nine figures that summarize furtherly described results and data; all the figures were translated and are kept in the TT as well.

To sum up, on the basis of previously mentioned features it can be assumed that the ST is in terms of stylistics a scientific text. A detailed commentary on the various lexical and structural properties will be provided in the following chapters.

5. TRANSLATION COMMENTARY

In this chapter, a detailed comparative analysis of the ST and the TT, as well as a commentary on use of different translation methods will be provided. The analysis will be divided into levels in which the changes have been made, starting with lexical level and moving to morphosyntax.

Every provided example has its number (if not, it is because some of the structures were not furtherly analysed) which is at the beginning of the line. The full list of examples from chapter 4.2. are to be found in *Glossary* in Appendix A. The examples used in chapters 4.3. and 4.3. are enumerated in the ST and TT (see Appendix C and D). Subsequently, the acronyms SL and TL are followed by a number which is referencing to the line on which can be the given example found. For the full text and context of the examples, see Appendix C for the TT and Appendix D for the ST. Should there be an example preceded by the abbreviation *hyp.*, the given structure is only hypothetical and does not occur neither in the TT, nor in the ST.

5.1. Texture Design and Typography

5.1.1. Text Composition

According to Knittlová (2010, 149), the typical feature of scientific texts is thoughtful text composition and strict sentence hierarchy, so that a sentence logically follows the preceding structures.

The ST begins with a title that gives the reader a cue what the text is going to deal with. As Knittlová (2010, 162) suggests, titles of English text show a higher degree of expressivity than Czech titles, which are more conservative and traditional. She also mentions author's tendency to employ *index headings*, in other words headings that include *key words*. A text with such a title can be then easily sorted in terms of bibliographic purposes. As can be seen in the headings of the ST and TT, the key words (underlined) in the translated text are kept.

SL (1): The Perception of the /æ/-/ɛ/ Vowel Continuum in British and United States English Speakers

TL (1): Vnímání kontinua samohlásek /æ/ – /ɛ/ mluvčími britské a americké angličtiny
Should a level of expressivity be compared, there is no shift in translation since neither the ST does not show any signs of expressivity, nor the TT.

What is a common practice of English titles is to capitalize the first word and then every other full-meaning word. In Czech, however, only the first word and proper nouns are capitalized. This method does not apply only to a text title, but also to titles of its chapters and subchapters as can be seen below on example from the text:

SL (67): *The Relationship Between Vowel Production and Perception*

TL (75): *Vztah mezi produkcí samohlásek a jejich vnímáním.*

Grygová (Knittlová et al. 2010, 209) points out that text composition in scientific texts consists of horizontal and vertical organization. The horizontal organization of the ST can be observed in its fragmentation into three main parts – *Introduction*, *Method*, and *Results*, and consequently into their sub-chapters. The original full text has also a *Discussion* part, so it follows the IMRaD model, which is typical for a scientific writing. As Čmejrková (1999, 161) suggests, graphical segmentation of the text reflects its thematic progression and keeps it easy to orientate in it. During translating the text, no changes in the paragraphs were made (meaning no two paragraphs were put together, or a single paragraph divided into two parts) as the ST organization was logical, with every paragraph dealing with one particular idea. As for the vertical organization such as author's annotations, paraphrases, or referencing to other sources, those help the reader not to lose orientation in the text. Should these devices of vertical organization be employed in a text, it is generally referred to as intertextual property of the text (Knittlová et al. 2010, 207). Since the ST frequently presents findings of third-party studies and the author's hypothesis are based on them, there were a number of in-text references, therefore, it can be assumed that the ST show signs of intertextuality.

5.1.2. Choice of Citation Style & Indication of Female Gender

Talking about referencing to other sources, there are few words needed regarding a choice of citation style. There are numerous methods of referencing in every language environment. Moreover, some of the styles can be dedicated only to a specific scientific field. When translating a scientific text, translator should consider replacing original in-text references with their TL equivalents that are appropriate for the given TL conventions. Nonetheless, it is always important to consider to whom the text is intended and in what environment is the text most likely to occur (scientific/academic/laic public/ . . .).

This sub-chapter will be focused on use of in-text references since, due to extend constrains, the ST was shortened. Therefore, a list of references is not included in the translation. It is needed to say that the citation style of the ST was not recognized. What the style is, however, is not important to know. It has been decided to transform the citations according to the most preferred norm in the Czech Republic, which is ISO 690. There were no changes required in the form of citation as the employed style is similar to Harvard referencing of ISO 690. Nevertheless, another aspect of translating (especially when translating to a Slavic

language) arose and that is an indication of female gender. According to Bratková (2008, 8), if a surname of a female author occurs inside parenthetical citation, it is not required to be transformed. In contrast, should the surname be within the text, it is necessary to transform it with accordance to the Czech grammatical system (this is connected to analytic features of the language). Ústav pro jazyk český in *Internetová jazyková příručka (Ústav pro jazyk český, 2008–2019)* (hereinafter referred to as “Příručka”) comments on such a transformation as a recommended step for avoiding misunderstandings and ambiguity, as the Czech syntactic structure cannot provide the complete information by itself and by its readers is seen as a natural part of the grammatical system of the language. That can be in Czech, as a flective language, expressed only by inflectional endings. In the ST, there is six female authors in total, to whom the author refers. Their surnames are in the whole text transferred into the Czech form by adding the inflectional ending *-ová*, as in:

(b16) SL (78): *Fridland & Kendall (2012) examined . . .*

TL (86): *Fridlandová & Kendall (2012) zkoumali . . .*

-ové respectively, in case of a possessive case of the proper noun as in:

(b6) SL (16): *The results prove Bell Berti's (et al., 1979) argument . . .*

TL (16–17): *Zjištěné výsledky potvrzují argumentaci Bell-Bertiové (aj., 1979), . . .*

As can be seen from the last example, the parenthetical reference has undergone one extra shift; namely the abbreviation *et al.* (from latin *et alii*). Bratková (2008, 16) recommends using its Czech equivalent *aj.*. Czech authors also use other abbreviations such as *a kol.* or *a spol.* which are also acceptable, what matters is the author's consistency in using only one chosen abbreviation throughout the whole text.

5.1.3. Typographical Changes

Translation is not only about shifts that arose from grammatical system of the language, but also other changes that have to be done in order to be in accordance with typographical rules of TL. Such changes, even though that are not so significant and might be perceived of minor importance, are inevitable part of the translators' job.

The typical example of typographical change is a choice of decimal separator in numbers. In English texts, a *decimal point (dot)* is used, however, Czech texts allow using only *decimal comma*. Such a change can be seen in:

(b27) SL (150): *24.7 years*

TL (162): *24,7 let.*

Another difference regarding the writing of numerals is in the use of symbols that follows a number. Typically, this is a case of writing the symbol of percentage - %. English traditionally does not make a space between the symbol and a number; the Czech system such a space requires. This is a very frequent typographical error which occurs not only in Czech translations but can also be observed in texts that are originally written in Czech. The change can be seen in:

(b54) SL (266): *beyond 5%*

TL (278): *nepřekročilo 5 %.*

The only exception where a space is not required is if the numeral stands as an adjective. Such a case was not, however, observed in the texts.

5.2. Shifts in lexical semantics

Should be looked at the text from the point of view of its lexicon, it can be said that the ST contains a number of specialised terms that are adequate for the given scientific field.

As aforementioned, vocabulary of scientific texts is poor, with almost no use of synonyms but repetition of the term instead. Those features keep the text consistent and leave no space for ambiguity or confusion. That can be illustrated on a word “speaker” (both in singular and plural) which occurs in ST eighty-one times.

When translating to Czech, it was focused on the final effect that the TT should leave on its reader. In other words, the approach of functional equivalence was employed. During the process of translating terms, it was always inevitable to consult other sources dealing with the problematics of phonetics and phonology to find equivalent terms that are already lexicalized in the TL instead of creating new terms. There are, according to Knittlová (2010, 39–41) three types of lexical equivalence: full, partial, and zero equivalence.

Full equivalence occurs very rarely and applies mainly to words which are in the basic lexicon, so they form a centre of vocabulary. It can be said that full equivalent expresses the same reality as in *oko* : *eye* (Knittlová et. al. 2010, 40). There is usually only one translation counterpart, but if happens there are more than one, such a word must be monosemantic in the given context.

Partial equivalence is the most frequent phenomenon. Since English and Czech are based on different typological system, social and cultural environment, and geographically distant from each other, the vast majority of terms are partial equivalents. It is referred to them as partial since there might be differences in denotation, connotation, and pragmatic. Knittlová devotes a single chapter to the topic of full and partial equivalence, but for the purposes of this thesis, the abovementioned arguments are sufficient. What is more important to focus on and where the real translator's job appear is in expressions that do not have an equivalent; in other words, they are examples of *zero equivalence*. In such a case, the analysis will employ the methods of translating as described by Vinay and Darbelnet (1995, 31–40) and are presented in the following chapter.

5.2.1. Borrowing

Even though that Vinay & Darbelnet do not mention the term *borrowing* in the first edition of *Comparative Stylistics of French and English* (1995), in their second edition, according to Knittlová (2010, 20) borrowing is used and described as a way of adopting new lexemes into a language system. Borrowed terms can also be called *loan-words*. In the ST, vast majority of the specialised terms were borrowed words. Below, few examples of borrowing are provided and is commented on their use.

(a74) SL (2): *continuum*

TL (1): *kontinuum*

The first term that frequently occurs in the text and so the way it has been translated is crucial for the translation in order to be considered as valuable. Even though there is a Czech word “škála” that could probably stand as an equivalent, it seemed there was a little difference in meaning. “Škála”, as was found in an on-line dictionary *Slovník spisovného jazyka českého*, is characterized as a scale, sometimes with a clear distinction between each of its steps; however, continuum was perceived as a continuous system. Moreover, the chosen lexeme is already lexicalized in the Czech language and its use in a scientific text should not anyhow disrupt the text's impact. It is also needed to say that in this example, it was not only the method of borrowing that was employed, but also transcription. Leaving the word beginning with a letter *c* in the Czech text would bring only confusion on the side of a reader, therefore, it was changed to a letter *k*, which is in accordance with Czech tradition.

(a68) SL (26): *TRAP vowel*

TL (27): *TRAP vowel (pro jeho výskyt právě ve slově trap)*

The example above could be considered as a prototypical use of borrowing. The expression has a strong cultural concept and is closely connected to the features of its language; therefore, it would be a mistake to translate it literally into Czech. Instead, the term was kept and additional information explaining its notion was added. According to the terminology of Malone (quoted in Knittlová 2010, 20), such a change can be named as explicitation. One could oppose that adaptation (as described by Vinay & Darbelnet 1995, 31) could be employed, meaning creating a new situation adapted to the Czech environment. That would, however, only bring wordy explanation, since the vowel contained in the word TRAP is not natural for Czech. The presented method was finally considered as the most feasible not only for the author of the translation but also its readers.

5.2.2. Calque

A calque is a method of translation where a form of an expression remains unchanged, but its parts are literally translated.

(a26) SL (26): *Great Vowel Shift*

TL (26): *Velké samohláskové posouvání*

Even though the abovementioned Czech equivalent might sound as too slavish translation, it is being used in some Czech texts. For instance, Czech translator Duběda uses the same expression in his translation of *Introducing Phonetic Science* (Ashby & Maidment, 2015). Even though it would be fully comprehended if left as an English term and borrowed into Czech, the number of Czech sources in which the term occurs, however, led to decision to use the Czech calque, which can be considered as semi-familiar among readers.

(a58) SL (49): *split system*

TL (55): *odštěpný systém*

Should it be commented on this example, it is necessary to look at its connotation in the ST. It says that it is referred to it as split “because variation of . . . can become distinct phoneme”; in other words, the system can be split. In Czech, the word “rozdělný” could be employed, but that evokes feeling of one whole which is being divided into more parts. Finally, the term “odštěpný” was found as appropriate since it brings the idea of a small part being separated from the rest. Another strategy of dealing with the English expression could also be its borrowing, that would however, would not make sense to nonspeakers of English in the hypothetical sentence:

TL (hyp.): *Tento systém se označuje jako split system, protože varianty krátkého -a v těchto oblastech se mohou odštěpit a stát se samostatnými fonémy.*

5.2.3. Transcription and Transliteration

According to Knittlová (2010, 19–20), transcription was described in the first edition of the book by Vinay & Darbelnet and it is a transformation in a written form based on phonetic articulation of words. Transliteration is then rewriting of a word with different alphabet, usually based on differences in pronunciation.

(a65) *synthetic* → *syntetický*

(a12) *coda* → *koda*

(a8) *categorical* → *kategorický*

The underlined letters have undergone a process of transcription according to Czech customs, where the pronunciation of a word is the same as its spelling. The method of transcription very often co-occurs together with other methods, typically borrowing. A word can be borrowed but it is required to adapt it to Czech conventions to fit naturally into the language. An example of transliteration was not found in the text.

5.2.4. Transposition

In words of Knittlová (2010, 20), transposition is a change in a word class without shifting a meaning. Such a change can be either obligatory (caused by differences in grammar of the two languages), or facultative. Knittlová also says that it is probably the most frequent method.

(b2) SL (9–10): . . . *the perception was analysed by testing their perception* . . .

TL (8): . . . *angličtiny na základě testování jejich schopností* . . .

Above, it can be observed that English gerund *testing* was transposed to the Czech noun *testování*. In this example, the change in a word class was required because of structural changes.

SL (189): *Before the task begun, . . .*

TL (203): *Před začátkem úkolu . . .*

Here, similarly as in the case of previous example, the verb was transposed to a noun. It can be claimed that this change is facultative (not required by grammar rules), because the TT could also use a verb. In such a case, the clause would be:

TL (hyp.): *Před tím, než byl úkol započat . . .*

The hypothetical clause provided above is unnecessarily wordy and does not respect the tendency the language has, and it is *language economy*. Moreover, the word “započít” has archaic connotations.

5.2.5. Amplification

When a term is amplified, a TT unit requires more words to describe the same concept of a unit in a ST (Vinay, Darbelnet 1995, 339).

SL (32–33): *separation between vowels that occur before nasals and vowels that do not.*

TL (35–36): *separace mezi samohláskami vyskytujícími se před nazály a samohláskami, které se před nimi nevyskytují.*

In this example, more shifts at the same time had to be done. Amplification was needed because of use of auxiliary verb “do” which does not have a Czech equivalent. Instead, full-meaning verb “vyskytovat se” must have been repeated. While English as an analytic language expresses here the negative sense by the negative particle “not”, Czech must include the negation into the verb in a form of prefix “ne-”. That is connected to synthetic properties of Czech.

(a41) SL (39): *Northern Cities Vowel Shift*

TL (44): *samohláskové posouvání v oblasti měst na severu USA*

The example above is a combination of calque and amplification. Even though the calque was used to transfer the second half of the source expression, it cannot be applied to the first part. Should be the whole expression translated literally as a calque, the result would be:

TL (hyp.) *samohláskové posouvání severních měst,*

which would be ambiguous in meaning and probably nonsensical. Therefore, the most appropriate way of translating was amplification. Additionally, extra information was added in the TL, so it can be said that also method of explicitation was employed.

