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ABSTRACT

of a dissertation on the topic of:

**Translation Problems in Digital Service Products
from English into Bulgarian**

**Проблеми на превода от английски на български език при локализация на
продукти за дигитални услуги**

submitted to Sofia University in partial fulfilment of the requirements

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CHAPTER 1: INTRODUCTION

1.1. Relevance and motivation

Localization is the process of adapting a digital product for a new market, different from the one it was originally intended for. It emerged as a phenomenon in the late 1970s (Chan 2013, 348) with the global rise of technology and since then the attempts at defining it have not ceased both on the part of translation studies and of the language industry. Those definitions vary mainly with regard to the scope of localization and its interdisciplinary nature, and, respectively, its relation, subordination, superiority to, or overlap with translation. A point of unanimity among scholars, however, is that localization is bound to translation, be it as a "variety of translation" (Gouadec 2007, 38) with its own intercultural context (EMT 2017, 8), technological implications and processes (Esselink 2000, 3), as a phenomenon additional to translation "in terms of a basic translation process that is modified by a series of factors relatively specific to communication via multilingual websites" (Pym 2011a, 410), or as a process that simply involves translation among its interdisciplinary activities (Schäler 2010, 209). Thus, while determining its place within or overlap with the paradigm of translation studies is important, on a more practical scale – from the perspective of applied Translation Studies and translator training, it is crucial to identify the specific translation problems and respective solution strategies localization entails.

What is more, the notorious rift between theory and practice applies *a fortiori* in regard to localization. As Jimenez-Crespo argues, "[t]he relative lack of dialogue between the Localization Industry and Translation Studies has been problematic as certain established practices…are not based on explicitly formulated theoretical models or solid empirical research" (2009, 61). Even though in the past decade bridging the gap has become more feasible with close to half of translation scholars coming from a career in the industry (Pym and Torres-Simón 2016a, 127), more empirical research is needed, especially in regard to commercially minor languages such as Bulgarian, in order to enhance the quality and efficiency of practices.

1.2. Research overview

The **Object** of the current study are the various translation problems that occur in

localization from English into Bulgarian, divided into three main categories:

- Problems associated with genre aspects and conventions.

- Problems associated with limitations stemming from the technological macrostructure the texts for translation are integrated in.

- Problems associated with insufficient context in the translation environment and process.

The **Subject** of the study are translation errors in digital service products localized from English into Bulgarian and available to the public. The focus is further narrowed down to the interlingual asymmetries behind those errors and their interplay with the localization-specific factors affecting the translation solutions.

The research **Objectives** include the development of a typology of translation problems in localization from English into Bulgarian based on the three pre-determined main categories and elaborated according to the linguistic factors and asymmetries behind the errors analysed. Further to the typology, a framework of solutions that can be applied by the translator as part of the localization process is proposed.

In order to reach these objectives, the following **Research Questions** have been formulated:

1. What are the localization-specific translation problems that arise in translation for localization of digital service products from English to Bulgarian and what factors lead to them?

2. Are there any language-pair-specific ones and do the problems which can be considered universal take on new dimensions when considered through the prism of a particular language pair, namely English-Bulgarian?

3. What solutions to these problems are available for the translator to implement?

4. What recommendations can be made for increasing quality in localization from English into Bulgarian, especially with a view to localization training?

1.3. Structure of the thesis

The thesis is composed of five chapters, outlined as follows:

Chapter 1 is an introduction to the relevance and motivation of the thesis, its objectives, and respective research questions.

Chapter 2 sets up some the working concepts used for the purposes of the study and presents a review of relevant theories and perspectives both from the field of Translation Studies and from industry resources. The importance of translation quality in localization into commercially minor languages and the need for empirical research on translation problems in localization from English into Bulgarian are highlighted.

Chapter 3 introduces the study set-up and process, the methodologies applied and the motivation for choosing them. A preliminary typology of translation problems is drafted based on existing relevant research for the current study to build upon.

Chapter 4 introduces a set of 150 translation errors found in live localized digital service products while browsing the web and using mobile applications in Bulgarian over the course of approximately a year and a half. The issues are classified according to the typology offered in **Chapter 3** with the aim of expanding it by adding the linguistic factors related to each type of translation problem. Subsequently, strategies available to translators for overcoming them are offered for each type.

Chapter 5 outlines the results of the analyses conducted in **Chapter 4** and sets out the final framework of problems and solutions identified. Conclusions with regard to translation problems in localization of digital service products from English into Bulgarian are drawn to answer the questions established in **Chapter 1**. The thesis applied and theoretical contributions of the thesis are outlined and suggestions are made for further research to build upon and expand the current findings.

1.4. Limitations of the study

With the staggering development of machine translation (MT), through the introduction of artificial intelligence (AI) technologies, to the business' continuous striving to decrease expenses, it would be unwise to overlook the numerous cases where translated texts published online have been neither translated nor reviewed by a language professional. This issue is not limited to the field of localization and can be observed in relation to any area of

translation. The current study does not delve into potential solutions to this complex problem. One of its aims, however, is to highlight that with this reality at hand, professional translators' preparedness and quality of delivery are all the more crucial, if we want to accentuate the importance of professional translation compared to amateur and impromptu solutions delivered on demand.

Likewise, machine translation is not be discussed as a factor. There is enough evidence that the products included in the study have not been localized by MT, or at least not exclusively so – some of them have translation style guides, others have openly shared information about their localization efforts and processes, and in some cases even the errors or translation solutions detected imply that there was human cognitive action behind them. It is still impossible to completely eliminate the option of MT usage as it is now deeply integrated in almost all translation tools. However, on the one hand, in these cases it is used as an aid and the translator or reviewer still has the final say, and on the other, even if the translation error were made by MT without a human arbiter, it is still representative of a localization translation problem. Firstly, because MT engines are trained by human translators and fed by human translations. And secondly, even if an error can be considered MT-bound but meets the criteria set out in this study, it will still be considered qualifiable for its purposes – precisely because MT engines are becoming ever more integrated in translation and localization processes and translators have to be aware of their advantages and disadvantages when operating them and post-editing the translations they produce.

CHAPTER 2: LITERATURE REVIEW

This chapter presents an overview of what localization entails in the context of commercially minor languages such as Bulgarian, as well as of the different perspectives on the place of translation in the context of localization. It also discusses the divergent understandings of Translation Studies and the translation industry in regard to this relationship, highlighting the role of the translator in this process and the corresponding opportunity for the academic community to regulate some inefficient localization practices by preparing translators for the different contexts of translation for localization. Various research pieces regarding genres and the corresponding text types in localization are examined to arrive at a definition of the type of product that shall be the subject of the present study. Furthermore, the key importance of the technological nature of products the original texts are integrated into, along with the respective technology-related problems, are discussed.

