

UNIVERSITY OF ECONOMICS IN BRATISLAVA
FACULTY OF APPLIED LANGUAGES

REGISTRATION NUMBER: 106006/B/2020/36109009596617220

COMMENTED TRANSLATION

Bachelor Thesis

2020

Sára Klinovská

UNIVERSITY OF ECONOMICS IN BRATISLAVA
FACULTY OF APPLIED LANGUAGES

COMMENTED TRANSLATION
Bachelor Thesis

Study Programme: Foreign Languages and Intercultural Communication

Field of Study: Philology

Consultation Centre: Department of Linguistics and Translatology

Thesis advisor: Mgr. Jozef Štefčík, PhD

Bratislava 2020

Sára Klinovská

Declaration

I hereby declare that this bachelor thesis presents my own writing, analysis and research based on my knowledge, all the used sources are acknowledged and referred to.

Date: 15.05.2020

A handwritten signature in blue ink, appearing to read 'Klinovska', is written above a horizontal line.

Signature

Acknowledgements

I would like to thank my thesis advisor Mgr. Jozef Štefčík, PhD for his help during my writing of this thesis. I would like to express gratitude for his guidance, advisement and assistance as well as for the quick and prompt communication with him.

ABSTRAKT

KLINOVSKÁ, Sára: Komentovaný preklad.- Ekonomická univerzita v Bratislave.

Fakulta aplikovaných jazykov; Katedra jazykovedy a translatológie. Vedúci záverečnej práce-Mgr. Jozef Štefčík, PhD.- Bratislava: FAJ EU, 2020, 60 s.

Cieľom bakalárskej práce je preložiť populárno náučný text z anglického do slovenského jazyka a následne analyzovať cieľový text. K dosiahnutiu hlavného cieľa nám slúžia sekundárne ciele, medzi ktoré patrí analýza východiskového textu a anticipácia prekladateľských problémov. Práca je rozdelená do štyroch kapitol. Východiskový text uvádzame v prílohe. Prvá kapitola je venovaná analýze a rozboru východiskového textu na základe mimotextových a vnútrotextových faktorov. V ďalšej kapitole opisujeme anticipované prekladateľské problémy, ku ktorým predpokladáme, že by v translačnom procese mohlo dôjsť. Obsahom nasledujúcej kapitoly je samotný preklad do cieľového jazyka. V záverečnej kapitole podrobne analyzujeme cieľový text, pričom prekladateľské riešenia a postupy ilustrujeme na konkrétnych príkladoch z textu. V práci zdôrazňujeme dôležitosť každej fázy prekladateľského procesu pri tvorbe kvalitného prekladu, ktorý spĺňa funkcie východiskového textu.

Kľúčové slová: populárno náučný text, prekladateľská analýza, prekladateľské postupy, východiskový text, cieľový text

ABSTRACT

KLINOVSKÁ, Sára: Commented translation.- University of Economics in Bratislava. Faculty of Applied Languages; Department of Linguistics and Translation- Thesis advisor- Mgr. Jozef Štefčík, PhD.-FAJ EU, 2020, 60 p.

The aim of this bachelor thesis is the translation of a popular science article from English into Slovak language and the analysis of the target text. Secondary aims, analysis of the source text and anticipation of translation problems, serve us to achieve the main aim of our thesis. The Thesis is divided into four chapters. The source text is part of the appendices. In the first chapter the source text is analysed according to extratextual and intratextual factors. Anticipation of translation problems that could occur in the translation process is the topic of the second chapter. The third chapter is the translation into the target language. In the last chapter we analyse the target text in detail, illustrating translation procedures and solutions to translation problems giving examples from the text. In the thesis we emphasize the importance of all stages of the translation process.