(a75 & a42) SL (82): *Westerners and Northerners*

TL (96): *obyvatelé severu a západu*

Here, the amplification must have been used due to a lack of one-word equivalent in Czech. Even though there are some expressions such as “západáci”, they belong to a slang register and their use in a scientific text would be highly inappropriate. Again, signs of explicitation can be observed since there is a new information that was in the ST expressed implicitly.

It frequently happens that if amplification is employed, explicitation also occurs. Sometimes it is hard to distinguish between the both methods and determine, which of them was the primary intention and which of them is only accompaniment to the other one.

5.2.6. Explicitation

Vinay & Darbelnet (1995, 342) comment on explicitation in their glossary that it is a technique consisting of “making explicit in the TL what remains implicit in the SL because it is apparent from either the context or the situation”.

SL (26): *fronted and raised*

TL (32–33): *dochází k posunu místa vzniku samohlásky vpřed a vzhůru v dutině ústní*

The problem here is that there is no one-word equivalent for such an expression. In English it is obvious (in context of phonology) that there is a shift in a place where a vowel is created. That, however, would not be deducible in Czech even if there were an equivalent (probably “pozvednutý”). Therefore, an explicitation was considered as the best way since it solves both problems – implicitness of the SL expression and lack of one-word equivalent. It is also worth noting that the example, once again, shows a close connection between amplification and explicitation.

Acronyms

In the ST, there is a number of acronyms which stand mainly for particular regions such as U.K. or U.S. Some of them were kept in the TT in the same form as in original and some were written out.

(b11) SL (44): *in the U.S.*

TL (50): *v USA*

First of all, it is needed to say that acronyms “U.S.” in the text represents two different word classes, depending on their function and a context. Since this example stands for a noun United States, the Czech equivalent “USA” could be used. Even though it was originally created by initial letter of the English proper noun, the acronym is well-known in the Czech environment and should not cause any confusion. Another possibility could be to use only two-letters acronym “US”, that is, however, not very typical and not everyone would be able to interpret it correctly.

(a56) SL (12): *U.S. speakers*

TL (10): *američtí mluvčí*

In contrast to the previous example, here the acronym has undergone a process of partial conversion and so functions as an attributive adjective premodifying the noun “speakers”. The main reason for the acronym to be written out are the syntactic properties of Czech, where an adjective must be in agreement with the noun which premodifies. Such an agreement can be in Czech achieved only by inflectional endings which are only rarely carried by acronyms.

Proper Nouns

In words of Newmark (2003, 214–215), people’s names are transferred so that their nationality is preserved. Exceptions might be only names of famous people or names, that have connotations in imaginative literature as in case of “Cendrillon” (Newmark 2003, 215), which is translated as “Popelka”.

In the ST, there are mentioned first names of the task participants and all of them were kept the same in the TT as in original. Although some of them, such as “Rebecca”, could be at least transcribed into Czech form (here “Rebeka”), such a shift would only cause an inconsistency of the text. Considering the origin and nature of the ST, an occurrence of foreign names can be expected.

The situation becomes more complicated when translating geographical terms. Newmark (2003, 216) does not recommend inventing new terms. Instead, translator should consult the most recent atlases and gazetteers. Decision making can become uneasy since some of the terms may be in a TL lexicalized in both forms - literally translated term and borrowed term.

(a37) SL (35): *New England*

TL (38): *Nová Anglie*

Even though that the original term could work in the TT, it was preferred to employ its Czech calque, which is wide-spread among Czech speakers and sounds naturally to them.

(a38) SL (35): New York

TL (39): New York

In contrast, original English name was used in the TT since its Czech calque “Nový York” has an archaic connotation.

To sum up, when dealing with equivalence at word level, translator should, at the first place, look for an already lexicalized term in the given TT instead of creating a new terminology. The use of lexicalized terms instead of unknown words can make the text easily comprehensible to its readers. It is also worth noting that the majority of the terms (see Appendix A) were only substituted with already existing Czech equivalents and only few examples had to be created anew in the TT.

5.3. Changes on Morpho-syntactic level

According to Knittlová (2010, 123) a use of different syntactic structures might have a significant effect on text's impact on its readers. English is in terms of syntax more condensed, containing more information, which are very often expressed implicitly. The question for a translator is whether to adapt the text and "educate" in a TT so it becomes easier for a reader, or whether not to explicitate and leave it on a reader, who then must decide by himself, depending on a context. Knittlová generally says that a layout of a ST should not be copied to a TT, such a TT would only appear as "non-Czech and unnatural" (Knittlová et al. 2010, 123).

During the process of translating, it was sometimes difficult to find the relationships between clauses. Particularly problematic were long structures with more subordinate clauses. Therefore, it was decided in few examples to divide the original sentence into more Czech sentences, so that there is a clear relationship which makes the text easily comprehensible.

Another case when it was decided to split the structure was when there was an occurrence of semicolon. Its use is frequent in English, however, in Czech it can be observed only rarely. In words of Urbanová and Oakland (2002, 83) it is sometime referred to semicolon as "weak full stop" or "strong comma", since its function lies in between of both mentioned punctuation marks. When used, it points to the presence of close relation between meanings of the two sentences.

(b28) SL (167): *Initially two sound files were created; a "pan" .wav file, which would be stimulus 1, and a "pen" .wav file, which would be stimulus 10.*

TL (179–180): *Zpočátku byly vytvořeny dva zvukové soubory. Pan.wav soubor, který byl podnětem 1, a pen.wav soubor, který byl podnětem 10.*

Here, the provided structure was simply split into two sentences. Such a change is, however, not required by a grammar rule but is only facultative, trying to adapt the text to Czech conventions for which the use of semicolon is not typical.

5.3.1. Passive Voice

Generally, passive voice in English occurs with higher frequency than in Czech. This claim can be supported by the finding of Dušková (quoted in Knittlová et al. 2010, 152), which says that in a dialogue speech, passive forms can be observed in 3%, while in written scientific style it is approximately 20%. Quirk (2012, 52) claims that it is common to use the passive in scientific texts as there is no reason to mention neither an agent nor an agency, either to avoid the constant repetition of the subject *I* or *we*, or an information about the agent does not play a significant role or is obvious from the context.

(b15) SL (74): *This finding was taken as evidence . . .*

TL (81): *Toto zjištění je považováno za důkaz . . .*

In this example, the ST employs *short passive*, which is characteristic for not mentioning the agent. The same form (according to Příručka, such a passive form is referred to as *descriptive passive*) was kept also in the TT since its modification into an active form would necessarily mean a shift from an impersonal to a personal structure as suggested below:

TL (hyp.): *Toto zjištění považujeme za důkaz . . .*

What is more, the reflexive passive form could be employed in the TT. That is, according to Příručka, preceded by reflexive pronoun “*se*”.

TL (hyp.): *Toto zjištění se považuje za důkaz . . .*

Although the abovementioned example follows the Czech grammatical rules, it implies the fact that “the findings are generally (not only by the author of the study) taken as evidence” and therefore unsuitable for the context of the TT.

(b22) SL (116–118): *Liberman (et al., 1957) was the first to introduce . . . In his experiment, 14 synthetic stimuli were produced . . .*

TL (126): *Liberman (aj., 1957) byl první, kdo . . . Ten ve svém experimentu vytvořil 14 syntetických podnětů, které . . .*

Often, passive voice is transferred to active form as in the example above. The change is required because of the fronted adverbial phrase in the ST. Firstly, the adverbial phrase had to be paraphrased since there is no such a structure possible in Czech. Secondly, as there is already mentioned the agent (Liberman), it was considered that the best solution is to transform the passive to the active form in order to keep the text’s cohesion by anaphoric referencing “*ten*”.

Generally, it can be said that most of the passive form in the ST were kept in the same form as in the TT. The presence of reflexive form of passive was not spotted at all.

5.3.2. Sentence Condensers

As Dušková (1994, 542) claims, the use of nominal phrases is frequent in English, while in Czech, the tendency to employ subordinate clauses is prevailing.

5.3.2.1. Infinitive Structures

Infinitive as a Subject

To-infinitive in a form of subject usually expresses an action that is furtherly modified in a predicate (here “faster”). As Dušková (1994, 543) says, should the structure contain a present infinitive, then it is possible to use infinitive also in Czech. But if there was a past infinitive, a use of subordinate clause is required. In the ST, there was no example of a past infinitive, but a present form was found and translated in accordance with Dušková’s suggestion as can be seen below:

(b46) SL (218–219): *it is not possible to respond to a stimulus faster*

TL (231): *protože není možné v uvedeném čase reagovat*

Additionally, an *anticipatory it* functioning as a subject was employed in the ST (Dušková 1994, 392). In Czech, however, there is no need to mention the subject and thus, “it” was omitted. The translated clause itself contains an implied subject, namely a general subject.

Infinitive as a Part of a Predicate

(b52) SL (255): *There appears to be one U.S. speaker . . .*

TL (266): *Výsledky ukazují na přítomnost jednoho amerického mluvčího, . . .*

Dušková (1994, 547) suggest that the verb “to be” can be both in English and Czech omitted. Furthermore, she recommends using an expression “zdát se” which, however, was not suitable in this example. Its use would imply an idea of probability, but, considering the context and the data obtained in the ST, it is certain that the “one U.S. speaker . . .” is present. Therefore, the sentence was paraphrased.

(b45) SL (217): *. . . it seemed suitable to remove these anomalies from the final results.*

TL (229): *. . . zdálo se vhodné takové anomálie z konečných výsledků odstranit.*

In contrast to the previous example, the verb “zdát se” was employed as is suggested by Dušková (1994, 547). It can also be seen that the Czech translation keeps the infinitive form of the verb “odstranit”. Similarly as in example (b46), the anticipatory “it” was in the Czech translation omitted.

Adverbial Infinitives

(b51) SL (253): *It is crucial to examine the results of the individual U.S. participants to investigate if particular speakers . . .*

TL (263): *Je velmi důležité zanalyzovat výsledky jednotlivých účastníků z USA, aby se zjistilo, zda nemohlo dojít . . .*

Dušková (1994, 561) notes that the most frequent function of adverbial infinitive is to demonstrate a purpose. Should there occur this kind of infinitive in a sentence, it is, according to Dušková (1994, 561), usually translated into Czech using a subordinate clause, namely purpose clause. Such a procedure was applied in the case of the abovementioned example where the Czech verb is followed by a subordinate adverbial clause.

(b37) SL (190): . . . *her language background in order to confirm that they were native. . .*

TL (204): . . . *o svém jazykovém zázemí, aby potvrdil, že je rodilým mluvčím anglického jazyka . . .*

The abovementioned statements of Dušková are similarly applicable to structures with occurrence of “in order to” phrase. Therefore, the proposed solution employs the same methods as in the example (b51).

5.3.2.2. Gerund

Gerund, similarly as infinitive, has its origin in a noun from which is derived and that is a factor that is reflected in syntactic use of gerund. As for a present active gerund, verbal noun is usually used in Czech. It is also worth noting that not every word ending with the suffix *-ing* is necessarily a gerund. It should be distinguished between gerund, participle, and *deverbal noun*. The lastly mentioned has all substantial features (has a plural form, can be modified by an adjective, or predetermined by articles, . . .) (Dušková 1994, 569).

(b49) SL (247–248): *The main finding from these results . . .*

TL (259): *Hlavním zjištěním vyvozeným z těchto výsledků je, . . .*

As can be seen, the provided example is an example of deverbal noun which has the same form also in Czech.

Gerund as a Subject

(b53) SL (259): *However, removing Angela's results does not dramatically alter . . .*

TL (271): *Nicméně, odebrání Angeliných výsledků nijak dramaticky nemění . . .*

The gerund “removing” was translated with the verbal noun “odebrání”, other than that, no dramatical changes were required. In the Czech example, similarly as in English, a subject is not explicitly expressed, so it can be referred to as a general subject.

Gerund as an Adverbial

(b34) SL (182): *. . . to which they would respond by pressing a button . . .*

TL (196): *. . . a svoji volbu vybrat stisknutím klávesy . . .*

According to Dušková (1994, 578), gerund can occur in a form of adverbial of *manner* where is usually preceded by a preposition “by” as in the example above. In such a case, Dušková (1994, 579) suggest using a subordinate clause. This solution, however, was not applied in this case since the hypothetical structure would be wordy and so would not respect the language economy tendency as in:

TL (hyp.): *. . . a svoji volbu vybrat tím, že stisknou klávesu . . .*

Secondly, as Dušková (1994, 578) observes, gerund can stand as an adverbial of *time*.

(b38) SL (194): *After hearing each sound, they would have to identify which word they heard.*

TL (208): *Poté, co se daný zvuk přehraje, musí posluchač určit, které slovo slyšel.*

Here, however, the adverbial phrase was modulated since there was not found an appropriate equivalent to the gerund “hearing”.

TL (hyp.): *Po vyslechnutí/vyposlechnutí/uslyšení každého zvuku . . .*

5.3.2.3. Participle

English participle is usually translated into Czech either as a verbal adjective, or Czech *přechodník* (Dušková 1994, 580).

Participle as an Attribute

A present participle is commonly used to premodify both transitive and nontransitive verbs and usually expresses a characteristic or long-lasting feature (Dušková 1994, 580).

(b24) SL (120): . . . *with a rising transition . . .*

TL (130): . . . *obsahoval rostoucí tranzient, . . .*

In this example, however, the participle suggests only temporal situation. In the translation, no other changes were required and so the participle form was transferred into an adjective.

Participle as a Subject Complement

According to Dušková (1994, 583), both present and past participle can occur in a form of a subject complementary. English *ing*-participle has the same formal system as its Czech alternation – *přechodník*. Both of them can be in present and past tense, and function in passive and active voice (Dušková 1994, 583). While English employs such structures frequently, use of *přechodník* in Czech would only bring an archaic appear; therefore, translators usually utilize periphrastic structures.

(b23) SL (119): *14 synthetic stimuli were produced that varied along a particular acoustic continuum, being the direction and extent . . .*

TL (128–129): . . . *vytvořil 14 syntetických podnětů, které se v rámci daného akustického kontinua lišily a zastupovaly tak různé směry a rozsahy . . .*

As stated above, use of *přechodník* did not seem as a good solution as it would imply “unnaturalness” of the sentence. Moreover, an English collocation “to be the direction of” cannot be literally translated into Czech; substitution of the verb “to be” seemed as the best solution.

TL (hyp.): . . . *vytvořil 14 syntetických podnětů, které se v rámci daného akustického kontinua lišily, byvše různými směry a rozsahy . . .*

5.4. Use of Machine Translation

As suggested in the theoretical part, machine translations are becoming frequently used even among professional translators. The provided TT was translated using a web-based platform *Wordfast Anywhere*.

The contribution of computer aided translation lies in the fact that these systems are able to learn and can, sometimes very precisely, translate even a large part of a text. After the text is

uploaded into the software, it automatically divides it into segments, which are usually one or two sentences long. Subsequently, after opening the particular segment, an automatic translation is provided. The job of a translator is to revise the proposed solution and either to adapt it in his/her way or leave it unchanged. Since the software does not have the human qualities, it can never propose a translation as good as would be created by a human translator.

On the other hand, what should a translator bare in mind is the fact that there might be some intersegmental changes required. Since it is usually focused on translating within a segment, the intersegmental changes can be by a translator unintentionally omitted.

To conclude, a translator should be in the position of a supervisor and should always adapt the proposed solution since the CAT does not take into consideration intertextual relations and connotations that might a particular expression contain.