2.1. Commercially minor languages and localization

Cronin makes one crucial claim that is denotative for linguistic inequality in an era of technology and globalization, by declaring that "the hegemony of English in the fastest-growing areas of technological development means that all other languages become in this context, minority languages." (2003, 146). Speaking about this extended idea of "minority", Cronin lists several negative consequences from "the absence of a critical self-reflective activity in the translation enterprise": the vulnerability of minority languages from interference in majority-to-minority translation, the alteration of minority languages in translation, and the predominant focus of translation theory on majority languages (2003, 149). If we apply Cronin's reflections regarding the hegemony of English to the context of localization and globally and commercially minor languages such as Bulgarian, we should consider the potential of localized texts to affect the linguistic competence of regular users of digital service products.

In our globalized reality, every market player strives to expand as vastly as possible, to bring their product to as many users as possible, and localization is a crucial step in this process. When international enterprises enter the small Bulgarian market, they are first faced with one dilemma – to localize or not to localize. The inevitability of this question lies in "the quantitative prism of return on investment", through which business executives perceive localization (Dunne 2006a, 1). One can easily imagine that with less than 5 million users who

access the Internet on a monthly basis (Miniwatts Marketing Group 2021a) localization into Bulgarian is not such an enticing venture, let alone quality localization.

In the translation industry, where quality assurance processes are already pretty vague and lead to contention, especially since the introduction of automation through CAT tools and machine translation as key elements of the translation process, the final quality of products localized into less commercially salient languages is at risk. Moreover, Berendt and Kralisch have established that web users can be divided into a "linguistic upper class" and a "linguistic lower class". They see the former as more proficient in English as a second language and more critical regarding the quality of web content and therefore more prone to using digital services in English regardless of whether they are available in their native tongue. The latter, on the other hand need localized content in order to access said digital products (2009, 397). Thus, the lower class is inevitably more vulnerable to translated and localized content of lesser quality, while companies' efforts to localize their products end up not reaching a great part of their target audience.

In this context, minimising the negative effects of poor translation on the Bulgarian language and its users can be singled out as an important objective for all parties involved – from scholars, through trainers and language professionals, to clients. In order to investigate what Translation Studies can do in order to mitigate potential language-related risks, in the next sections, an attempt is made to understand the position of linguistic matters in localization within both Translation Studies and the translation industry.

2.2. Translation for localization

The following general features can be identified in the myriad definitions of localization offered by Translation Industry and Translation Studies:

- It is a process with the general purpose of taking a (most commonly digital) product to a new market, defined by a different language or language variety (i.e. locale). (LISA 2003, Dunne 2006b, Gouadec 2007, Schäler 2010, Jimenez-Crespo 2013)

- Both language and technology play integral parts in it. (LISA 2003, Schäler 2004, Esselink 2006, Gouadec 2007, Munday 2016)

- Cultural adaptation is mandatory. (LISA 2003, Gouadec 2007, Schäler 2010).

- More complex definitions and analyses also highlight localization's

interdisciplinary nature, elaborating on all the processes related to the first feature in this list – managerial, commercial, marketing, etc. (Dunne 2006b, Gouadec 2007, Schäler 2010).

One of the most contentious discrepancies in perspectives, however, refers to the position of translation in regard to localization. In industry perspectives, translation is commonly described as a mere step in the localization process – its indispensable nature is always acknowledged, but only with the aim of showing how much more there is to bringing your product to an international market than linguistic concerns (Jimenez-Crespo 2013, 14). Anthony Pym goes further and claims that, in the industry, translation is often seen as limited only to "artificial equivalence" (Pym 2004, 3–4). In one of the translation industry's first attempts at defining localization, translation is presented as part of localization and it is said that sometimes the two processes partially overlap (LISA 2003, 13).

One of the main reasons to consider translation and localization as two separate, albeit interconnected, processes, however, is the key role technology plays in localization. And this is not about the technological tools that have become integral to translation processes over the past decades, but about the technological nature of products that undergo localization. Translators need to be aware of the way this technological nature affects their work and decisions – from the translation environment to the need to consider the technological context in each translation decision. These competences are encountered in more recent competence models – of Folaron (2006, 213–216) or Jimenez-Crespo (2013, 177–179), to name but a few.

All these aspects correspond with Postolea's definition of specialized translation as "translation carried out in a specialised context, i.e. a context which involves specialist source-text producers, specialist topics, or a specialist activity" (2016, 56). Thus, in this thesis, translation for localization is considered a type of specialised translation with a focus on translation as part of the localization process and on the translator as a participant in this process.

2.3. The role and preparedness of translators

Translators in localization practice are treated with the same disregard as translation itself. In fact, Austermühl & Mirwald (2010, 29–30) publish their results of a study on the

localization industry's discourse regarding translation and translators with the grim conclusion that "[t]he marginalized image of translators and translation in the localization industry is in stark contrast to the academic image of translators and translation in Translation Studies". As a possible solution to this issue, they suggest the incorporation of "a broader concept of translation" along with collaboration that will benefit both sides, with the authors implying that the industry holds a simplistic notion of quality.

Thus, this thesis argues that if Translation Studies were to take on a proactive role and adapt not only to meet industry developments, but to outgrow them, this reality will change. The dispersed responsibility and ownership in the interdisciplinary localization process (Alkan 2017) would only be harmful if each agent does not fulfil their step(s) in the process in a conscientious, proactive, and informed way. In this context, translators hold the crucial role of language owners in localization and Translation Studies should strive to provide them with all instruments and competences necessary for them to act as drivers for regulation and be active participants in the evolution of language services as we know them.

Language service providers, on the other hand, report a need for improvement across all relevant competences of translation graduates joining the market, highlighting that as of 2022 "[s]kill gaps are not closing and recruitment plans are not in line with training programs." (ELIS Research 2022a, 43). Against this backdrop, the industry is taking much of the training into its own hands, as evidenced by the plethora of training materials offered by translation software companies, the various networks and help pages created by practising translators, and even the existence of enterprises such as Nimdzi[1] which are exclusively dedicated to researching the developments in the numerous branches of the translation and localization industry. Even with these significant efforts, however, there is still a huge data gap in terms of how industry innovations manifest in specific language pairs, and even more so when it comes to translation into commercially minor languages. Even though it may be impossible for the academic community to fully catch up with every advancement in translation practice that originates in the industry, it can still aim to analyse these advancements and prepare translators to minimize the poor linguistic quality of texts in localized products.

Substantial research is lacking, however, into the translation challenges localization

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[1] https://www.nimdzi.com/

into Bulgarian entails. One major reason for this might be the fact that "due to non-disclosure agreements signed by translators – among other factors – researchers might find it difficult to observe and reflect on paper what translation challenges localizers deal with in professional projects and how they solve them (Rojo 2013, as cited in De la Cova 2016, 234). And if the opportunities for collaboration between Translation Studies and industry are generally scarce, in Bulgarian they would be ever more rare. Not only because of the fewer localization projects a minor language would entail, but also because in a smaller academic setting it would be more difficult to have researchers working on every aspect the ever-evolving world of translation practice offers. These circumstances lead to a vicious circle, which Ho has summarised as follows:

If a theory is established with no foundation on the practice of a profession, it will naturally cause suspicion from practitioners in the field. If the majority of the translation research community advances theories without practical groundwork as the essential basis, the rejection from professional translators and interpreters is inevitable, because they will not be convinced that such theories are relevant to their practice and the real situation of the profession.