Key words: Popular science article, translation analysis, translation procedures, source text, target text

Table of contents

List of Abbreviations	8
Introduction.....	9
1 Analysis of the source text	10
1.1 Extratextual factors	10
1.1.1 Type and function of the text	10
1.1.2 Author	12
1.1.3 Publication and situational features.....	12
1.1.4 Recipients.....	12
1.2 Intratextual factors	13
1.2.1 Macrostructure	13
1.2.2 Microstructure	14
1.2.3 Lexical analysis	14
1.2.4 Morphological analysis	15
1.2.5 Syntactical analysis	16
2 Anticipation of translation problems	17
2.1 Linguistic problems.....	18
2.2 Contextual problems.....	20
2.3 Cultural problems	21
2.4 Typographical problems.....	21
3 Translation into the source language	23
4 Analysis of the target text	40
4.1 Lexical-semantic analysis	40
4.2 Morpho-syntax analysis.....	43
4.3 Typographical analysis	47
4.4 Solutions to cultural problems	48
4.5 Solutions to contextual problems	49
Conclusion.....	51
Resumé	52
References	56
Book sources	56
Internet Sources	58
List of appendices.....	60

List of Abbreviations

SL Source language

ST Source text

TL Target language

TT Target text

Introduction

The main aim of our bachelor thesis is translation of a popular science article from English into Slovak language and analysis of the translation. Translation is a very complex process and our bachelor thesis shows different translation procedures and solutions to translation problems. Translation is often being underestimated, however, we consider it a very demanding process because it is not only a transfer of information across linguistic but also cultural boundaries.

We decided to translate a popular science article from the magazine National Geographic. The article deals with a topic that is currently popular and at present discussed very often. The main topic is plastic pollution in oceans giving the readers a brief overview of the history of plastic, stating the current state and also expressing some expectations for the future. Laura Parker is the author of the article, she worked on similar articles before and specializes in covering climate change and marine environments. The article is accompanied by extensive photographs by photographer Randy Olson, we tried to attach the photographs to our article to convey the same message to the recipients of the target text. The environmental issue is nowadays one of the most discussed problems, which was also one of the reasons we have chosen the article. The next reason is that we wanted to analyse a popular science article, which has both informative and aesthetic function and is therefore an interesting illustration for various translation procedures and solutions.

Our thesis is divided into four chapters. In the first chapter we analyse the source text according to extratextual and intratextual factors, intratextual factors divided more specifically into macrostructure and microstructure. The aim of the second chapter is to anticipate translation problems that could occur in the process of translation. The third chapter is the translation to the source language. Analysis of the translation is part of the fourth chapter, here we analyse the target text from lexical, morphological and syntactical point of view, also commenting on translation solutions to cultural, typographical and contextual problems. The source text can be found in the appendix. The article has not been translated into Slovak before, and we hope to contribute some new information to Slovak recipients.

1 Analysis of the source text

A very important part of the translation process is the analysis of the source text. It is the first phase and most important phase before starting the translation from the source to target language. “Process and result of translation, therefore, are closely interconnected. The one cannot be separated from the other” (A. Neubert, 1985:18). We are going to apply a model by German translator and linguist Christiane Nord. It is used to gain all possible information about the ST that could influence the translation process. This chapter begins with examining extratextual factors and then in the second section we will analyse intratextual factors. Nord points out that it is important to determine translation relevant information, factors that influence the creation of a translation. She underlines that translation relevant factors should be especially taken into consideration (Ch.Norde. 2010). To allow us to understand the ST we will analyse both extratextual and intratextual factors, which are translation relevant and will help us further in the translation process.

1.1 Extratextual factors

Extratextual factors are all the factors that somehow influence the text. As Müglova says it is the author, recipient and also publication and situational features (D. Müglová, 2009). Nord further lists a set of questions, which help the translator analyse the ST. Among them the translator should be able to answer who the author is, for what reason, when, where and for whom the text was written and what the function of the text is (Ch.Nord. 2010). In the next section we are going to analyse our ST trying to give an answer to all of these questions.

1.1.1 Type and function of the text

One of the most important features of the ST is the type of the text. The type is connected to the style and the function. “Text types are not always clearly defined. Translations move within the bounds of such a more or less clearly defined L2 text type. They may even introduce some- though not too many – new features into an established type, which have not been experienced before by L2 users” (A. Neubert 1985:123). As Neubert states, text types are never fixed one and for all and therefore we need to approach each text as a unique unit with specific characteristics.