6. CONCLUSION

Since the aim of this bachelor thesis was to translate a specialised text, it was first inevitable to define characteristic features of a scientific style to which the translated text should belong. Therefore, Chapter 1 was devoted to the description of the mentioned properties, which are approached differently by British and Czech scholars. After being familiar with the specifics, a stylistic analysis could be run and therefore can be found in Chapter 4.

As stated, a specialised text was chosen. For that reason, the author decided to seek for a text that belongs to a specific scientific field - phonetics and phonology. Basically, any text from the mentioned scientific field can be considered as specialised; the question was what degree of specialisation the text shows.

The stylistic analysis was run on more levels and started with evaluating the title of the ST. Since the title employs professional terminology as well as specific phonemic symbols, it can be assumed that the text deals with a distinct topic, which probably would not be comprehensible by a laic public. Should it be looked at a layout of the text, it could be observed its division into chapters. The presence of Abstract, Introduction, Method, Results, and Discussion points to the typical segmentation of professional texts.

In the second step, the employed terminology was examined. It was found that a specialised terms, belonging to a scientific register, were frequently utilized.

As stated in the theoretical part of the thesis, scientific style is characteristic of the frequent use of a passive voice, especially short passive, which leads to deagentization of the sentence. The analysis confirmed the abovementioned declaration and supported the findings with several examples taken from the ST. Impersonality, as another feature of scientific texts, usually co-occurs with a passive voice which is proved by the analysis. Moreover, the person of the author was mentioned neither in explicit form nor via personal pronouns.

The ST makes use of multimodal elements such as tables, screenshots, and graphs. Those are perceived as one of the features of scientific texts since they contribute to the comprehensibility of the text and help the author to classify the data.

To sum up, the abovementioned results of the stylistic analysis prove, that the text is regarded as a text of a scientific style. Such a finding can provide a cue to the translator what to expect and should be a contribution to a process of translating, especially when making decisions what stylistic devices should be employed in the TT.

After defining the stylistic features of the text, it could be proceeded to the process of translating. Based on the defined translation approaches, the approach of functional equivalence was chosen as the most suitable. Therefore, when translating, the focus is put on the meaning and connotations of an expression, not on its form. The text has also undergone a change in the orientation on a reader when some expressions had to be adapted in order to be comprehensible by Czech readers without knowing the specifics of the text's country of origin.

The commentary opens with general differences between the ST and the TT. The text composition was analysed, and it was found that no shifts with paragraphs' boundaries were required since each paragraph deals with only one particular idea.

What, however, required a change was the form of exophoric references, i.e. in-text citations. It was not found out what citation style is employed in the original text since it did not play any role. Since the TT occurs in a different cultural environment, the citation form should be adapted to the conventions of Czech citing. Therefore, ISO 690 citation norm was applied to the text. Should there occur a female author, it was decided to transfer her surname in accordance with Czech grammatical rules.

Another part of the analysis was focused on shifts in lexical semantics. Should an expression lack a Czech equivalent, methods of translating as described by Vinay and Darbelnet (1995, 31–40) were employed. Frequently, more than one method needed to be used since they overlap in their use. This typically happened in case of loan words, which had to be in most of the cases transcribed so that their form is in accordance with Czech grammatical system. The vast majority of the transcribed terms required a change in inflectional ending. When searching for the Czech counterpart, the preferred strategy was to employ the already existing terminology instead of creating new terms. In such a case, it can be said that substitution was predominating over literal translation.

Lastly, the morpho-syntactic level was analysed. Even though Czech can use long phrases, it was sometimes necessary to split an English phrase into two sentences; mainly due to a large amount of information provided in the phrase. A passive voice was examined, and it has resulted in a finding that the vast majority of the passive structure contains a short passive. In Czech, most of the passive forms were kept in passive, only a few examples were transferred into active voice, mainly for syntactic reasons. If there is an occurrence of infinitives, the situation gets more complicated. Such structures can be either translated into Czech as a subordinate clause, or their infinitive form can be kept unchanged. In the case of gerund, there

are more possibilities of dealing with them. Gerunds can be either transformed into Czech as verbal nouns or as subordinate clauses. Lastly, the use of participles was analysed, and it was found out that they are usually transferred into Czech as adjectives or, in case it occurs as a subject complement, as Czech přechodník.

Even though there could also be a textual analysis, it was decided to focus only on the lexical and morpho-syntactic level, since adding another level could lead to a very shallow analysis. Therefore, the provided analysis goes deeper and tries to find very little nuances of the grammatical systems of both languages.

7. RESUMÉ

Tato bakalářská práce se zabývá problematikou překládání odborných textů z anglického jazyka do jazyka českého. Důvodem pro zvolení tohoto tématu je fakt, že se angličtina, dnes již označována jako *lingua franca*, v nedávné době proměnila v jazyk s celosvětovým výskytem. Možná právě proto se dnes čím dál častěji můžeme setkat s názorem, že překládání není činností nijak náročnou, a kvalitního překladu může dosáhnout prakticky každý uživatel jazyka, jež disponuje potřebnou jazykovou vybaveností. Takové tvrzení by ale bylo chybné. Tato práce se mimo jiné zaměřuje právě i na znalosti překladatele, kdy tvrdí, že překladatel, kromě toho, že by daný jazyk měl ovládat na perfektní úrovni, by měl zároveň být odborníkem v oblasti, do které překládaný text náleží.

Povahou by tato práce mohla být rozdělena do dvou základních částí – části teoretické, která je složena ze tří kapitol, a části praktické, o rozsahu dvou kapitol.

První kapitola se zevrubně zabývá problematikou stylistiky a přichází se dvěma odlišnými náhledy na věc. Prvním z nich je náhled českých autorů, kde se tradičně rozlišují funkční styly, a to podle místa, ve kterém se dané texty objevují. Britští lingvisté naopak zapojují termín *register*, který označuje jistý způsob a kontext užití daného stylu.

Kapitola druhá pak okrajově nastiňuje jazykovou typologii, která může být překladateli velmi nápomocná, je-li s ní plně obeznámen.

Třetí kapitola pak přichází s konkrétními přístupy k překládání a snaží se alespoň částečně představit jejich vývoj v nedávné historii. Hlavním přínosem této části práce ale je její vhled do, dnes tak často probíraného, přístupu k překladu, kterým je funkční ekvivalence. Slovy P. Newmarka (2003, 48), “ekvivalence není cílem překladu, nýbrž jeho žádoucím výsledkem”. Během překládání se ale může stát, a často k tomu i dochází, že cílový jazyk není schopen zdrojovou informaci jednoduše přeložit. V takovém případě se jedná o neekvivalentnost a překladatel tak musí být kreativní při hledání vhodného řešení. Tato práce se ale raději uchýlila k metodám tradičním a tyto základní postupy, které byly prvně popsány kanadskými autory Vinayem a Darbelnetem, rozebírá, a následně i aplikuje v kapitole čtvrté.

Již zmíněná kapitola čtvrtá je první částí analýzy textu, v tomto případě se zaměřuje na stylistické rysy překládaného textu. Jak může být patrné již z názvu této práce, jejím cílem bylo kvalitně přeložit a okomentovat text náležící do odborného stylu. K tomu, aby se potvrdilo, že text je skutečně textem odborným, musela být provedena právě jmenovaná stylistická analýza.

Ta se v prvním kroku zabývá názvem překládaného textu, který zapojením velmi specifických termínů vyvolává dojem, že půjde o text z úzce zaměřené části jisté vědecké disciplíny, kterou je v tomto případě fonetika. Odborné a konkrétní výrazy se taktéž vyskytovaly i v textu samotném, a to s vysokou frekvencí. Na příslušnost překládaného textu k odbornému stylu může být taktéž usuzováno z přítomnosti jednotlivých částí textu, jmenovitě sekce úvod, metodologie, výsledky a diskuze. Tento formát, v anglické literatuře označován jako IMRaD model, je charakteristický právě pro texty odborného stylu. Dalším typickým prvkem odborného stylu je zapojení pasiva. Ten je v tomto typu textů oblíbený pro svoji možnost neuvádět konatele děje. V překládaném textu se objevilo velké množství takových frází, naopak pasivních struktur s vyjádřeným konatelem bylo nalezeno minimum. S použitím pasiva souvisí další vlastnost popisovaného funkčního stylu a tou je neosobnost. Ve zdrojovém textu se ani v jednom případě nevyskytuje jakákoliv forma vyjádření, která by mluvila o autorovi textu. Jeho osoba je potlačena do pozadí a celý text se tak soustředí výlučně na předkládaná fakta. Posledním z analyzovaných prvků v této části je multimedialita textu. Té je v daném textu dosaženo užitím tabulek, obrázků a grafů, a jejich zapojením se zvyšuje celková výpovědní hodnota textu. Zmíněné prvky tedy neslouží k tomu, aby text oživily, nýbrž aby jindy holá data seřadily a dosáhly tak snadnějšího porozumění textu ze strany čtenáře.

Na základě všech výše popsaných výskytů může být usuzováno na fakt, že text zvolený k překladu je opravdu textem náležitým do funkčního stylu vědy a techniky. Toto zjištění je pro překladatele klíčové při rozhodování, jaké překladové protějšky zapojit, a též by mělo být nápomocné při definování, jakému typu čtenáře je text určen.

Po definování příslušnosti k odbornému stylu je možné přistoupit k překladu samotnému. Na základě dříve popsaných překladatelských přístupů byla zvolena funkční ekvivalence jako nejnadekvátnější způsob překládání. Cílový text by tedy měl působit přirozeně, bez známek toho, že je transformací textu zdrojového. Takového efektu se autor snažil docílit důslednou adaptací těch výrazů, které nejsou v českém prostředí známé, nebo obsahují konotační stránku, která se českým čtenářům může zdát cizí.

Kapitola pátá je tedy překladovým komentářem. Pomocí něho se autor snaží obájít svá překladatelská rozhodnutí a podložit je zákonitostmi, které vycházejí ze systematických rozdílů mezi danými jazyky.

Před okomentováním jednotlivých stupňů analýzy je ale nutné zmínit další doprovodné změny, které bylo nutné provést tak, aby cílový text přirozeně zapadal do českého prostředí po

všech jeho stránkách. Takovou změnou je například adaptace citační normy. Ve zdrojovém textu se užívá neznámé citační normy, její identifikace ale nebyla pro potřeby této práce nutná. Co bylo důležité si uvědomit je, pro koho je český překlad určen. Na základě toho mohlo být následně učiněno rozhodnutí o volbě citační normy. Bezsporně by se v českém textu mohlo užít normy *Chicago*, nakonec ale převládl fakt, že citační norma *ISO 690* je v českém odborném prostředí normou preferovanou. Všechny vnitrotextové reference byly tedy adaptovány v souladu s již zmíněnou normou. V souvislosti s tím se také přistoupilo k nutné adaptaci ženských příjmení, jež se ve zdrojovém textu objevily. Ačkoli takový krok není gramatickými pravidly českého jazyka vyžadován, v českém prostředí je přechylování běžnou praxí, a tak bylo k této úpravě přistoupeno. Přechylená ženská příjmení, zvláště dochází-li k jejich ohýbání, pak do textu přirozeně zapadají, čímž se opět zvyšuje kýžený efekt ekvivalentnosti textu.

Další podstatnou částí překladatelského komentáře je lexikální analýza. V případě, že nebyl v češtině nalezen ekvivalentní překladový protějšek, přistoupilo se použití jedné z tradičních překladatelských metod. Často ale docházelo ke kombinování více metod najednou, zejména v případě výpůjček, kdy byl daný termín převzat a následně transkribován v souladu s českým územ. Rozhodujícím faktorem při volbě českého protějšku ale bylo, zda čeština již nedisponuje takovým výrazem. Mnohem častěji tedy docházelo spíše k substituci, tj. náhradě anglického slova slovem jiným, v češtině již lexikalizovaným. Aplikací takového postupu se překladatel vyhýbá situaci, kdy i třeba v daném oboru vzdělaný čtenář přeloženému textu neporozumí, protože jednoduše není s nově vzniklou terminologií obeznámen.

Poslední část analýzy pak tvoří rozbor morfosyntaktické roviny. Její začlenění do této práce vychází z faktu, že změny na této úrovni jsou obvykle většího rozsahu a nutí tak překladatele užít i jiných struktur, které ve zdrojovém textu nejsou obvyklé. Častou změnou na této úrovni bylo dělení větných struktur na menší celky. Anglické odborné texty jsou typické svou hutností ve vyjadřování, kde může být i velké množství informací kondenzováno do jedné věty. V češtině ale takové možnosti často nejsou, a tak nezbyvá jiné řešení rozdělování větných celků. Dalším typickým znakem, jak už bylo zmíněno, je užití pasiva. To ale bylo ve většině případů zachováno, protože i v českém odborném jazyce je vyžadována neosobnost a konatel děje není často podstatný. V případě výskytu infinitivního slovesa se v češtině nabízí více možností, a to v závislosti na funkci infinitivu. Často jsou ale tyto výskyty adaptovány do formy vedlejších vět. Forma infinitivu může být, ale v některých případech zachována. Speciálním případem jsou pak výskyty anglického participia, jehož přítomná forma by mohla být do čeština

přeložena užitím přechodníku. Vzhledem k povaze přechodníků a jejich téměř nulovému užití v současné mluvě, nebylo takového řešení v celé práci užito.