The scenario of translation education is the same. If it is out of touch with the practice of translation, it is doomed to fail as well. (Ho 2015, 381–382)

As a starting point to the solution of this impasse in relation to localization into Bulgarian, we would inquire into the types of challenges common in translation for localization – what they are, what localization-specific factors and problems lead to them and how they can be overcome.

2.4. Translation problems in localization

With localization being a broad concept covering various digital media types such as videogames, websites, applications, software and multimedia advertising (Ardelean 2014, 26), in this section of Chapter 2 the scope of translation for localization for the purposes of this research is delimited to a particular type of medium – namely, **digital service products**. Thus chosen, the term encompasses software, websites, and mobile applications when those are part

of a service chain owned by a private company, offered online to the general public, and accessed through a personal computer or a mobile device. This definition allows for a research subject which is as versatile as possible, but still comparable, as all these media exhibit various similar features. For instance, they are all navigated by a user and share universal genres and text types, such as homepage/screen, menu items, service flow, frequently asked questions, buttons and hyperlinks, as well as relevant conventions.

This section continues with an overview of existing relevant research on translation problems in localization with the aim of establishing the universal problems for the current study to build upon. Jimenez-Crespo, for instance, highlights the importance of understanding genres for achieving high-quality translation (2009, 68), and Austermühl suggests that translator training for localization should include text types relevant for the media and genres that normally undergo localization (2006).

As mentioned earlier, apart from generic implications, translation for localization is significantly affected by its inherently technological nature. Jimenez-Crespo highlights the crucial role of interaction between translators and engineers in the localization process and of translators' comprehensive understanding of technological issues (2013, 17). This correlation between language and technology also transpires in the process of internationalization, which precedes localization and translation. Esselink defines internationalization as "the adaptation of products to support or enable localization for international markets", enumerating technological adjustments that need to be made in order to enable the translation of textual elements in a product and making the product locale-specific, such as "the support of international natural language character sets, separation of locale-specific features such as translatable strings from the software code base and the addition of functionality or features specific to foreign markets" (2006, 23).

Later on, Schäler adds that internationalization not only makes localization possible, but also aids and simplifies it remarkably by eliminating the need for re-engineering or excessive testing where linguistic asymmetries might lead to translation problems due to "restricted or inappropriate encoding of characters, hard-coded strings or concatenated strings, or ill-advised programmatic dependencies on specified strings". He provides an example of the use of "Y" for a confirmation button in many pieces of software, where the prompt *Press "Y"*

to continue was used. Through internationalization this was successfully made more flexible, allowing for variation of the "Y" button across languages (2010, 211).

A study by De la Cova is examined in which she discusses translation problems due to lack of adequate internationalization with a specific focus on the English-Spanish language pair. Analysing a corpus of original English texts in their translation environment, she identifies three types of translation challenges in localization – those related to the internationalization of software, those related to the internationalization of textual content, and those related to the rigidity of translation memories (2016). The examples she cites are analysed and it is concluded that it is necessary to consider these problems in the context of a specific language pair in order to be able to propose solutions that translators can apply when other steps of the process which they have no say in, such as contextualisation and internationalization, have not taken place.

Finally, the chapter discusses a study of localization errors in airline companies, in which the author drafts a typology of errors harmful to the user experience (Man Hin Wu, 2017). Man Hin Wu's analysis, however, considers only mechanical, locale convention, and functionality issues, and no linguistic ones, which makes the typology not directly related to the work of the translator. Some of these types of errors, however, are selected to be adopted for the purposes of this thesis.

CHAPTER THREE: RESEARCH PROCESS AND CORPUS COMPILATION

The first section of this chapter presents an overview of the obstacles to research on translation problems in localization, which depends not only on the way texts are integrated in the source code of the product(s) or in the translation environment, but also on access rights provided by the companies these digital products are owned by. In order to bypass such limitations to product selection and text extraction without complete access and awareness of the source text environment, I have approached localized texts from a user perspective. The main function of texts in such products is to provide the users with sufficient and clear information, establishing a positive brand image, and successfully navigating users through whatever service the relevant product offers. Accordingly, for the purposes of this study, translation problems in localization of digital service products are considered to be the problems leading to errors affecting these pragmatic purposes. This approach is similar to the one Man Hin Wu uses to develop a taxonomy of localization errors. In this study, however, the focus is not on mechanical and technological errors that might not stem from translation, but it is narrowed down to exclusively translation-related problems which harm the user experience.

In order to establish what these problems constitute, various digital service products localized into Bulgarian have been harvested in everyday use for translation errors as defined above. As a further delimitation, once the errors have been harvested, they are classified according to a previously established framework of three main pre-defined categories based on the theoretical discussion in Chapter 2. This is done with the aim of limiting the errors analysed to the scope of localization, so that general translation errors typical of the EN>BG language pair and universal in terms of genre and medium are avoided.

Section 2 of Chapter 3 describes the three categories constituting the pre-defined typology (Fig. 1) and establishes that the subsequent analysis of the errors focuses on the interlingual asymmetries transpiring in localization-specific translation problems with the aim of elaborating the preliminary typology and offering language-pair specific strategies and solutions for overcoming them.
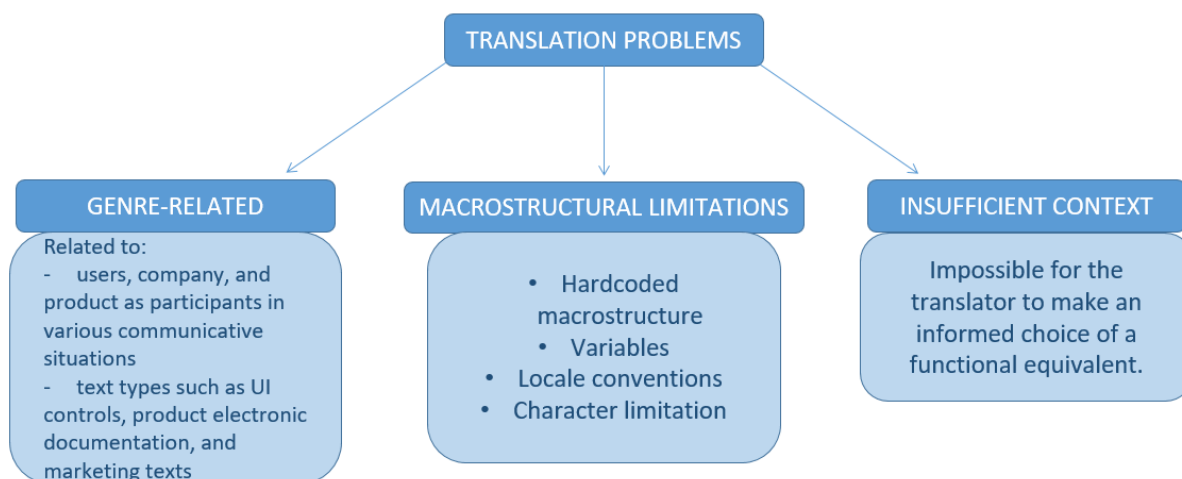
Fig. 1 Preliminary typology of translation problems in localization

The first category established in this preliminary typology is genre-related problems in digital service products. It builds on the discussion of the place of genre and relevant text types in the problems translators face in specialised translation. It is expected that the problems in this category will relate to the company, the product, and the users as participants in the various communicative situations in this digital genre, as well as to the conventions of navigation texts in the product's user interface, digital documentation, and marketing texts.