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9. APPENDICES

Appendix A – *Glossary*

Appendix B – *List of Abbreviations used in Appendix C and Appendix D*

Appendix C – *Translated text*

Appendix D – *Source text*

Appendix A – Glossary

Example num.	Source text	Target text	Method
a1	above chance	nadprůměrně	equivalent
a2	acting on instinct	instinktivní volba	transposition
a3	allophone	alofon	borrowing
a4	argument	argumentace	borrowing
a5	bias	zaujatost	equivalent
a6	blue line	modrá křivka	equivalent
a7	cardinal vowel	kardinální samohláska	calque
a8	categorical	kategorické	equivalent
a9	centralization	centralizace	borrowing
a10	claim	tvrzení	equivalent
a11	closed syllable	zavřená slabika	calque
a12	coda	koda	equivalent
a13	cognitive processing	kognitivní zpracování	calque
a14	comma-separated file	soubor CSV s hodnotami oddělenými čárkami	explicitation
a15	consonant	samohláska	equivalent
a16	continuous system	spojitý systém	calque
a17	dialect	dialekt	equivalent
a18	dicrimination task	diskriminační analýza	calque
a19	experimental method	experimentální metoda	calque
a20	exposure	vystavení	equivalent
a21	files sampled at	soubory vzorkované na	calque
a22	finding	zjištění	equivalent
a23	foreign-accented speech	řeči s výskytem cizího akcentu	transposition
a24	formant	formant	equivalent
a25	fricative	frikativa	equivalent
a26	Great Vowel Shift	velké samohláskové posouvání	calque
a27	handedness	lateralita	equivalent
a28	hypothesis	hypotéza	borrowing
a29	individual's production	produkce jednotlivce	calque
a30	key linguistic feature	klíčový jazykový rys	calque
a31	language background	jazykové zázemí	calque
a32	Midland	Midland	borrowing
a33	mora	mora	equivalent
a34	nasal	nazála/nazální	borrowing
a35	nasal system	nazální systém	calque
a36	native speaker	rodilý mluvčí	equivalent
a37	New England	Nová Anglie	calque
a38	New York	New York	borrowing
a39	non-shifters	mluvčí, jejichž výslovnost neprošla posunem	explicitation
a40	North Carolina	Severní Karolína	calque

a41	Northern Cities Vowel Shift	samohláskové posouvání v oblasti měst na severu USA	explicitation
a42	Northernes	obyvatelé severu USA	explicitation
a43	paper	studie	equivalent
a44	perception	vnímání	equivalent
a45	perceptual boundary	hranice vnímání	calque
a46	peripheralization	periferizace	borrowing
a47	phoneme boundary	hranice fonému	calque
a48	phonemic input	fonemický vstup	calque
a49	phonetic	fonetická	borrowing
a50	random order	náhodné pořadí	equivalent
a51	region of origin	region původu	equivalent
a52	sociolinguistics investigation	sociolingvistické zkoumání	calque
a53	sound file	zvukový soubor	equivalent
a54	Southern breaking system	jižanský lámaný systém	calque
a55	Southern speaker	mluvčí z jihu USA	explicitation
a56	speaker	mluvčí	equivalent
a57	speech synthesizer	hlasový syntetizátor	calque
a58	split system	oddělný systém	calque
a59	Standard British English	standartní britská angličtina	equivalent
a60	steady state	fáze setrvání	calque
a61	steep drop	strmý pokles	calque
a62	stimulus	podnět	equivalent
a63	stimulus value	hodnota podnětu	calque
a64	stop consonant	plozivum	borrowing
a65	synthetic	syntetické	equivalent
a66	to glide inwards	sklouzávat hlouběji	equivalent
a67	transition	tranzient	borrowing
a68	TRAP vowel	TRAP vowel	borrowing
a69	University of Oxford	Univerzita Oxford	calque
a70	velars	veláry	borrowing
a71	Voice Onset Time	nástup hlasivkového tónu (VOT)	calque
a72	voiced stop	plozivum	borrowing
a73	voiceless	neznělý	equivalent
a74	vowel continuum	samohláskové kontinuum	calque
a75	Westernes	obyvatelé západu USA	explicitation
a76	word identification task	test rozlišování slov	calque
a77	x-axis	osa x	equivalent

Appendix B – *List of Abbreviations used in Appendix C and Appendix D*

Ac	acronym
Act	active voice
Adv	adverbial
AdvC	adverbial clause
cit	change in citation/indication of female gender
DN	deverbal noun
GA	gerund as an adverbial
GS	gerund as a subject
Inf	infinitive
InfA	adverbial infinitive
InfO	infinitive as an object
InfP	infinitive as a part of a predicate
InfS	infinitive as a subject
PA	participle as an attributive
Pas	passive voice
peri	periphrased
POc	participle as an object complement
PP	participle as a part of a predicate
split	sentence split
typo	typographical change
VN	verbal noun

6 **Abstrakt**

7 Tato studie přináší (b1)analýzu vnímání kontinua samohlásek /æ/ – /ɛ/^{peri} mluvčími
8 britské a americké angličtiny na základě (b2)testování^{DN} jejich schopností rozlišit mezi slovy
9 *pan* – *pen*. (b3)Mezi již zmíněnými skupinami mluvčích byl objeven patrný rozdíl.^{split} Tím je
10 přetrvávající tendence amerických mluvčích vnímat slovo *pan* ve větší míře, než je tomu u
11 britských mluvčích. K tomu dochází pravděpodobně kvůli (b4)napjatému^{Adj} /æ/ vyskytujícímu
12 se v amerických dialektech, zvláště před nazálními kodami (b5)(Labov aj., 2006)^{cit}. Bylo
13 zjištěno, že množství výskytů napjatého /æ/ napříč fonetickými prostředními v dialektech
14 amerických mluvčích stejně jako vystavení těchto mluvčích britské angličtině ovlivnilo, jak
15 kontinuum vnímali. Zjištěné výsledky potvrzují argumentaci (b6)Bell-Bertiové^{cit} (aj., 1979), že
16 produkce a vnímání řeči jsou úzce spjaty a strmý pokles vnímání slova *pan* a namísto něho
17 vnímání slova *pen*, který vykazují obě skupiny mluvčích, může prokazovat, že pocitování
18 samohlásek je kategorické. (b7)^{split}Pozorovaný výsledek přímo rozporuje všeobecně
19 uznávanému názoru (Fry aj., 1962), avšak aby bylo možné vydat jakékoliv spolehlivé tvrzení,
20 musela by být provedena diskriminační analýza.

21 Úvod

22 *Výslovnost krátkého -a v britské a americké angličtině*

23 Jedním z klíčových jazykových rysů, na jehož základě lze rozlišit mezi angličtinou
24 britskou a americkou, je způsob tvoření *krátkého -a* mluvčími obou zmíněných zemí. Během
25 velkého samohláskového posouvání v Anglii došlo k posunu výslovnosti *krátkého -a*,
26 též označovaného jako *TRAP vowel* (pro jeho výskyt právě ve slově *trap*), směrem vpřed
27 a vzhůru v dutině ústní až k [æ] (Lass, 2000). Na začátku dvacátého století se v Británii
28 samohláska *krátké -a* znovu posunula, tentokrát směrem dolů až do otevřené souhlásky [a]
29 (Wells, 1997).

30 Napříč Spojenými státy je konfigurace *krátkého -a* komplexnější. Mluvčí americké
31 angličtiny využívají systém tzv. napjatého /æ/, (dochází k posunu místa vzniku samohlásky
32 vpřed a vzhůru v dutině ústní). Tento systém se ale liší (b8)v závislosti^{peri} na dialektu mluvčího.
33 Labov (aj., 2006) tento systém rozděluje následovně:

34 Prvním systémem je systém nazální, pro který je typická široká akustická separace mezi
35 samohláskami vyskytujícími se před nazálami a samohláskami, které se před nimi nevyskytují.
36 Hláska *krátké -a* vyskytující se před nazálou je napjatější než před jinými konsonanty tohoto
37 systému. Takový nazální systém se pak vyskytuje v oblasti Nové Anglie, New Jersey (vyjímaje
38 oblast New Yorku) a napříč regionem Midland¹, zejména ve velkých městech, jako jsou
39 Pittsburgh, Columbus nebo Indianapolis.

40 Druhým ze systémů je systém s posunem vzhůru v dutině ústní při tvorbě hlásky /æ/, ve
41 kterém jsou všechny samohlásky napjaté. Ty poté vytvářejí druhou moru a sklouzávají hlouběji
42 do dutiny ústní (až k [ɛə], [eə], [iə]) a jsou jednou ze (b9)spouštěcích^{Adj} událostí
43 samohláskového posouvání v oblasti měst na severu USA. Tento posun je dominantní pro
44 vnitrozemí severu Spojených států. Jak zjistil Labov, u řady mluvčích z této oblasti druhá mora
45 sestává z fáze setrvání namísto sklouzávání hlouběji do dutiny ústní. Výsledným efektem je pak
46 tendence *krátkého -a* rozpadat se na dvě mory o stejné délce, z nichž jedna pochází ze střední
47 přední části a naopak druhá ze spodní přední nebo centrální části dutiny ústní.

48 Třetím systémem (b10)napjatého^{Adj} /æ/ (b11)v USA^{Ac} je jižanský lámaný systém,
49 vyskytující se v angličtině obyvatel jihu USA. Tato je charakterizována samohláskou začínající
50 ve spodní přední pozici a následována hláskou [j], poté se navrácí do pozice nepřilíh akusticky

¹ Midland = tradiční označení pro oblast mezi severem a jihem USA; pás států táhnoucí se od Nebrasky a Kansasu východně až k Indianě a Ohio

51 odlišné od původní samohlásky. K tomu nejčastěji dochází v souvislosti s výskytem nazální
52 kody, kdy /n/ vykazuje nejvyšší procento lámání.

53 Čtvrtým systémem je odštěpný systém *krátkého -a*, který se vyskytuje ve městě New
54 York a Středoatlantské oblasti. V New Yorku se krátké napjaté *-a* vyskytuje před neznělými
55 frikativy, plozivními a nazálními souhláskami, zatímco ve středoatlantské oblasti, dochází
56 k jeho napínání před nazálami a neznělými frikativy s výjimkou /ʃ/. Tento systém se označuje
57 jako odštěpný, protože varianty *krátkého -a* v těchto oblastech se mohou odštěpit a stát se
58 samostatnými fonémy.

59 Posledním systémem je spojitý systém, který je nejběžnější konfigurací *krátkého -a* na
60 západě a v oblasti Midlandu. Jedná se o kontinuum alofonů samohlásky *krátké -a*, jež je tvořena
61 ve spodní přední až střední části dutiny ústní. Nejjednodušší fonetické prostředí, ve kterém je
62 *krátké -a* nejnižší, je před neznělými velárami. Nejpokročilejším je pak prostředí s krátkým *-a*
63 v nejvyšší poloze, k čemuž dochází před nazálními kodami.

64 Na základě těchto pěti systémů lze odvodit, že u všech mluvčích americké angličtiny
65 k procesu napínání dochází před nazálami v zavřených slabikách.

66 Z předchozího výzkumu je zřejmé, že způsob produkce *krátkého -a* se mezi mluvčími
67 britské a americké angličtiny značně liší, přičemž britští mluvčí (b12) produkuji^{peri} otevřenější
68 krátkou samohlásku mnohem častěji než mluvčí (b13) americké^{Adj} angličtiny, a to zejména před
69 nazálními kodami. Experiment v této práci má za úkol zjistit, zda se rozdíl v produkci *krátkého*
70 *-a* mezi oběma skupinami mluvčích odráží v jejich vnímání samohláskové kontinuity /æ/ – /ɛ/,
71 konkrétně v kontinuu slov *pan – pen*.

72 Vztah mezi produkcí samohlásek a jejich vnímáním^{typo}(b14)

73 Než bude možné formulovat hypotézu o tom, jak britští a američtí mluvčí vnímají
74 kontinuum slov *pan – pen*, je nutné zvážit vztah mezi produkcí a vnímání samohlásky
75 u téhož mluvčího. Existují četné studie podporující tvrzení, že produkce a vnímání jednotlivce
76 jsou úzce spjaty. Bell-Bertiová (aj. 1979) zjistila, že rozdíly v tvorbě samohlásky /i/ daným
77 mluvčím úzce souvisí s jeho rozdílným vnímáním téže samohlásky. (b15) Toto zjištění
78 je považováno za důkaz^{Pas} existence společného mechanismu, jenž zprostředkovává tvorbu
79 a vnímání samohlásek. Ačkoli sociolingvistických zkoumání vztahu mezi tvorbou samohlásky
80 a jejím vnímáním nebylo provedeno mnoho, za zmínku stojí jedna významná studie, která je
81 svým tématem blízko příbuzná našemu experimentu z hlediska jeho cíle, zkoumaných
82 skutečností a experimentálních metod. (b16) Fridlandová & Kendall^{cit} (2012) zkoumali,
83 jak mluvčí v USA vnímají kontinuum samohlásek /e/ – /ɛ/. Mluvčí z jihu USA, kteří typicky

84 vykazovali centralizaci /e/ a periferizaci /ɛ/ způsobenou jižanským hláskovým posouváním
85 (Feagin, 1986; Labov aj., 2006; Thomas, 2001), vnímali /e/ jako delší v porovnání s obyvateli
86 západu a severu USA, a to i přesto, že způsob produkce samohlásek těmito dvěma zmíněnými
87 skupinami obyvatel se nijak nelišil. Výsledky také ukázaly, že vnímání samohlásky závisí jak
88 na vlastním způsobu tvorby řeči, tak na způsobu tvorby řeči v daném regionu, kterému je mluvčí
89 vystaven. (b17)Například obyvatelé jihu, kteří aktivně podlehli jižanskému hláskovému
90 posouvání vnímali /e/ jako delší v porovnání s obyvateli jihu, kteří tímto posunem nebyli
91 ovlivněni.^{split} Přestože druhá zmíněná skupina posouvání nepodlehla, vykazovala /e/ delší než
92 obyvatelé severu a západu, a to pravděpodobně kvůli jejímu vystavení vlivu zbytku obyvatel
93 regionu, jejichž výslovnost posunem prošla. Je proto důležité (b18)vzít v potaz^{InfO} fakt, že
94 dialekt jednoho mluvčího nemusí být shodný s dialektem ostatních mluvčích v daném regionu,
95 což by mohlo ovlivnit vnímání /æ/ – /ɛ/ kontinua daným mluvčím. Vzhledem k časovému
96 omezení nebyli ostatní mluvčí v daném regionu v této studii nahráváni a výsledné předpoklady
97 tak musely být provedeny pouze na základě dialektu účastníka založeném na regionu původu.

98 Za zmínku také stojí skutečnost, že strávil-li americký mluvčí delší časové období
99 ve Spojeném království, jeho hranice vnímání se mohla posunout směrem k britskému způsobu
100 vnímání kontinua /æ/ – /ɛ/. Jak může být patrné v sekci „Účastníci“, mnozí američtí účastníci
101 tohoto experimentu žili (b19)ve Spojeném království^{Ac} nejméně osm měsíců, tudíž výsledky
102 mohou být ovlivněny. Tato hypotéza je podpořena jinými výzkumy, konkrétně Clarková &
103 Garret (2004) a Nygaardová (aj., 2005) zjistili, že posluchačův způsob vnímání řeči s výskytem
104 cizího akcentu se rychle přizpůsobuje. Clarková & Luce (2005) pak pozorovali snahu
105 posluchačů o posun hranice doby nástupu hlasivkového tónu (VOT) u orálních okluziv s cílem
106 připodobnit způsob produkce hlásek danému mluvčímu. K takové adaptaci dochází již během
107 dvou minut vzájemné interakce mluvčího a posluchače. Clopperová & Pisoni (2007)
108 a Sumnerová & Samuel (2009) (stejně jako Fridlandová & Kendall (2012)) zjistili, že vnímání
109 mluvčího závisí jak na jeho vlastní produkci, tak na dialektu mluvčích v jeho okolí.