The second and third categories constitute a modified version of De la Cova's challenges (2016) based on the discussion in Chapter 2. They are respectively dubbed (2) problems due to macrostructural limitations and (3) problems due to insufficient context provided. The former category include problems and respective errors associated with hardcoded macrostructures (not allowing for changes in word order) and variable elements, as well as character limitations and locale format conventions (such as currency and metric conventions) as seen in Man Hin Wu's typology. The latter category of insufficient context encompasses problems and respective errors in situations where various TT units are potentially functionally equivalent to the ST one, and the translator cannot choose the actual equivalent without additional information outside of the ST unit they have been provided with.

Additionally, when the translation problems can be attributed to conventions regarding text types pertaining to the digital service product medium, where possible, further quantitative research is conducted to establish whether any relevant generic conventionality exists. The errors encountered in these complementary studies are not added to the corpus of errors

harvested for this thesis.

Once the typology has been expanded and elaborated, translation strategies for overcoming the translation problems and establishing functional equivalents are offered for each subcategory or type. The framework of solutions focuses on a linguistic perspective of localization in order to highlight the importance of a language pair asymmetry-based approach to localization in translation training compared to observed technological approaches to localization in existing master programmes in translation. When a solution that can be implemented within the target textual elements cannot be tailored, potential extralinguistic actions on behalf of the translator as a key stakeholder in the localization process are proposed.

The third section of this chapter describes the corpus of errors and outlines the processes of compiling and analysing it. The corpus of errors harvested for analysis consists of 150 errors encountered in 42 products (see Appendix 1). The products include device operating system features, mobile apps and web apps or web-app modals within websites varying in purpose and functionality from social media apps to payment forms or e-commerce platforms. Following the preliminary typology, the errors have been divided as follows: 56 genre-related errors (37%), 61 errors associated with macrostructural limitations (41%) and 33 related to lack of context or context consideration in the translation environment (22%). The steps of building the corpus of errors, as well as the process of the current research are systemised and visualised in Fig. 2 below.
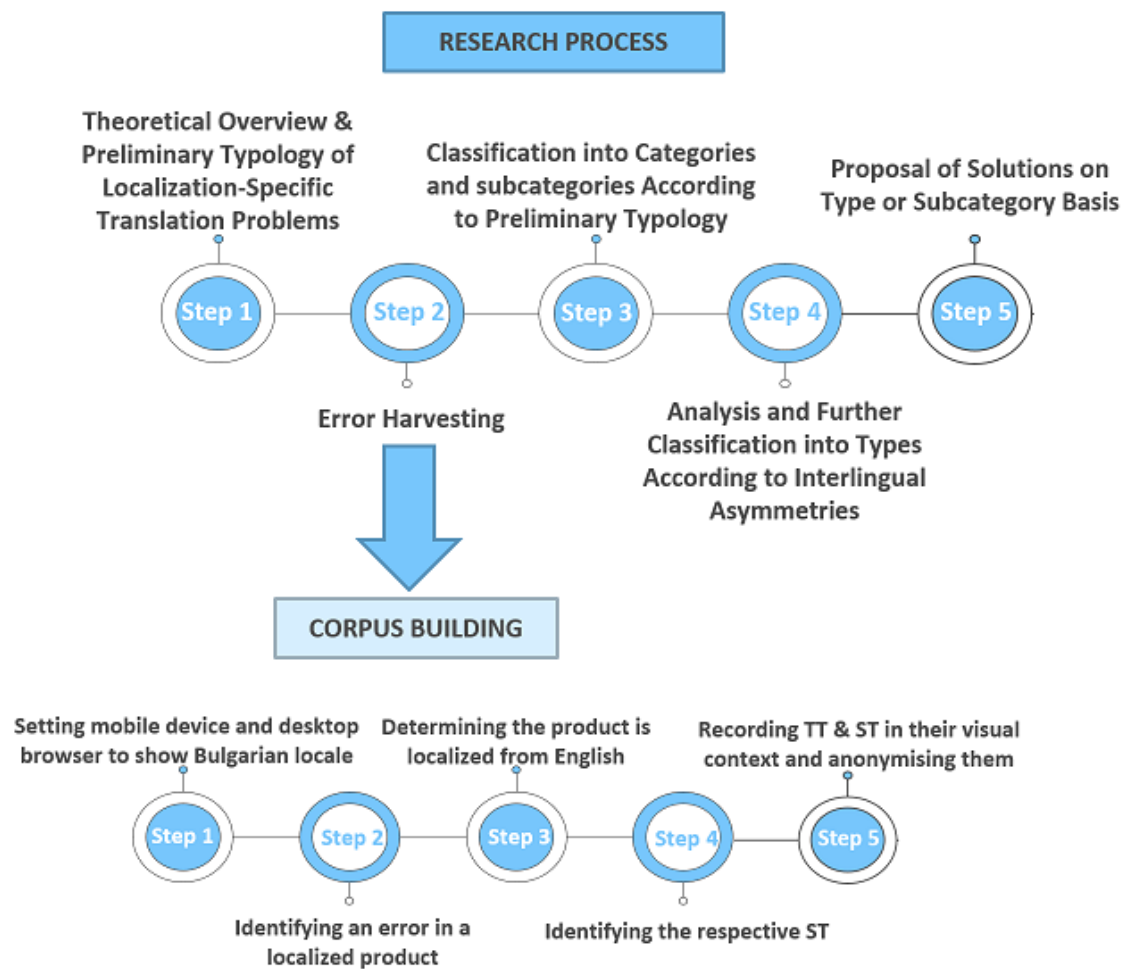
RESEARCH PROCESS

Theoretical Overview &
Preliminary Typology of
Localization-Specific
Translation Problems

Classification into Categories
and subcategories According
to Preliminary Typology

Proposal of Solutions on
Type or Subcategory Basis

Step 1   Step 2   Step 3   Step 4   Step 5

Error Harvesting

Analysis and Further
Classification into Types
According to Interlingual
Asymmetries

CORPUS BUILDING

Setting mobile device and desktop
browser to show Bulgarian locale

Determining the product is
localized from English

Recording TT & ST in their visual
context and anonymising them

Step 1   Step 2   Step 3   Step 4   Step 5

Identifying an error in a
localized product

Identifying the respective ST

Fig. 2 Research process and corpus compilation

CHAPTER FOUR: TRANSLATION ERRORS AND AVAILABLE SOLUTIONS

This main chapter of the thesis describes the research conducted with all the steps outlined in the previous chapter. The first section discusses errors related to genre and relevant text types, the second section exlores errors related to macrostructure limitations, and the third section discusses errors due to lack of sufficient context.

According to the types of errors observed and the corresponding interlingual asymmetries identified, the first category is divided into four subcategories related to: forms of address used in addressing the user; grammatical gender used in reference to an anonymous user; call-to-action texts; and product- and brand-specific terminology. Each of these subcategories is found to induce several types of errors. In the case of form of address, the errors in the corpus are related to the inconsistent use of different forms in the same communicative situations (Fig. 3), the systematic misspelling of pronouns in the polite form of English (with a lowercase *в*), and the use of plurals for adjectives and past participles in the polite form. An additional study was conducted on the forms of address used in 29 of the most frequently visited websites by users in Bulgaria (SimilarWeb 2021). It was established that more than half of these websites use a form of address that does not conform to prescriptive grammatical norms. For the purposes of the study, this form of address is dubbed "hybrid", as it constitutes a combination of the formal address and elements of the informal one, such as lowercase pronouns and the use of plural adjectives and past participles when addressing an individual user.

Fig. 3 Examples of inconsistencies in the form of address: Glovo and Philips Home

After the identification of all error types in this first category, strategies for overcoming them are proposed. In order to avoid errors of inconsistency, guidelines are given for the selection and establishing of an appropriate form of address for the specific product and its communicative situations, as well as for the use of translation tools (when available), and for communication with other participants in the translation and localization process in order to obtain additional context. To avoid misspellings of second-person plural pronouns when used for an individual addressee or referent, strategies have been proposed including pronoun ellipsis, pronoun explication through subordinate clauses, or replacement of the entire translated equivalent with another functional equivalent not containing the pronoun in question and consistent with the context of the product item where the source text to be translated occurs (Table 1). These strategies are recommended when the translator is not the first linguist working on a project and inconsistencies or the aforementioned "hybrid" form are observed in previous translations.

SOURCE TEXT	TARGET TEXT	SOLUTION PROPOSED	PRODUCT
Thanks for reviewing your stay, Maria!	Благодарим **ви**, че оценихте престоя си, Maria!	Благодарим, че оценихте престоя си, Maria!	Booking
Log in as Maria… Not **you**?	Влизане като Maria… Не сте **вие**?	Влизане като Maria… Акаунтът е грешен?	Facebook
Manage **your** Google Account	Управление на профила **ви** в Google	Управлявайте профила си в Google	Google Chrome
Maria your photo book draft is about to expire	Maria, черновата на албума **ви** е на път да изтече	Maria, черновата на албума, който създадохте, е на път да изтече	Google Photos

Table 1: Examples of errors in 2 p.sg. pronouns spelling in the polite form of address and respective solutions proposed

The next part of this section discusses gender-neutrality in addressing anonymous users and offers strategies of avoiding errors related to the gender of adjectives, pronouns, and nouns referring to the anonymous individual user. The discussion combines these types of errors on the premise that the pluralization of these lexical items in violation of the codified polite address is indeed an attempt to avoid assigning gender to the anonymous user. Apart from instances of ungrammatical pluralization, the use of the masculine and neuter genders in the

immediate context of the user's name is also observed among the errors of this second subcategory. The strategies for overcoming this asymmetry include:

- Introducing a new subject different from the user in order to avoid the use of past passive participles.

- Omitting the relevant lexical item through category shifts (Catford 2000).

- Introducing a common noun such as *потребител* (user) as a substitute for the respective pronoun or for the relevant elements to be in concord with.

Some of the errors observed in this subcategory are presented in Table 2 below, along with the strategies discussed.

SOURCE TEXT	TARGET TEXT	SOLUTION PROPOSED	PRODUCT
You will be **forwarded** back to the home screen	Ще бъдете **пренасочени** към началния екран.	Ще Ви пренасочим към началния екран.	BigBlueButton
Unstoppable!	**Неудържими сте!**	Нямате спирачки!	Google Fit
Followed by {user}	**Последвано** от {user}	{user} следва този потребител	Instagram

Table 2: Examples of errors in the category of gender when referring to the user and respective solutions proposed

The second subcategory – of errors related to call-to-action texts, occurs in two types of errors in the corpus. In this subcategory, errors of inconsistency are observed once again. A complementary study is conducted on this text type in the homepages of three comparable websites of digital service products selling airplane tickets. It is established that the errors of this subcategory are associated with the lack of conventions regarding the translation of this text type when it is used for navigation purposes (e.g. CTA texts in buttons). This is due to the fact that call-to-action texts in English are verbs (or verb phrases) in the imperative (realized by the zero infinitive), while in Bulgaria, the imperative verb is conjugated according to the categories of person and number. What is more, the study finds that Bulgarian translations of CTA texts often use noun phrases, which only further diminishes any potential conventionality (Fig. 4). The second error type in this subcategory occurs precisely when nouns have been used (most commonly deverbal ones) as equivalents of the instances of call-to-action in the source and when these nouns do not perform their appellative function unambiguously enough (Fig. 5).
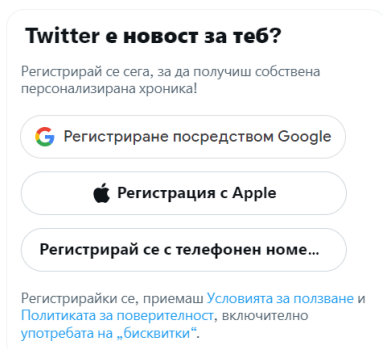
*Fig. 4 Inconsistent translation of "Register"
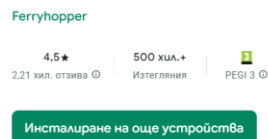on Twitter*

Fig. 5 Ambiguous CTA in Google Play

The strategies offered regarding inconsistency in the former subcategory apply for this one, too. For the second error type guidelines are offered for the choice of solution with the recommendation to refrain from the use of ambiguous nominal solutions or when using such to explicate them further through additional semiotic elements when applicable, such as arrows, for instance.

The same couple of error types – of inconsistent and of ambiguous solutions, are found in the fourth, terminology-related subcategory. In this case, however, the errors cannot be associated with a particular interlingual asymmetry. The inconsistency in the use of a relevant term can be resolved through the application of the strategies offered for this error type above. An additional strategy is offered regarding the use of termbases, which most CAT tools offer. The errors of ambiguous or incongruous translation of a term most commonly occur in the translation of neologisms coined by the respective brand or characteristic of the respective service domain (Table 3). No strategies for the resolution of this type of problems are offered due to the low number of representative corpus entries, as well as to the extralinguistic, and most commonly marketing, factors which have to be taken into account in regard to these errors. A suggestion is made for conducting further research on this problem in the context of a particular product(s) of a common service domain and with a more comprehensive perspective on these extralinguistic factors.