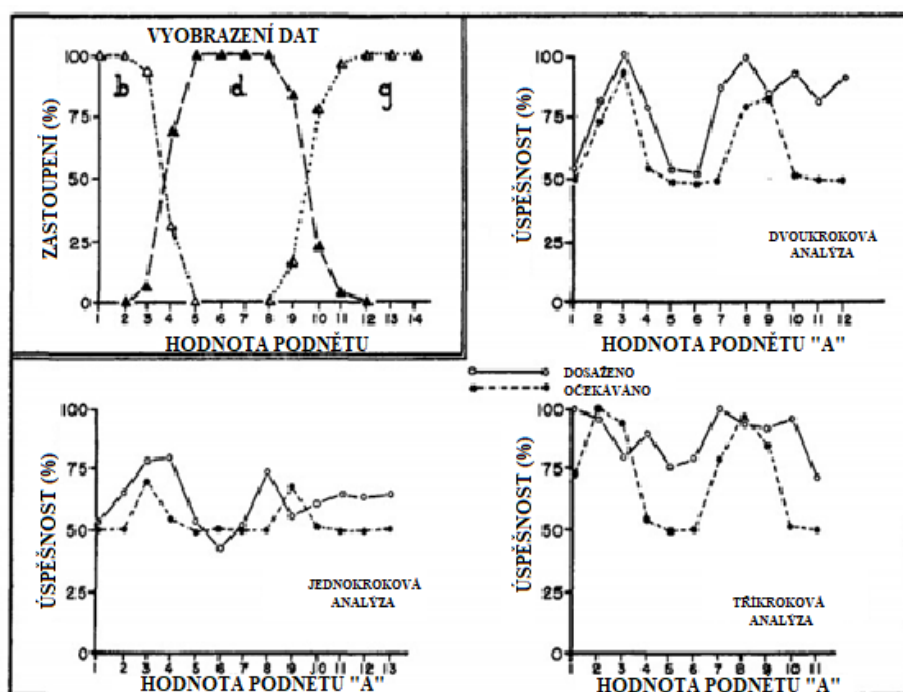
110 Na základě (b20)zjištění^{DN} předchozího výzkumu se předpokládá, že v tomto
111 experimentu mluvčí z USA (kteří ve většině případů vykazují napjaté /æ/ před nazálními
112 kodami), vnímají slovo *pan* o něco delší než britští mluvčí, jejichž produkce *krátkého -a*
113 před nazálními kodami je otevřenější a blíže ke kardinální samohlásce /a/. Dále v případě,
114 že americký mluvčí strávil ve Spojeném království značné množství času, je možné, že vnímání
115 samohlásek v kontinuu *pan* – *pen* bude ovlivněno. (b21)Ukáže-li se^{peri}, že vnímání *pan* – *pen*

116 kontinua je mezi britskými a americkými mluvčími odlišné, bude podpořeno tvrzení Bell-
117 Bertiové (aj., 1979) o existenci korelace mezi produkcí a vnímáním mluvčího.

118 *Vnímání a kategorizace samohlásek*

119 Liberman (aj., 1957) byl první, kdo přišel s myšlenkou, že fonémy, zejména pak
120 souhlásky, jsou vnímány kategoricky. (b22)Ten ve svém experimentu vytvořil 14 syntetických
121 podnětů^{Act}, (b23)které se v rámci daného akustického kontinua lišily a zastupovaly tak různé
122 směry a rozsahy tranzientu^{peri} druhého formantu (F2). První formant zůstal neměnný a
123 obsahoval (b24)rostoucí^{Adj} tranzient, který je znakem výskytu plozivy. (Delattre aj., 1955).
124 Rozlišovacím testem bylo zjištěno, že účastníci jasně vykazují kategorické hranice mezi
125 souhláskami /b/, /d/ a /g/. Percepce posunu z jedné souhlásky na druhou v rámci kontinua byla
126 náhlá, což poukazuje na fakt, že hranice fonémů byly ustálené a jasně vytyčené. V
127 jednokrokové, dvoukrokové a tříkrokové diskriminační analýze bylo pro účastníky snazší
128 rozlišovat podněty, které leží na jedné ze stran hranice fonémů než podněty ve stejné kategorii.
129 Obrázek 1 ukazuje výsledky Libermanových rozlišovacích testů a diskriminačních analýz.

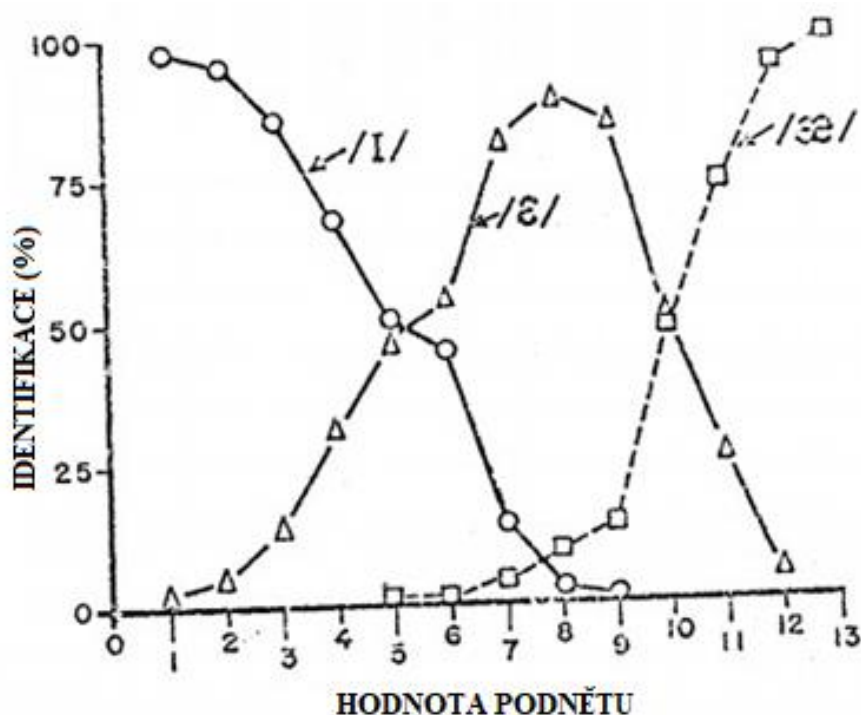
130 *Obrázek 1: Výsledky Libermanova experimentu. Převzato od Libermana (aj., 1957)*



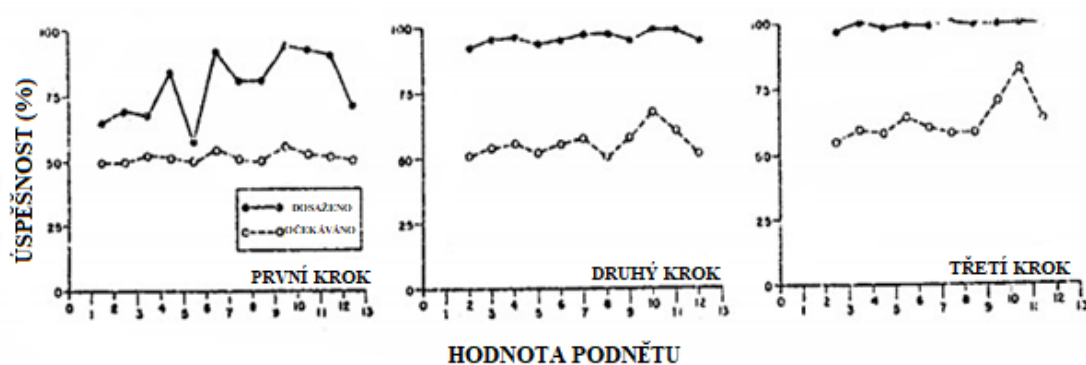
131 Fry (aj., 1962) míní, že hranice mezi vokalicími fonémy jsou méně ostře definovány
132 než mezi fonémy konsonantickými. V jeho rozlišovacím testu s vokalicími fonémy
133 vykazovali mluvčí postupný posun ve vnímání od jedné samohlásky k druhé, což je v protikladu
134 s Libermanovým experimentem, kde tyto posuny byly náhlé. V jednokrokových,

135 dvoukrokových a tříkrokových diskriminačních analýzách si mluvčí vedli nadprůměrně dobře,
 136 což znamená, že účastníci byli schopni rozlišovat podněty samohlásek i v odstupě od sebe, bez
 137 ohledu na to, kde leží ve vztahu k hranicím fonémů. Obrázky 2 a 3 ukazují výsledky Fryových
 138 rozlišovacích testů a diskriminačních analýz.

139 Obrázek 2: Výsledky Fryova rozlišovacího testu. Převzato od Frye (aj., 1962)



140 Obrázek 3: Výsledek Fryova rozlišovacího testu. Převzato z Frye (aj., 1962)



141 Pokud má (b25) být předchozí literatura považována^{Pas} za pravdivou, očekává se, že
 142 účastníci této studie budou v tomto experimentu vykazovat spíše kontinuální než kategorické
 143 vnímání kontinuity samohlásek /æ/ – /ɛ/. Pokud by však mluvčí společně vykazovali posun ve
 144 vnímání pan k pen jako náhlý, bylo by možné tvrdit, že kategorizace samohlásek je ostřejší,

145 než se dříve věřilo. Tento experiment však nemůže být považován za důkaz, že samohlásky
146 jsou vnímány kategoricky. (b26)K potvrzení takového názoru^{AdvC} by musela být provedena
147 diskriminační analýza, která by poskytla věrohodné argumenty o vnímání samohlásky. Její
148 provedení ale, vzhledem k časovým omezením, nebylo možné.

149 **Metodologie**

150 *Účastníci*

151 Do studie bylo zapojeno celkem čtrnáct účastníků. Sedm z nich bylo rodilých mluvčích
152 standardní britské angličtiny jihu Spojeného království ve věku 21–35 let (průměr = (b27)24,7
153 let^{typo}), dva ze sedmi těchto mluvčích byly ženy a pět bylo mužů. Všichni byli vychováni na
154 jihu Anglie a žili v Oxfordu po dobu nejméně osmi měsíců. Dalších sedm účastníků bylo
155 rodilými mluvčími angličtiny Spojených států ve věku 18–21 let (průměr = 20,4 let). Dva z nich
156 byli muži, zbytek tvořilo pět žen. Všichni byli vychováni v USA; dva v Massachusetts, jeden
157 v Michiganu, jeden v Marylandu, jeden v Iowě, jeden žil přes tři roky v Massachusetts a Illinois,
158 a jeden, který se často stěhoval mezi Massachusetts, Severní Karolínou a Pensylvánií. Všichni
159 z nich žili po dobu nejméně osmi měsíců v Oxfordu, s výjimkou jednoho mluvčího, kterou je
160 Angela. Ta, v den konání tohoto experimentu, žila ve Spojených státech pouze 4 dny. Obrázek
161 4 ukazuje jména amerických mluvčích, jejich region původu a předpokládaný dialekt založený
162 na regionu podle Labova (aj., 2006).

163 *Tabulka 1: Jména amerických mluvčích, jejich region původu a předpokládaný dialekt*

<i>Jméno</i>	<i>Region původu</i>	<i>Předpokládaný dialekt</i>
<i>Angela</i>	<i>Highland a Livonia, Michigan</i>	<i>Angličtina severní části vnitrozemí</i>
<i>David W.</i>	<i>Middleborough, Massachusetts</i>	<i>Angličtina severovýchodu Nové Anglie</i>
<i>Rebecca</i>	<i>Worcester, Massachusetts</i>	<i>angličtina severovýchodu Nové Anglie</i>
<i>David H.</i>	<i>Hagerstown, Maryland</i>	<i>západopensylvánská angličtina</i>
<i>Jennifer</i>	<i>Des Moines, Iowa</i>	<i>Angličtina oblasti Midland</i>
<i>Emily</i>	<i>- Sherborn, Massachusetts - Charlotte, Severní Karolína - Kennett Square, Pensylvánie</i>	<i>- angličtina severovýchodu Nové Anglie - jihoamerická angličtina - středoatlantská angličtina</i>
<i>Lindsay</i>	<i>- Martha's Vineyard, Massachusetts - Chicago, Illinois</i>	<i>- angličtina severovýchodu Nové Anglie - angličtina severní části vnitrozemí</i>

164 *Materiály*

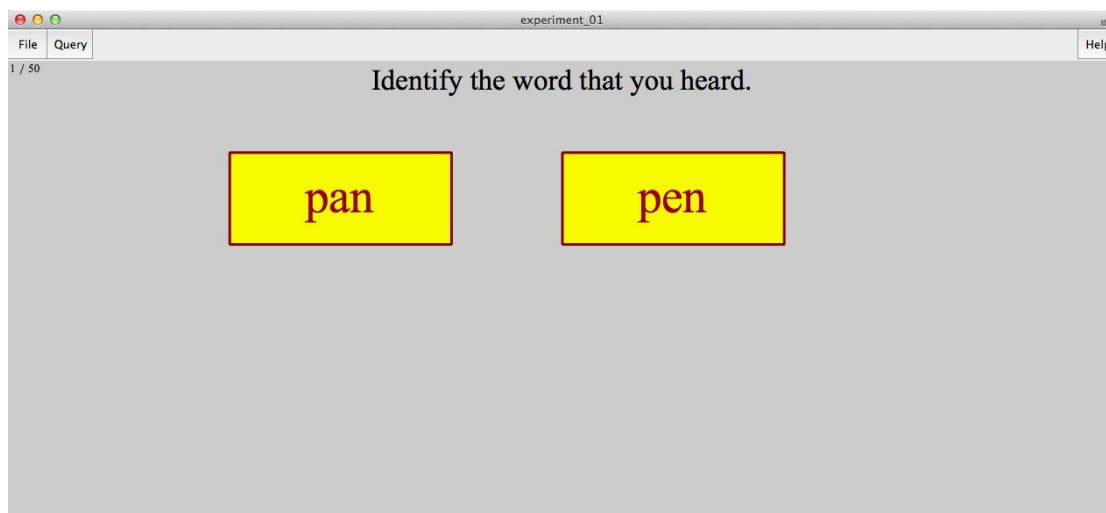
165 Každý účastník se zúčastnil testu rozlišování slov, ve kterém poslouchal
166 100 syntetických podnětů napříč celým kontinuem *pan – pen* (jednalo se o 10 unikátních
167 podnětů násobených 10 a přehrávaných v náhodném pořadí). Podněty byly vytvořeny pomocí
168 hlasového syntetizátoru IPOX Speech Synthesizer (Dirksen & Coleman, 1995), který je
169 schopen generovat syntetická slova pomocí fonemického vstupu. (b28)Zpočátku byly
170 vytvořeny dva zvukové soubory.^{split} Pan.wav soubor, který byl podnětem 1, a pen.wav soubor,
171 který byl podnětem 10. Jednalo se o 16bitové zvukové soubory vzorkované na 11025 Hz.
172 Samohláska /æ/ v podnětu 1 měla hodnotu F1 838 Hz, hodnotu F2 1560 Hz, hodnota F3 2430
173 Hz a F4 byl na hodnotě 3300 Hz. Samohláska /ε/ v podnětu 10 pak měla hodnotu F1 620 Hz,
174 hodnotu F2 1660 Hz, hodnota F3 byla 2430 Hz a F4 s hodnotou 3300 Hz. Následně bylo
175 vytvořeno osm dalších podnětů, které se pohybovaly ve stejných stupních napříč akustickým
176 kontinuem od podnětu 1 do 10. Tento proces byl proveden (b29)vytvořením souboru parametru
177 podnětu 1 a podnětu 10^{AdvC} přes IPOX a osminásobným kopírováním tohoto souboru. Následně
178 došlo k nastavení hodnot formantu tak, aby vzniklo 10 parametrových souborů, které se
179 pohybovaly ve stejných stupních od podnětu 1 do 10. Tyto soubory parametrů pak byly
180 převedeny zpět na soubory .wav, (b30)a tak vzniklo^{peri} 10 zvukových souborů, (b31)které se
181 pohybují^{AdvC} napříč kontinuem *pan – pen*. Tyto zvuky byly následně přeneseny do testu
182 rozlišování slov, který probíhal na počítači pomocí softwaru Praat (Boersma & Weenink, 2016).
183 (b32)Program přehrával již zmiňovaných deset zvukových souborů pětkrát v náhodném pořadí,
184 což znamenalo 50 podnětů.^{split} Úkolem posluchačů bylo (b33)identifikovat^{Inf}, zda slyšeli slovo
185 *pan* nebo *pen* a svoji volbu (b34)vybrat^{Inf} stisknutím klávesy pravou rukou. Program byl poté
186 spuštěn podruhé, ale jeho účastníci museli tentokrát (b35)používat^{Inf} ruku levou. Celkově tedy
187 každý posluchač slyšel 100 podnětů. Účastníci byli povinni odpovídat oběma rukama, aby se
188 vyloučila jakákoli zaujatost vůči určité odpovědi. Existuje totiž důkaz, že jazyková dominance
189 v levé nebo pravé hemisféře mozku je spojena s lateralitou ruky (Knecht aj., 2000).