SOURCE TEXT	TARGET TEXT	PRODUCT	CONTEXT
Activity // No **activity** yet.	**Дейност** // Още няма **активност**.	Revolut	Заглавие и информационен текст в раздел от приложението, където потребителят да провери активността по картата си.
Spring Recap	Пролетен обзор Recap	YouTube Music	Заглавие на сезонна функционалност, с която потребителите могат да разгледат какво са слушали през изминалия сезон.

Table 3: Examples of errors in translated terms and neologisms

The second section of Chapter 4 discusses errors due to translation problems related to macrostructural limitations. Following an analysis of the errors in this category, they are reduced to three subcategories respectively associated with: variable elements in the macrostructure (where rigid uneditable macrostructure also occurs as a factor), character limitations, and locale conventions regarding standard elements such as units of measurement and currencies. It is established that the errors of the first subcategory occur when interlingual asymmetry in word order is observed (in the case of numeric variables), as well as asymmetries in the categories of gender and number, and in target texts containing the prepositions *в* or *с* ("in" or "with"), which occur with variable spelling in Bulgarian (see Table 4). The errors of each type are discussed and solutions are offered for avoiding them, while an observation is made that, more often than not, internationalization of the macrostructure is most commonly an undesirable solution that is difficult to implement. The following solutions are offered for avoiding the respective types of error:

Word order and numeric variables:

- Where the variable has not been internationalized[2]: opting for an NP with the numeric variable in initial position.

- Internationalized variable: introducing rank and structural shifts (Catford 2000) to achieve non-emphatic word order of the target text.

The prepositions *в* and *с*:

- Using the short spelling with a colon inserted after it to reduce cohesion.

- Replacing the preposition with another preposition or a punctuation mark.

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[2] A non-internationalized variable is a variable that has not been separated from the source code and included in the source text for translation – i.e. its position in the text cannot be altered.

- Introducing a class shift to avoid the use of a preposition in the target text: for instance *в* becomes *тук*, and *с* becomes *включващи.*
- Inserting a permanent umbrella noun for the preposition to agree with.

Gender:

- Inserting an umbrella noun for concord and keeping the variable in apposition (only possible with internationalized variables or not in initial position in the source text).
- Introducing a colon to weaken cohesion and using the neuter gender.
- Using the neuter gender for one-word source text elements consisting of an adjective or a past participle.

Number:

- Decreasing cohesion with a colon to indicate the number (only possible with internationalized variables or not in initial position in the source text).
- Requesting internationalization if the project is in a TMS environment – since the asymmetry to the category of number in English is observed in many languages, most TMS tools offer features where a source element can be rendered with a paradigm of elements according to the different numeral forms in the target language.
- Providing both singular and plural forms with a slash or parentheses (only when the variable is not internationalized and the other strategies proposed are not applicable).

SOURCE	TARGET	SOLUTION	PRODUCT
{minutes} remaining	1:36 остават	{minutes} до края // Остават {minutes}	Instagram
Hotels in {city}	Хотели в Варна	Хотели в: Варна // Хотели в гр. Варна // Хотели: Варна	Booking
An unrecognized {device} just logged in near {city}	Непознато Pixel 7а току-що влезе от района на Sofia, Bulgaria	Непознато устройство (Pixel 7a) току-що влезе от района на Sofia, Bulgaria	Instagram
{number} new	1 нови	Нови: 1	Facebook

Table 4: Examples of variable-related errors and proposed solutions

Character restrictions are due to not sufficiently flexible design, as well as to the fact that in translation from English into Bulgarian, texts normally reach up to 180% of the length of the source text (Fedotov 2022). The errors of this subcategory are divided into three types, which are not associated with interlingual asymmetries, but with the level of severity with regard to the functionality of the text. The most severe type of errors in this subcategory are those where the text is partially invisible to the user and thus impedes their understanding of
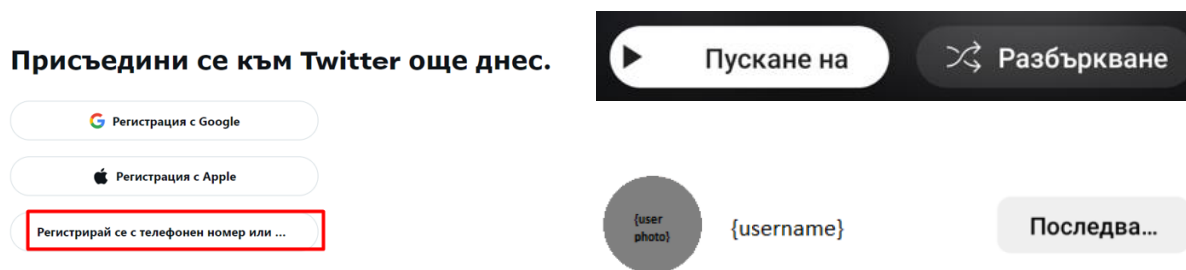
the respective functionality (Fig. 6).

Fig. 6 Long TT units disrupting the product functionality in Twitter (left), YouTube Music (top right), and Instagram (middle and bottom right)

When it comes to the second most severe errors, the translator seems to have taken into consideration the character restriction as they have used abbreviations to overcome it. The corpus entries recorded, however, are still problematic as the abbreviations used are ambiguous and/or harmful to the user experience and could have been avoided with the adoption of a different strategy (Fig. 7).
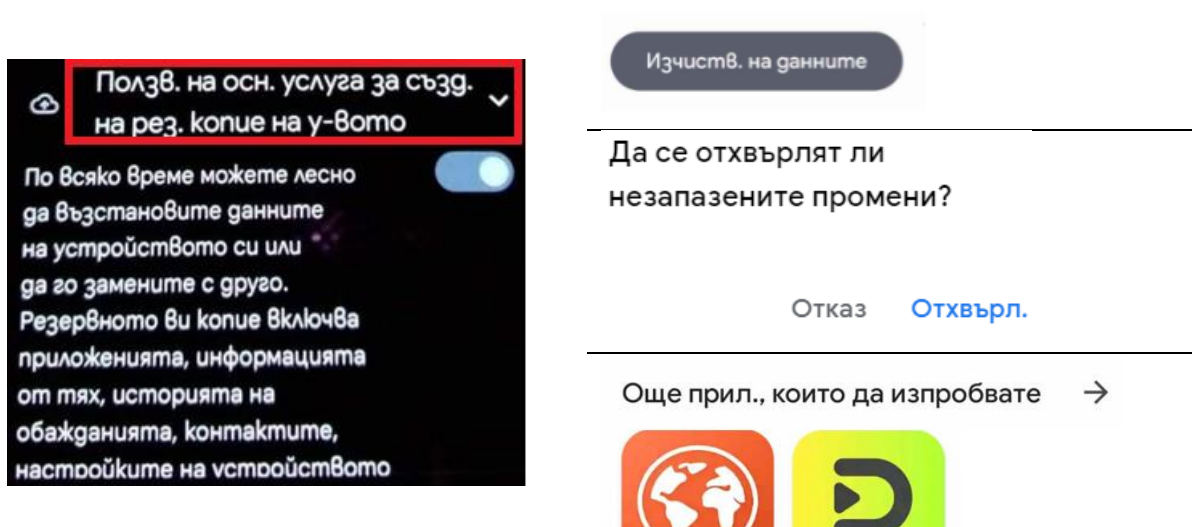