190 *Postup*

191 Před začátkem úkolu byl každý účastník povinen (b36)vyplnit^{Inf} dotazník o svém
192 jazykovém zázemí, (b37)aby potvrdil^{AdvC}, že je rodilým mluvčím anglického jazyka, a aby se
193 získaly informace o tom, kde byl ve Spojeném království nebo USA vychováván. Účastník byl
194 poté usazen do zvukotěsné místnosti před obrazovku počítače a klávesnici a bylo mu řečeno,
195 že ve sluchátkách uslyší blok padesáti slov, která budou znít jako slovo *pan* nebo *pen*.

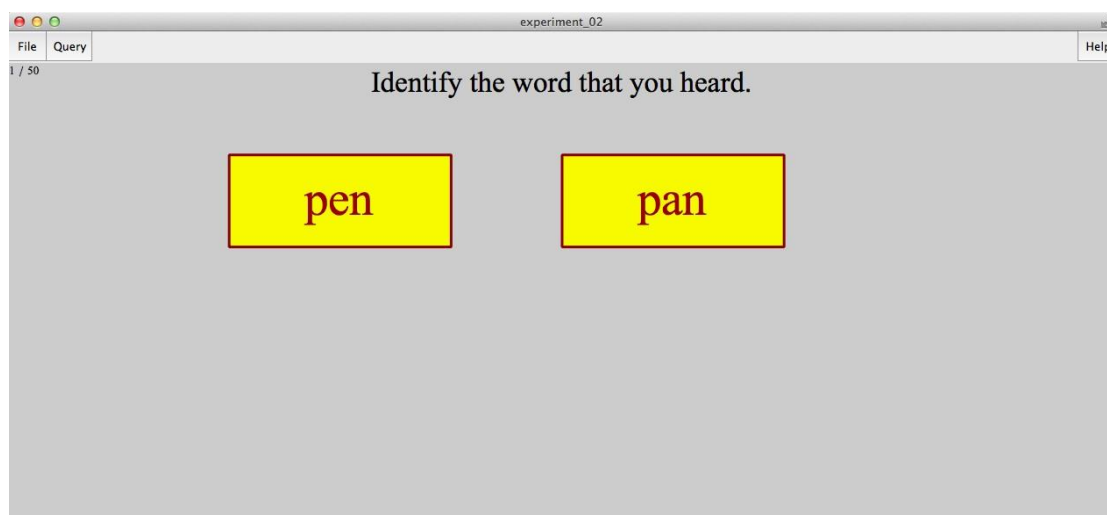
196 (b38)Poté, co se daný zvuk přehraje,^{peri} musí posluchač určit, které slovo slyšel. (b39)Slovo *pan*
197 se zobrazovalo na levé straně obrazovky, zatímco *pen* na pravé, jak je znázorněno na obrázku
198 5.^{split} Slyšel-li posluchač slovo *pan*, (b40)musel^{Act} pravým ukazováčkem (b41)stisknout^{Inf}
199 klávesu „Q“; slyšel-li ale slovo *pen*, musel pravým prostředníčkem stisknout klávesu „W“.

200 *Obrázek 4: Snímek obrazovky prvního bloku rozlišovacího testu*



201 Účastníkovi bylo sděleno, že pro jednotlivé podněty neexistuje správná nebo nesprávná
202 odpověď a že si musí svou odpověď vybrat co nejrychleji, (b42)aby jeho volba byla
203 instinktivní^{AdvC}, což nejvíce realisticky odráží běžnou komunikaci. Jakmile byl přehrán celý
204 blok, účastníci testování znovu podstoupili, tentokrát se však lišil způsob volby odpovědi.
205 (b43)Stiskem^{Adv} písmene „Q“ levým prostředníčkem reagovali na slovo *pen* a písmeno „W“
206 stisknuté levým ukazováčkem pak značilo, že slyšeli slovo *pan*. Kromě toho bylo ve druhém
207 bloku slovo *pen* na levé straně obrazovky a slovo *pan* vpravo, jak je znázorněno na obrázku 6.
208 Před začátkem hlavní části experimentu proběhl zkušební test o rozsahu o 25 podnětů s cílem
209 seznámit účastníky s úkolem a vyzkoušet hlasitost zvuku.

210 *Obrázek 5: Snímek obrazovky druhého bloku rozlišovacího testu*



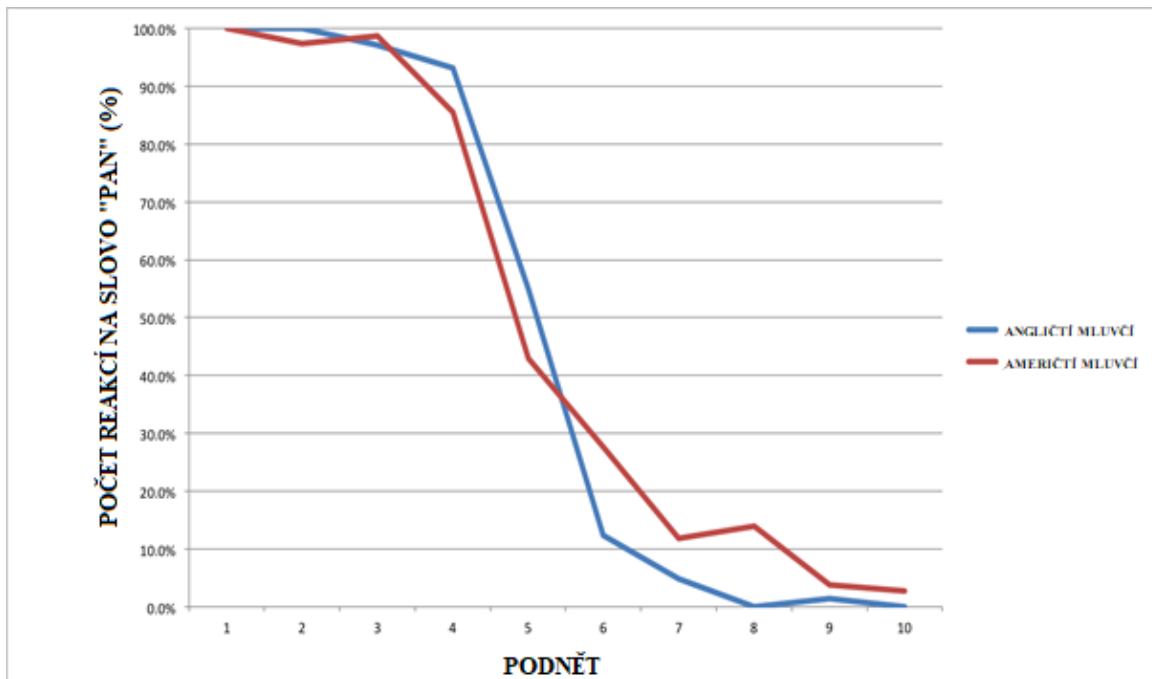
211 *Analýza*

212 Odpovědi každého účastníka byly zaneseny do tabulky v programu Praat a uloženy jako
213 soubor CSV s hodnotami oddělenými čárkami. Odpovědi s reakční dobu delší než 1,5 sekundy
214 byly odstraněny kvůli skutečnosti, že často vykazovaly neobvyklé reakce, tudíž (b44)byly
215 považovány za neinstinktivní^{peri}. Protože však většina odpovědí byla zadána v čase pod
216 1,5 sekundy, (b45)zdálo se vhodné takové anomálie z konečných výsledků odstranit.^{Inf} Vzápětí
217 byly odstraněny i reakce s reakčními časy nižšími než 0,16 sekundy, protože (b46)není možné
218 v uvedeném čase reagovat^{Inf} (Kosinski, 2008). Odpovědi podané v kratším reakčním čase než
219 již zmíněných 0,16 sekundy ukazují, že mluvčí odpověděl příliš brzy na to, aby mohl kognitivně
220 zpracovat slyšený podnět. Procento odpovědí pro slovo *pan* a slovo *pen* (b47)bylo vypočteno^{Pas}
221 pro každého jednotlivce zvlášť a následně pro obě skupiny mluvčích.

222 Výsledky

223 Obrázky 7 a 8 ukazují výsledky experimentu obou skupin mluvčích. Na obrázku 7 leží
224 na ose X podněty 1 až 10 a na ose Y je celkové procento reakcí na slovo *pan* pro každý podnět.
225 Modrá křivka zde představuje skupinu mluvčích britské angličtiny a červená reprezentuje
226 skupinu mluvčích americké angličtiny.

227 Obrázek 6: Podíl reakcí na slovo *pan* skupinami mluvčích anglické a americké angličtiny (graf)



228 Tabulka 1: Podíl reakcí na slovo *pan* skupinami mluvčích anglické a americké angličtiny
229 (tabulka)

		Podnět									
		1	2	3	4	5	6	7	8	9	10
Skupina mluvčích	Britská angličtina	100 %	100 %	97,1 %	93,1 %	54,9 %	12,4 %	4,9 %	0 %	1,4 %	0 %
	Americká angličtina	100 %	97,4 %	98,7 %	85,5 %	42,9 %	27,6 %	11,8 %	13,9 %	3,8 %	2,7 %

230 Výsledky ukazují, že v případě podnětů 1 až 4 se oběma skupinám mluvčích dařilo
231 nadprůměrně dobře, neboť (b48)vykazovali^{Act} slovo *pan* v 85 % případů. U podnětu 5 však
232 došlo k prudkému poklesu v počtu vnímání slova *pan* u obou skupin, neboť vykazovaly
233 průměrné výsledky: britští mluvčí identifikovali slovo *pan* v 54,9 %, mluvčí americké
234 angličtiny pak ve 42,9 % případů. Následoval podnět 6, u kterého obě skupiny mluvčích opět
235 vykazovaly nadprůměrné výsledky, přičemž britští mluvčí identifikovali slovo *pan* ve 12,4 %
236 případů (jinými slovy, identifikovali slovo *pen* v 87,6 %) a američtí mluvčí pak určili slovo *pan*
237 ve 27,6 % (označili tedy slovo *pen* v 72,4 %). U podnětů 6 až 8 vykazovala skupina mluvčích
238 americké angličtiny výrazně vyšší procento reaktivity na slovo *pan*, než vykazovala skupina
239 britských mluvčích (o 15,2 % více u podnětu 6, o 6,9 % více u podnětu 7 a o 13,9 % více u
240 podnětu 8). Podněty 7 a 8 vykazovala skupina amerických mluvčích jako slovo *pan* stále ještě

241 v míře nad 10 % (11,8 %, resp. 13,9 %), zatímco u britských mluvčích byla tato míra pod 5 %
242 (4,9 %, resp. 0 %). U podnětu 9 a 10, pouze 1 ze 139 odpovědí všech britských mluvčích byla
243 slovo *pan*, zatímco američtí mluvčí uvedli slovo *pan* v 5 případech ze 155 celkových. Hlavním
244 (b49)zjištěním^{DN} vyvozeným z těchto výsledků je, že obě skupiny mluvčích vykázaly ostrý
245 pokles ve vnímání slova *pan* u podnětu 5 od podnětu 6 a dále pak američtí mluvčí vykazali
246 podstatně častější vnímání slova *pan* v porovnání s britskými mluvčími.

247 Je velmi důležité (b50)zanalyzovat^{Inf} výsledky jednotlivých účastníků z USA, (b51)aby
248 se zjistilo^{AdvC}, zda nemohlo dojít k ovlivnění výsledků celé skupiny amerických mluvčích
249 jedním mluvčím, zejména u podnětů 6 až 10. Na obrázku 9 je tabulka výsledků jednotlivých
250 amerických mluvčích. (b52)Výsledky ukazují na přítomnost^{peri} jednoho amerického mluvčího,
251 který opakovaně identifikoval slovo *pan* ve větší míře, než je průměr skupiny u podnětů 6, 7 a
252 8. Angela identifikovala slovo *pan* v 50 % případů u podnětu 6 (22,4 % nad průměrem),
253 ve 44,4 % případů u podnětu 7 (32,6 % nad průměrem) a 20 % případů u podnětu 8 (6,2 % nad
254 průměrem). Nicméně, (b53)odebrání^{VN} Angeliných výsledků nijak dramaticky nemění
255 výsledky pro podněty 6 (24,2 %), 7 (7,5 %) a 8 (13,0 %). Skupina amerických mluvčích stále
256 vykazuje výrazně vyšší procento identifikace slova *pan* než skupina britských mluvčích. U
257 podnětů 6 až 10 identifikoval každý americký mluvčí v jistém okamžiku slovo *pan* v míře nad
258 průměrem skupiny. Výjimku tvořil pouze David W., který u podnětů 6 a dále vždy identifikoval
259 *pan* pod průměrem. To naznačuje, že u podnětů 5 a vyšších téměř celá skupina amerických
260 mluvčích vnímala slovo *pan* ve větší míře než britská skupina, jejíž vnímání slov *pan* nikdy
261 nepřekročilo hranici (b54)5 %^{typo}. U podnětů 7 až 10 pouze tři ze sedmi britských mluvčích
262 vykazali slovo *pan* s celkovým počtem čtyř výskytů, zatímco ve skupině amerických mluvčích
263 to bylo šest ze sedmi členů s celkovým počtem 25 výskytů slova *pan*. Z toho je patrné, že ve
264 druhé polovině kontinua *pan* – *pen* vnímala skupina amerických mluvčích slovo *pan* v
265 podstatně vyšší míře, než jej vnímala skupina mluvčích britské angličtiny.

266 *Tabulka 2: Procento reakcí na slovo pan jednotlivých amerických mluvčích*

	1	2	3	4	5	6	7	8	9	10
Angela	100 %	100 %	100 %	100 %	42,9 %	50 %	44,4 %	20 %	20 %	0 %
David W.	100 %	90 %	100 %	70 %	11,1 %	10 %	0 %	0 %	0 %	0 %
Rebecca	100 %	100 %	100 %	100 %	57,1 %	44,4 %	11,1 %	0 %	0 %	0 %
David H.	100 %	90 %	100 %	90 %	50 %	30 %	0 %	30 %	0 %	0 %
Jennifer	100 %	100 %	100 %	80 %	20 %	0 %	0 %	0 %	0 %	10 %
Emily	100 %	100 %	100 %	70 %	60 %	20 %	20 %	20 %	10 %	20 %
Lindsay	100 %	100 %	90 %	87,5 %	33,3 %	22,2%	10 %	20 %	0 %	0 %

1 **The Perception of the /æ/-/ɛ/**
2 **Vowel Continuum in British and**
3 **United States English Speakers**

4 By
5 Chad Hall
6 *University of Oxford*

7 10.6.2016^{typo}

8 **Abstract**

9 In this paper, (b1)the perception of the /æ/-/ɛ/ vowel continuum was analysed^{Pas}
10 in British and United States English speakers (b2)by testing^{GA} their perception of the pan-
11 pen continuum in a word identification task. (b3)A clear difference was found between
12 the two speaker groups,^{split} with the U.S. speakers continuing to perceive ‘pan’ beyond
13 the British speakers, presumably due to (b4)/æ/-tensing^{DN} in U.S. dialects, particularly
14 before nasal codas (b5)(Labov et al., 2006)^{cit}. It was found that the amount of /æ/-tensing
15 across phonetic environments in a U.S. speaker’s dialect as well as their exposure to
16 British English affected how they perceived the continuum. The results prove (b6)Bell
17 Berti’s^{cit} (et al., 1979) argument that speech production and perception are closely related,
18 and the steep drop in perception from ‘pan’ to ‘pen’ displayed by both speaker groups
19 may prove that vowel perception is categorical, (b7)^{split}in contrast to popular opinion (Fry
20 et al., 1962), though a discrimination task would have to be run before any reliable claim
21 can be made.