Fig. 7 Long TT units with unnecessary and dysfunctional abbreviations in Android (left and top right), Gmail (middle right), and Google Play (bottom right)

The third and least severe error type of this subcategory includes corpus entries where the text is visible and legible, but partially hidden or folded to a new line, harming the user experience and the wholesomeness of the design (Fig. 8).
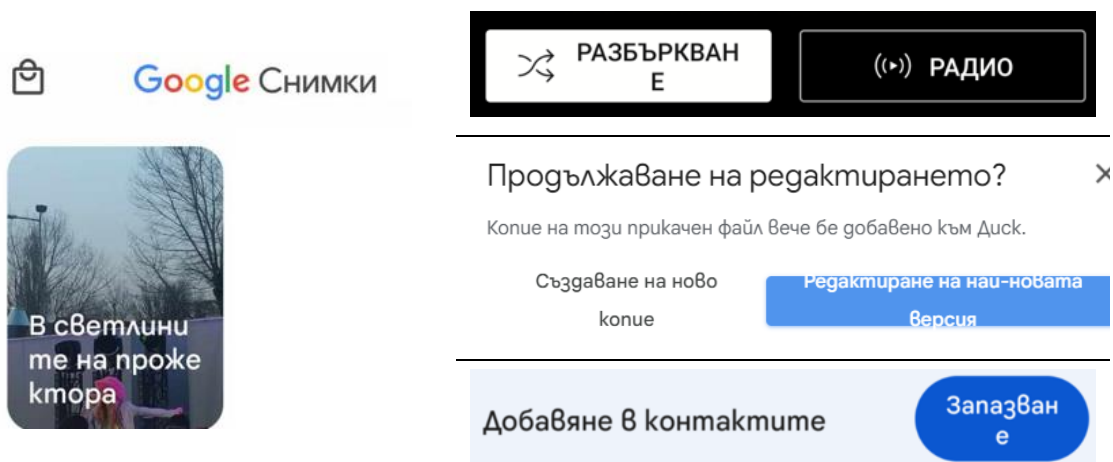
Fig. 8 Long, but visible TT units disrupting the user experience and the product's design in Google Photos (left), YouTube Music s(top right), Google Drive/Gmail (middle right), and Android (bottom right)

The solutions proposed for this problem involve the use of equivalents of length similar to that of the source text which require the omission of textual elements, category shifts, appropriate and unambiguous abbreviations, or the adoption of solution that is completely different from the original, but is functionally equivalent to it in the respective pragmatic context (e.g. ***Още прил., които да изпробвате*** > becomes ***Изпробвайте още*** >).

The errors in the final subcategory of this section are deviations from the locale conventions for currency, duration, and title capitalization formats (Fig. 9). It is established that these are to a great extent associated with the level of internationalization of the respective source elements, leaving the translator with quite limited options. It is still noted, however, that awareness of the relevant asymmetries in locale formats is required so that the translator can anticipate them in translation for localization of products where these formats are expected to occur. Thus, they will be able to avoid errors due to interference or simply internationalize the formats. Nevertheless, the errors of this subcategory found in the corpus are not sufficient for more conclusions to be drawn, and further research in this regard is recommended.
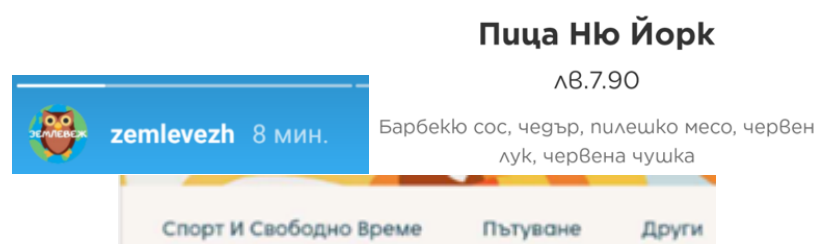

Fig. 9 Errors in duration (Instagram), currency (Glovo) and title (Takeaway) spelling conventions

The last section analyses the errors due to insufficient context and determines two subcategories based on the linguistic factor that the respective errors resulted from. The first subcategory is found to be associated with semantic or morphosyntactic ambiguity, and the second one – to an asymmetric paradigm that is exhibited in the target language, but not in the source one (see Table 5). Following the analysis of the corpus entries, it is established that those of the first subcategory result from semantic or pragmatic polysemy, heterosemy, syncretism, or synonymy in the source text. An instance of this error type is the imperative verb *Empty* (Fig. 10) rendered as an adjective in Bulgarian, or the adjective *Free* respectively rendered as *Свободно* instead of *Безплатно* (Fig. 11).

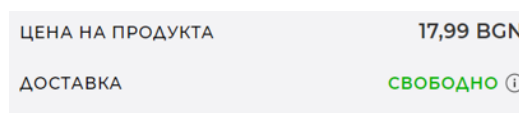*Fig. 10 An error due to insufficient context and heterosemy Gmail*

Fig. 11 An error due to insufficient context and polysemy in Reserved

The errors of the second subcategory, on the other hand, occur in instances where the target text can vary in terms of gender, number, definiteness, functional meaning, or punctuation depending on the macrostructural and pragmatic context of the original. An error of this subcatogy, for instance, is the full definite article used in the translation of *My account* in Fig. 12, as well as the plural form used in the translation of *3 replies* as *3 отговори*, where the cardinal numeral (which is most probably a non-internationalized variable in the source) requires *отговора* to be used.
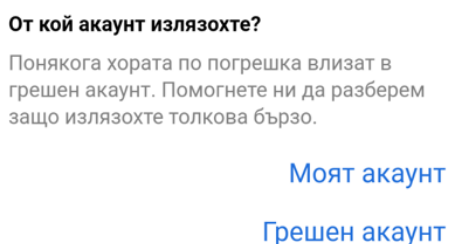

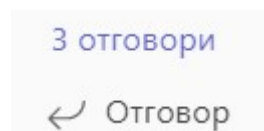*Fig. 12 An error due to insufficient context and asymmetry in definiteness*

Fig. 13 An error due to insufficient context and asymmetry in number

Since these errors are entirely contingent on the context provided in the translation process and environment, the solutions proposed constitute strategies enabling the translator to

acquire the context necessary. These strategies involve analyzing the information about the type of service the digital product offers, awareness of the type of translation environment with the arrangement of the source elements for translation in it, as well as communication with other stakeholders in the localization process such as project managers, developers, and clients. Only one potential and not entirely efficient solution is proposed when acquiring context proves impossible. This solution concerns translation units that consist of a single adjective or past participle which the translator has to choose the appropriate gender for. As a "last resort" the adoption of the neuter gender is proposed, which can be considered neutral and even in discord with other elements in the context of the source unit, it will not ruin the overall functionality.

CHAPTER 5: CONCLUSION

Five research questions were outlined in the introduction of this thesis:

1. What are the localization-specific translation problems that occur in translation for localization of digital service products from English to Bulgarian and what factors lead to them?

2. Are there any language-pair-specific ones and do the problems which can be considered universal take on new dimensions when considered through the prism of a particular language pair, namely English-Bulgarian?

3. What solutions to these problems are available for the translator to implement?

4. What recommendations can be made for increasing quality in localization from English into Bulgarian, especially with a view to localization training?

In answer to the first question, a typology of translation problems in English-Bulgarian digital product localization is offered, which also includes the respective errors these problems cause. An outline of this typology is presented in Table 5 below, providing the number of errors found in each subcategory of the corpus. A key finding is highlighted noting that problems and factors of different categories oftentimes occur in combination and should therefore be considered at all times during the translation process. For instance, not only should the pragmatic context always be reckoned with, but macrostructural limitations can also occur in genre-related problems and affect the choice of equivalent.

In answer to the second question it is concluded that out of all four subcategories in the category of genre-related problems, only those associated with terminology cannot be dubbed language-pair specific. This is established on the basis of the interlingual asymmetries found to induce the problems in the rest of the subcategories. Nevertheless, it should be noted that these problems should not be considered exclusive to the language pair at hand, as they will occur in translation for localization into any language where the same asymmetry to English is observed. It is highlighted that a more in-depth study of translation problems in translating neologisms and terminology in localization is needed for more exhaustive conclusions to be made.

CATEGORY	SUBCATEGORY	TYPE	ERRORS RECORDED
GENRE-RELATED	FORM OF ADDRESS	INCONSISTENCY	10
		LACK OF CAPITALISATION	9
		ADJECTIVE &	12
	USER GENDER	PARTICIPLE PLURALISATION	9
		MASCULINISATION	
		NEUTERISATION	
	CALL-TO-ACTION NAVIGATION TEXTS	INCONSISTENCY	3
		AMBIGUITY	6
	TERMS & NEOLOGISMS	INCONSISTENT TERMINOLOGY	2
		INCONGRUITY AND/OR AMBIGUITY	5
MACROSTRUCTURAL LIMITATIONS	VARIABLES	WORD ORDER	3
		VARIABLE-SPELLING PREPOSITIONS	7
		GENDER	5
		NUMBER	2
	CHARACTER LIMITATIONS	NON-VISIBLE UI DISRUPTING PRODUCT FUNCTIONALITY	17
		VISIBLE UI DISRUPTING PRODUCT DESIGN	12
		UNCLEAR ABBREVIATIONS	7
	LOCALE CONVENTIONS	DURATION	2
		CURRENCY	4
		CAPITALIZATION	2
INSUFFICIENT CONTEXT	& SOURCE AMBIGUITY	POLYSEMY	3
		FUNCTIONAL POLYSEMY	5
		HETEROSEMY	2
		SYNCRETISM	1
		SYNONYMY	2
	& TARGET PARADIGMATIC VARIATION	GENDER	3
		NUMBER	9
		DEFINITENESS	4
		FUNCTIONAL POLYSEMY	2
		PUNCTUATION	2

Table 18. Problem categories and respective error types

On the other hand, although they can be considered universal due to their association with the product's technological nature, problems stemming from macrostructural limitations are found to occur in combination with particular interlingual asymmetries in the language pair. The only potential exception to this observation is the character limitation, but in the case of the English-Bulgarian pair it is particularly severe, as Bulgarian is one of the languages with greatest expansion in translation from English (Fedotov 2022). Respectively, this is the problem with the biggest number of representative errors in the corpus – 36 (24% of all).

In the third category, the problems due to insufficient context and ambiguity of the source text are universal and would occur in translation into any target language. On the contrary, those due to insufficient context and target variation are exclusively bound to paradigms observed in the target language and not exhibited in the source.

The answer to the third question constitutes two main types of solutions offered for the problems identified in this thesis. The first type are suggestions for translation strategies and shifts to be applied for each specific type of error and the respective interlingual asymmetry observed. These solutions are primarily contingent on the translator's linguistic competence, and their application depends on the particular element of the source text, along with its function and context, and grants the translator the opportunity to bypass the constrictions of the technological and linguistic context. The second type of solutions are offered for those instances where solutions of the former kind are either impossible or inapplicable. This latter type rather constitutes strategic actions that can be taken on the part of the translator and that are contingent on their extralinguistic competence and knowledge of the general arrangement of the particular localization project at hand. Such strategic actions are offered for avoiding inconsistency in translations, as well as for acquiring contextual information, and are applicable to all categories where problems due to insufficient context or of inconsistency have been observed. A third, minor type of similar strategies are also established in the form of guidelines for choosing an appropriate equivalent when a strict convention has not been established in the genre.

In answer to the final, fourth question, a conclusion is made that translator training for the context of localization should acquaint trainees not only with the processes, tools, and participants as universal elements of this specialized context, but training should also focus on a specific language pair. Additionally, it has to highlight the role of the translator as a proactive participant in the localization process and as an ambassador and owner of the target language.

Based on the relevant limitations to this research, both preliminary established as well as ones identified in the research process, several recommendations for future research can be made, namely:

- Further research into register and CTA conventions in products originally designed in Bulgarian – to test the hypothesis about the influence of localization solutions in this regard.

- Further research on translation of digital-product-specific terminology and neologisms, as well as on locale conventions and the respective technological implications.

- Research that builds upon the findings in this thesis by adopting and applying them in real translation-for-localization context in collaboration with representatives of the localization industry or with technological companies requiring localization services that can provide access to all macrostructures and to the full translation environment of a product or a set of products. Thus, not only will more light be shed on all the factors leading to translation problems in the English-Bulgarian localization context discussed in this thesis, but also the adoption of more process- and participant-oriented methods in researching these problems will be possible.

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CONTRIBUTIONS

1. This is the first attempt at a comprehensive study of translation problems and errors typical of localization from English into Bulgarian.

2. A corpus of translation errors in digital service product localization from English into Bulgarian has been compiled that can be used in training materials or as groundwork for future research into translation problems in localization in the English-Bulgarian language pair.

3. A respective typology of translation problems in digital service product localization from English into Bulgarian has been developed with a view to text types and communicative situations characteristic of the digital genre, to the macrostructural limitations due to the products' technological nature, and to the impact of insufficient context. This typology can be applied not only in academic setting, but also in the translation industry in the further specialisation of translation practitioners, as well as for increasing the awareness of other stakeholders in the localization process of the complexities of translation for localization from English into Bulgarian and the way those complexities are connected to and affected by their work.

4. A framework of translation solutions and strategies has been offered that can be integrated in translator training as well as adopted in agency and client localization reference materials such as style guides and trainings.

5. It has been determined that a linguistic perspective is integral for theories of translation for localization, especially for identifying solutions and good practices and for understanding and elevating the position of the translator in the localization process.

6. Likewise, it has been established that a focus on linguistic competence and interlingual asymmetries is needed in translation-for-localization training.

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