22 **Introduction**

23 ***British and United States English Short-a Pronunciation***

24 The production of short-a by British and United States speakers is one of the key
25 linguistic features that differentiates the dialects of these two countries. In England during
26 the Great Vowel Shift, the short-a or TRAP vowel was fronted and raised to [æ] (Lass,
27 2000). Then in the early twentieth century, the short-a vowel in Britain was lowered again
28 to a fully open [a] sound (Wells, 1997).

29 Across the United States, short-a configuration is complex. U.S. speakers follow
30 a system of /æ/-tensing (fronting and raising) which varies (b8)depending^{PP} on dialect,
31 according to Labov (et al., 2006):

32 The first system is the nasal system where there is a wide acoustic separation
33 between vowels that occur before nasals and vowels that do not. Short-a is more tensed
34 before nasals than before other consonants in this system. The nasal system is
35 concentrated in New England, New Jersey outside the New York City area, and across
36 the Midland, particularly the large cities of Pittsburgh, Columbus and Indianapolis.

37 The second is the raised /æ/ system where all short-a vowels are tensed. They then
38 develop a second mora and glide inwards ([ɛə], [eə], [iə]). It is one of the (b9)triggering^{PA}
39 events of the Northern Cities Vowel Shift and is dominant in the Inland Northern area of
40 the United States. Labov found that for many speakers in this area, the second mora
41 consists of a second steady state instead of an inglide. As a result, the short-a tends to
42 break in to two morae of equal length, with one in mid front position and the other in low
43 front or central position.

44 The third system of (b10)/æ/-tensing^{Ger} (b11)in the U.S.^{Ac} is the Southern breaking
45 system that occurs in Southern American English. This is when the vowel begins in a low
46 front position, is then followed by a [j] and then returns to a position not far acoustically
47 from the origin. It is most favoured by nasal codas, with /n/ showing the highest
48 percentage of breaking.

49 The fourth is the short-a split system which occurs in New York City and the Mid-
50 Atlantic. In New York City, short-a is tensed before voiceless fricatives, voiced stops and
51 nasals whereas in the Mid-Atlantic, short-a is tensed before nasals and voiceless fricatives

52 apart from /f/. It is referred to as a split system because the variations of short-a in these
53 areas can become distinct phonemes.

54 The final system is the continuous short-a system, the most common short-a
55 configuration in the West and the Midland. It is a continuum of allophones of the short-a
56 vowel from low front to mid position. The most conservative phonetic environments
57 where short-a is lowest is before voiceless velars, and the most advanced where short-a
58 is highest is before nasal codas.

59 From these five systems, it can be deduced that for all speakers in the United
60 States, short-a undergoes a process of tensing before nasals in closed syllables.

61 What is clear to see from previous research is that short-a production is markedly
62 different between British and United States English Speakers, with British speakers far
63 more likely (b12)to produce^{InFP} a more open short-a vowel than (b13)U.S. speakers^{Ac},
64 particularly before nasal codas. This experiment will seek to find if this difference in
65 short-a production between British and United States English speakers is reflected in their
66 perception of the /æ/-/ɛ/ vowel continuum, specifically the pan-pen continuum.

67 **The Relationship Between Vowel Production and Perception**^{typo} (b14)

68 Before being able to make a hypothesis on how British and United States speakers
69 will perceive the pan-pen continuum, it is first necessary to consider the relationship
70 between a speaker's vowel production and that same speaker's perception. There are
71 numerous studies that support the claim that an individual's production and perception
72 are closely related. Bell-Berti (et al. 1979) found that speaker differences in the
73 production of the /i/ vowel were strongly linked to differences in their perception of /i/.
74 (b15)This finding was taken as evidence^{Pas} for a shared mechanism mediating the
75 production and perception of vowels. There are less sociolinguistic investigations on the
76 relationship between vowel production and perception, though there is one notable study
77 that is closely related to this current experiment in terms of its aim, the subjects
78 investigated and the experimental methods implemented: (b16)Fridland & Kendall^{cit}
79 (2012) examined how speakers in the U.S. perceived the /e/-/ɛ/ vowel continuum.
80 Southern speakers, who typically display /e/ centralization and /ɛ/ peripheralization due
81 to the Southern Vowel Shift (Feagin, 1986; Labov et al., 2006; Thomas, 2001) sustained
82 a longer /e/ perception along the continuum than Westerners and Northerners, whose
83 vowel production along this continuum are not dissimilar. Results also suggested that
84 vowel perception depends on both the speaker's own production of speech and what that

85 speaker is exposed to in their region. (b17)For example, Southerners who actively
86 engaged in the Southern Vowel Shift displayed a longer /e/ perception than Southerners
87 who did not^{split}, though these non-shifters still displayed a longer /e/ perception than
88 Northerners and Westerners, presumably due to exposure to vowel shifters in their region.
89 It is therefore important in this experiment (b18)to consider^{InfS} that a speaker's dialect
90 may not be similar to those that live in their region, which could influence their perception
91 of the /æ/-/ε/ continuum. Unfortunately however, due to time constraints, speakers were
92 not recorded in this study and assumptions had to be made on the participant's dialect
93 based on region of origin.

94 It is also worth noting that if a U.S. speaker has spent an extended period of time
95 in the U.K., their perceptual boundaries may have shifted towards a more British
96 perception of the /æ/-/ε/ continuum. As will be seen in the "Participants" section, many
97 of the U.S. speakers in this experiment lived (b19)in the U.K.^{Ac} for at least eight months,
98 and thus results may be affected. Literature supports this proposal: Clarke & Garret
99 (2004) and Nygaard (et al., 2005) found that listener perception adapts rapidly to foreign-
100 accented speech while Clarke & Luce (2005) discovered that listeners shift their Voice
101 Onset Time categorization boundary for stop consonants to match a speaker's production
102 after less than two minutes with that speaker. Furthermore, Clopper & Pisoni (2007) and
103 Sumner & Samuel (2009) (as well as Fridland & Kendall (2012)) have found that speaker
104 perception depends on the production of the individual and the dialect of the speakers
105 around them.

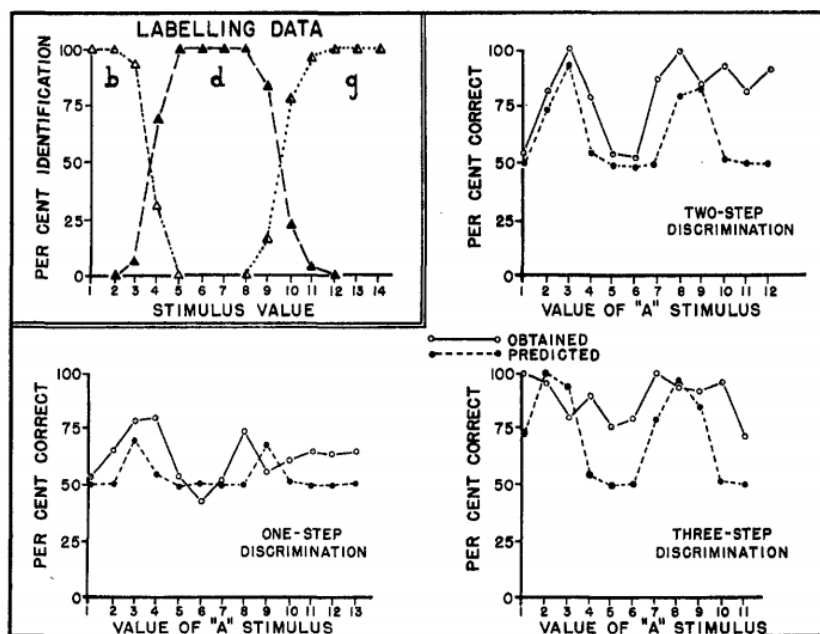
106 Based on the (b20)findings^{DN} of previous research, it is hypothesized that in this
107 experiment, speakers from the U.S. who in most cases display /æ/-tensing before nasal
108 codas will maintain a longer 'pan' perception along the pan-pen continuum than British
109 speakers whose production of short-a before nasal codas is more open, close to the
110 cardinal vowel /a/. Additionally, in the case that a U.S. speaker has spent a significant
111 amount of time in the United Kingdom, it is possible that the speaker's pan-pen perception
112 will be affected. If the perception of the pan-pen continuum (b21)is proven^{Pas} to be
113 different between British and U.S. speakers, it would support the claim of Bell- Berti (et
114 al., 1979) that a speaker's production and perception are correlated.

115 ***The Perception and Categorization of Vowels***

116 (b22)Lieberman (et al., 1957) was the first to introduce the concept that speech
117 sounds, in particular consonants, are perceived categorically. In his experiment, 14

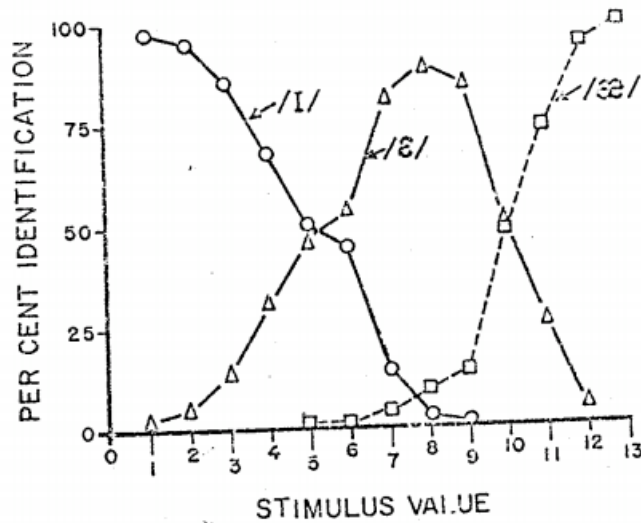
118 synthetic stimuli were produced^{pas} that varied along a particular acoustic continuum,
 119 (b23)being^{POc} the direction and extent of the second formant (F2) transition. The first
 120 formant (F1) was kept consistent with (b24) a rising transition^{PA}, a marker for voiced stops
 121 (Delattre et al., 1955). It was found that in an identification task, participants displayed
 122 clear categorical boundaries between the consonants /b/, /d/ and /g/. The shift in
 123 perception from one consonant to another along the continuum was abrupt, indicating that
 124 the phoneme boundaries were stable and sharp. In one-step, two-step and three-step
 125 discrimination tasks, participants found it easier to discriminate stimuli that lay on either
 126 side of a phoneme boundary than stimuli within the same category. Figure 1 shows the
 127 results of Liberman's identification and discrimination experiments.

128 *Figure 1: The results of Liberman's experiment. Taken from Liberman (et al., 1957)*

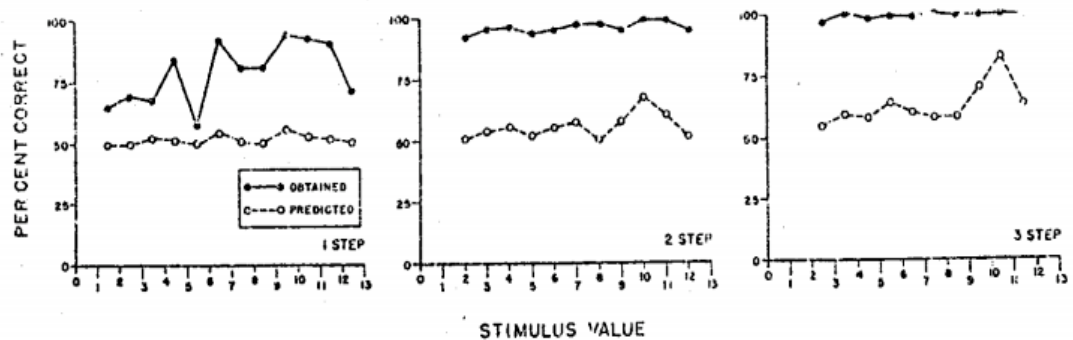


129 Fry (et al., 1962) proposed that the boundaries between vowel phonemes are less
 130 sharply defined than consonants. In his vowel phoneme identification task, speakers
 131 displayed a gradual shift in the perception of one vowel to another compared to
 132 Liberman's experiment where shifts were sudden. Moreover, speakers performed
 133 consistently above chance in the one-step, two-step and three-step discrimination tasks,
 134 meaning that participants were able to discriminate vowel stimuli even a step apart,
 135 regardless of where they lay in relation to phoneme boundaries. Figures 2 and 3 show the
 136 results of Fry's identification and discrimination experiment.

137 Figure 2: The results of Fry's identification experiment. Taken from Fry (et al., 1962)



138 Figure 3: The result of Fry's discrimination experiment. Taken from Fry (et al., 1962)



139 If previous literature (b25) is to be assumed^{Pas} true, participants in this study would
 140 be expected to show a more continuous, rather than categorical, perception of the /æ/-/ε/
 141 vowel continuum in this experiment. However, should speakers collectively show an
 142 abrupt shift from perceiving 'pan' to 'pen', it could be argued that perhaps vowel
 143 categorization is sharper than previously believed. This experiment however cannot prove
 144 that vowels are perceived categorically since a discrimination task would have to be run
 145 (b26) in order to provide^{InfA} any credible arguments on vowel perception. Due to time
 146 constraints, this was not possible.

147 **Method**

148 ***Participants***

149 Fourteen participants took part in the study. Seven were native speakers of
150 Standard Southern British English aged 21-35 (mean = (b27)24.7 years^{typo}), two of the
151 seven British speakers were female and five were male. They were all raised in the South
152 of England and had lived in Oxford for at least eight months. The other seven participants
153 were native speakers of United States English aged 18-21 (mean = 20.4 years). Two of
154 them were male and five were female. They were all raised in the U.S.; two in
155 Massachusetts, one in Michigan, one in Maryland, one in Iowa, one who had lived for
156 over three years in Massachusetts and Illinois, and one who moved frequently between
157 Massachusetts, North Carolina and Pennsylvania. They had all lived in Oxford for at least
158 eight months, apart from one speaker, Angela, who had been living in the country for 4
159 days on the day of her experiment. Figure 4 shows the names of the U.S. speakers, their
160 region of origin, and assumed dialect based on region according to Labov (et al., 2006).

161 *Figure 4: Names of the U.S. speakers, their region of origin and assumed dialect*

<i>Name</i>	<i>Region of Origin</i>	<i>Assumed Dialect</i>
<i>Angela</i>	<i>Highland and Livonia, Michigan</i>	<i>Inland Northern American English</i>
<i>David W.</i>	<i>Middleborough, Massachusetts</i>	<i>Northeastern New England English</i>
<i>Rebecca</i>	<i>Worcester, Massachusetts</i>	<i>Northeastern New England English</i>
<i>David H.</i>	<i>Hagerstown, Maryland</i>	<i>Western Pennsylvania English</i>
<i>Jennifer</i>	<i>Des Moines, Iowa</i>	<i>Midland American English</i>
<i>Emily</i>	<i>- Sherborn, Massachusetts - Charlotte, North Carolina - Kennett Square, Pennsylvania</i>	<i>- Northeastern New England English - Southern American English - Mid-Atlantic American English</i>
<i>Lindsay</i>	<i>- Martha’s Vineyard, Massachusetts - Chicago, Illinois</i>	<i>- Southeastern New England English - Inland Northern American English</i>

162 ***Materials***

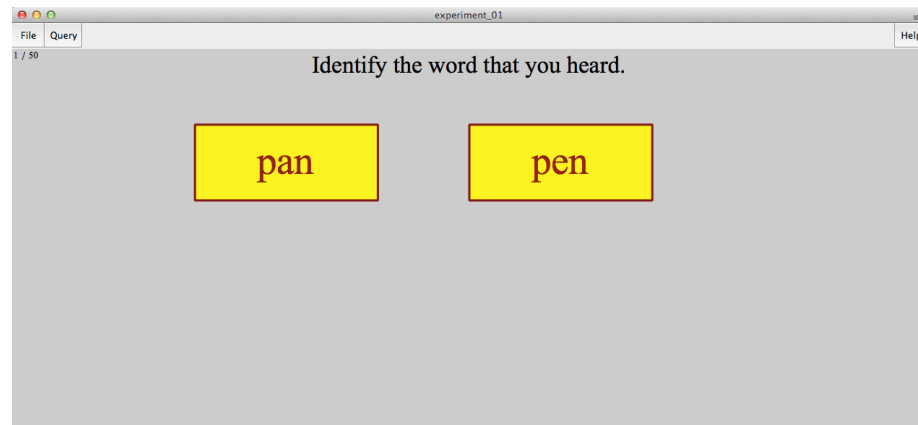
163 Each participant took part in a word identification task, listening to 100 synthetic
 164 stimuli ranging across the pan-pen continuum (10 unique stimuli multiplied by 10 and
 165 played in random order). The stimuli were created with the IPOX Speech Synthesizer
 166 (Dirksen & Coleman, 1995) which is able to generate synthetic words using a phonemic
 167 input. (b28)Initially two sound files were created;^{split} a “pan” .wav file, which would be
 168 stimulus 1, and a “pen” .wav file, which would be stimulus 10. The files were 16-bit
 169 sound files sampled at 11025Hz. The /æ/ vowel in stimulus 1 had an F1 value of 838 Hz,

170 an F2 value of 1560 Hz, an F3 value of 2430 Hz and an F4 value of 3300 Hz. The /ε/
171 vowel in stimulus 10 had an F1 value of 620 Hz, an F2 value of 1660 Hz, an F3 value of
172 2430 Hz and an F4 value of 3300 Hz. Eight more stimuli were then created that moved
173 in equal steps across the acoustic continuum from stimulus 1 to 10. This process was
174 carried out (b29)by creating^{GA} a parameter file of stimulus 1 and 10 through IPOX,
175 duplicating the stimulus 1 parameter file eight times and then adjusting the formant values
176 so that there were 10 parameter files moving in uniform steps from stimulus 1 to 10.
177 These parameter files were then converted back to .wav files, (b30)giving^{PA} 10 sound
178 files (b31)ranging^{POc} across the pan-pen continuum. These sounds were then embedded
179 in to a word identification task, run on a computer using a Praat script (Boersma &
180 Weenink, 2016). (b32)The script played the ten sound files five times in random order,
181 giving 50 stimuli^{split}, asking the listener (b33)to identify^{InfP} whether they heard the word
182 “pan” or “pen”, to which they would respond (b34)by pressing^{GA} a button on the keyboard
183 with their right hand. The script was then run a second time with the participant
184 (b35)using^{POc} their left hand, meaning each listener heard 100 stimuli. Participants were
185 required to answer with both hands to reduce any bias towards a particular answer since
186 there is evidence that language dominance in the right or left hemisphere of the brain is
187 linked to handedness (Knecht et al., 2000).

188 ***Procedure***

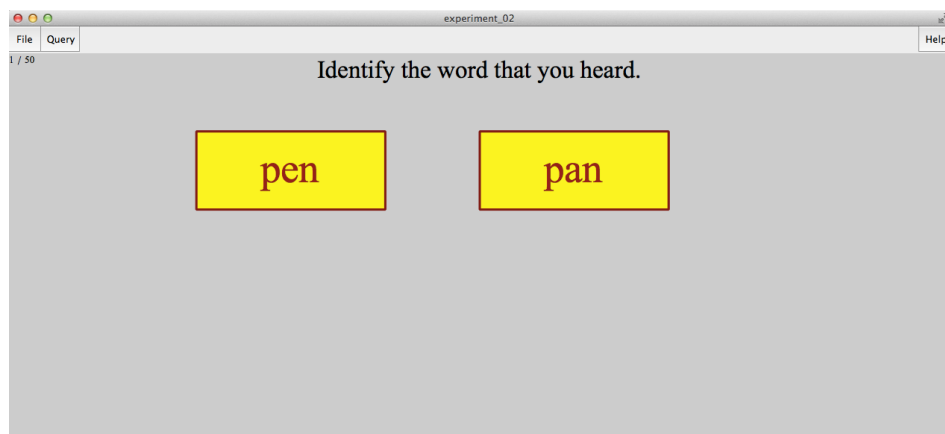
189 Before the task begun, each participant was required (b36)to fill out^{InfP} a
190 questionnaire on his or her language background (b37)in order to confirm^{InfA} that they
191 were native English speakers and to extract information on where they were raised in the
192 U.K. or U.S. The participant was then sat in a soundproof room in front of a computer
193 screen and keyboard, and was told that they would hear a block of fifty words through
194 headphones that would sound like the word “pan” or “pen”. (b38)After hearing each^{GA}
195 sound, they would have to identify which word they heard. (b39)The screen showed the
196 word “pan” on the left hand side and “pen” on the right as shown in Figure 5^{split}, and
197 participants (b40)were required^{Pas} (b41)to press^{InfP} the letter “Q” on the keyboard with
198 their right index finger if they heard the word “pan” and the letter “W” with their right
199 middle finger if they heard the word “pen”.

200 *Figure 5: A screenshot of the first block of the identification task*



201 It was specified to the participant that there was no right or wrong answer to each
202 stimulus and that they must choose their answer as quickly as possible, (b42)in order to
203 force^{InfA} the participant in to acting on instinct as to which word they heard, reflecting
204 normal communication as realistically as possible. Once the block was over, participants
205 then re-sat the test, this time by (b43)pressing^{GA} the letter “Q” with their left middle finger
206 if they heard the word “pen” and the letter “W” with their left index finger if they heard
207 the word “pan”. Moreover, in the second block, “pen” was on the left hand side of the
208 screen and “pan” was on the right as shown in Figure 6. A shorter block of 25 stimuli was
209 run before the main experiment in order for participants to familiarize themselves with
210 the task and to test sound volume.

211 *Figure 6: A screenshot of the second block of the identification task*



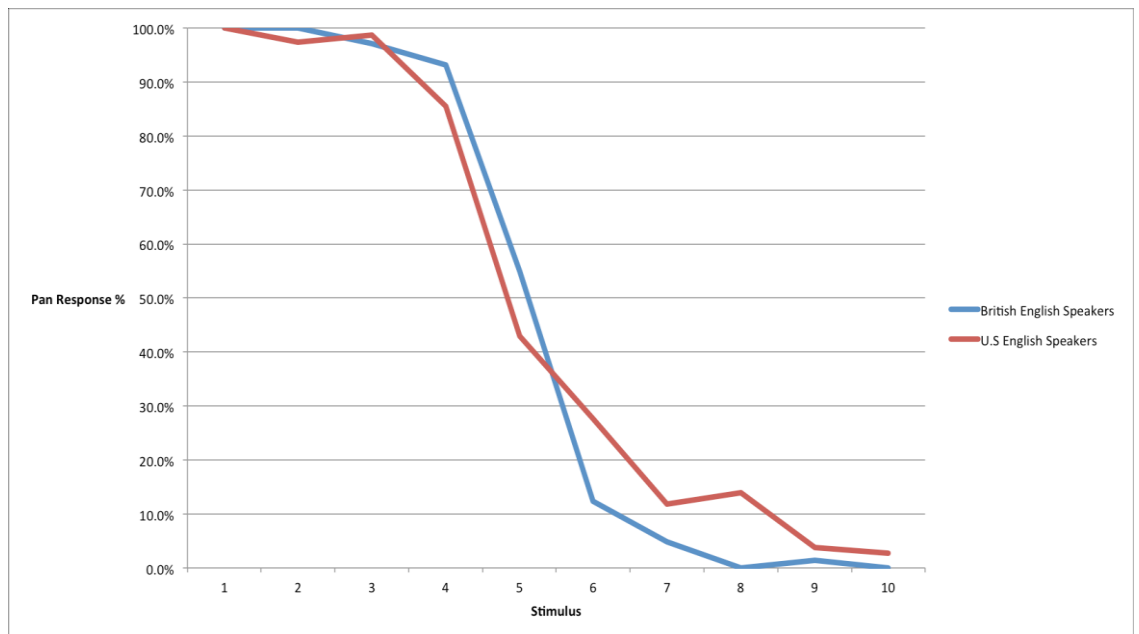
212 *Analysis*

213 The responses of each participant were collected to a table on Praat and saved as
214 a comma-separated file. Responses that had reaction times above 1.5 seconds were
215 removed due to the fact that they often yielded unusual responses and were thus deemed
216 (b44)to not be instinctive^{InfO}. Since the majority of responses were below 1.5 seconds,
217 (b45)it seemed suitable to remove^{InfP} these anomalies from the final results. Additionally,
218 responses with reaction times below 0.16 seconds were removed since (b46)it is not
219 possible to respond^{InfS} to a stimulus faster than this (Kosinski, 2008). Answers given
220 below this reaction time indicate that a speaker answered too soon before cognitively
221 processing what they heard. The percentage of “pan” and “pen” (b47)responses were
222 calculated^{Pas} for each individual and then for both speaker groups.

223 **Results**

224 Figures 7 and 8 show the results of the experiment for the British and United States
225 English speaker groups. In Figure 7, across the x-axis is stimulus 1-10, and across the y-
226 axis is the overall percentage of “pan” responses to each stimulus. The blue line represents
227 the British English speaker group and the red line represents the United States English
228 speaker group.

229 *Figure 7: The percentage of “pan” responses by the British and U.S. speaker groups*
 230 *(Graph)*



231 *Figure 8: The percentage of “pan” responses by the British and U.S. speaker groups*
 232 *(Table)*

		Stimulus									
		1	2	3	4	5	6	7	8	9	10
Speaker Group	British English	100%	100%	97.1%	93.1%	54.9%	12.4%	4.9%	0%	1.4%	0%
	U.S. English	100%	97.4%	98.7%	85.5%	42.9%	27.6%	11.8%	13.9%	3.8%	2.7%

233 The results show that from stimulus 1-4, both the British English and United States
 234 English speaker groups performed above chance, (b48)identifying^{PP} the word “pan” over
 235 85% of the time. At stimulus 5, there was a steep drop in the perception of “pan” for both
 236 groups who performed at chance: The British speakers identified “pan” 54.9% of the time
 237 and the U.S. speakers identified “pan” 42.9% of the time. By stimulus 6, both speaker
 238 groups performed above chance, with the British speakers identifying “pan” 12.4% of the
 239 time (meaning they identified “pen” 87.6% of the time) and the U.S. speakers identifying
 240 “pan” 27.6% of the time (meaning they identified “pen” 72.4% of the time). At stimulus

241 6-8, the United States English speaker group displayed a significantly higher percentage
242 of “pan” responses than the British English speaker group (15.2% more at stimulus 6,
243 6.9% more at stimulus 7 and 13.9% more at stimulus 8) and at stimulus 7-8, the United
244 States English speaker group still responded with “pan” over 10% of the time (11.8% and
245 13.9% respectively) while less than 5% of the British English responses were “pan” (4.9%
246 and 0% respectively). At stimulus 9-10, only 1 out of 139 responses by all British speakers
247 was “pan”, while 5 out of 155 U.S. speaker responses were “pan”. (b49)The main
248 finding^{DN} from these results is that both the British English and United States English
249 speaker groups sharply dropped in their perception of “pan” at stimulus 5, but from
250 stimulus 6 onwards, United States English speakers perceived “pan” significantly more
251 than the British English speakers.

252 It is crucial (b50)to examine^{InfS} the results of the individual U.S. participants
253 (b51)to investigate if^{InfA} particular speakers influenced the U.S. group results
254 considerably from stimulus 6 onwards. Figure 9 is a table of the results of the individual
255 U.S. speakers. (b52)There appears to be^{InfP} one U.S. speaker who consistently identified
256 “pan” well above the group average across stimulus 6, 7 and 8. Angela identified “pan”
257 50% of the time at stimulus 6 (22.4% above the average), 44.4% of the time at stimulus
258 7 (32.6% above the average), and 20% of the time at stimulus 8 (6.2% above the average).
259 However, (b53)removing^{GS} Angela’s results does not dramatically alter the results for
260 stimulus 6 (24.2%), 7 (7.5%) and 8 (13.0%): The U.S. English speaker group still displays
261 a markedly higher percentage of “pan” responses than the British speaker group. Each
262 U.S. speaker identified “pan” above the group average at some point from stimulus 6-10,
263 apart from David W. who always identified “pan” below the average from stimulus 6
264 onwards. This indicates that beyond stimulus 5, almost the entire U.S. speaker group
265 perceived “pan” more than the British English group whose “pan” perception never
266 increased (b54)beyond 5%^{typ0}. From stimulus 7-10, only three of the seven British
267 speakers perceived “pan” at any time with four “pan” responses in total whereas six of
268 the seven U.S. speakers perceived “pan” with 25 “pan” responses in total. Thus it is clear
269 that the United States English speaker group perceived “pan” significantly more than the
270 British English speaker group in the second half of the pan-pen continuum.

271 *Figure 9: The percentage of “pan” responses by the individual U.S. speakers*

	1	2	3	4	5	6	7	8	9	10
Angela	100%	100%	100%	100%	42.9%	50%	44.4%	20%	20%	0%
David W.	100%	90%	100%	70%	11.1%	10%	0%	0%	0%	0%
Rebecca	100%	100%	100%	100%	57.1%	44.4%	11.1%	0%	0%	0%
David H.	100%	90%	100%	90%	50%	30%	0%	30%	0%	0%
Jennifer	100%	100%	100%	80%	20%	0%	0%	0%	0%	10%
Emily	100%	100%	100%	70%	60%	20%	20%	20%	10%	20%
Lindsay	100%	100%	90%	87.5%	33.3%	22.2%	10%	20%	0%	0%