The article „Plastic” is written in popular-scientific style and was published in the magazine National Geographic. In popular science articles, authors try to inform a non-specialist audience about a scientific topic in an understandable and interesting way. One of the most important features of popular science articles is simplifying the content, giving an overview of the study and providing only the most relevant information. The information must be accurate but results can be simplified. Readers should find the article appealing and interesting to start reading it and it should maintain their interest to the end. Therefore, the title should rise attention and should attract non-specialist readers. The main function of the text is to inform, nevertheless the literary function is also of significant importance. Reiss points out correlation between a given text type and translation method, to ensure that the predominant function of the text stays preserved in the translation (K. Reiss, 1976). As already mentioned, the main function of our ST is informative, Munday says what a translator should do in this case. “Thus, what the translator must do in the case of informative texts is to concentrate on establishing semantic equivalence and, secondarily, on connotative meanings and aesthetic values” (J. Munday, 2009:44).

Our ST deals with an environmental issue that is nowadays very popular. Laura Parker, the author of the article, keeps the text interesting and combines scientific information and data with her own ideas and experience she has made when studying the topic. The main topic of the article is plastic pollution, unrecycled plastic that ends in the seas and oceans, kills millions of creatures and endangers our health. Laura Parker briefly describes the history of plastics and shows us consequences of the unrecycled waste and its impact on our planet. In the first part, she describes microplastics, nanoplastics and their impact on the environment and marine creatures. Not only consequences of plastic pollution are mentioned but also the history of the first plastic manufacture and its great popularity in the second half of the 20.th century. Description of the situation in the polluted areas follows in the next paragraphs, and the author ends the article with mentioning possible solutions to the problem and expressing hope for the future.

The text is also enriched with many interviews with specialists and experts who express their opinion. This is typical of publicist style, which is also to be seen in our ST. Publicist style is a blend of reflecting the objective state of things and a subjectivity expressing author’s personal feelings and emotions. The text is divided into a number of paragraphs that is similarly one of the features of publicist style.

1.1.2 Author

Author always plays an important role in the translation process. It is he who sets the style of writing and uses specific phrases and syntactical constructions unique to him. The author or authors can be known or rather not known to the translator. In some cases the name of the author is not known at all which can lead to problems when it comes to translating difficult terms and ambiguities. In our case, the author of the ST is known and stated at the end of the article. The author of the ST is Laura Parker, a staff writer who specializes in covering climate change and marine environments. Prior to joining National Geographic, she worked as a national correspondent for USA Today and for the Washington Post. The article is accompanied by extensive photographs by photographer Randy Olson, who worked together with the author also on previous features in the National Geographic.

1.1.3 Publication and situational features

By publication, we understand medium, the way by which the text has been distributed to the recipients. The article has been published in the magazine National Geographic in June 2018 in the edition dealing specially with the plastic issue. National Geographic is the official magazine of the National Geographic Society. The magazine contains articles about geography, culture, environment, science and history. It is published monthly, is also available in the online edition and is known by its extensive use of dramatic photographs. Publication and situational features are very important because they partly determine who the readers are going to be and if the article is easily accessible to a wide range of people, which leads to the next extra textual factor-recipients.

1.1.4 Recipients

Not only the author, publication and function of the ST is important but also the recipients who the text is dedicated to. The age and education of the recipients is vital for the translator and has to be taken into consideration in the translation process. Nord draws attention to the fact that the recipients of the ST might have different knowledge and experience as the recipients of the TT. This is the result of different cultural settings and experience (Ch.Nord.2010). The translator is thus faced with the problem to identify

information that has to be altered or additionally specified to the recipient of the TT. In this way, the translator can choose the appropriate style and better understand author's intention.

The article has been published in the magazine National Geographic that is published monthly and available online. We can suspect that regular readers of National Geographic are also very likely to come across the article. The ST was published in the edition dedicated to the plastic issue; it is dedicated to people interested in topics like environment, marine life and recycling. The ST is published in a popular scientific magazine and therefore meant for laic audience that only has basic knowledge about the topic.

1.2 Intratextual factors

After the analysis of extratextual factors, we can move to the analysis of intratextual factors. It is the analysis of the text as such. Similarly as in the analysis of extratextual factors, Nord provides a set of helpful questions when examining the internal structure of the ST. Before starting the translation, the translator should be able to answer what the text is about, what is (not) being stated, in which order, with which words and sentences and in which way (Ch. Nord 2010). We will illustrate features of the microstructure and macrostructure of our ST providing examples taken from the ST.

1.2.1 Macrostructure

In the following section, we are going to look at the formal structure of the text, its organisation, division into paragraphs and separation of the most important statements and quotes. As already mentioned the ST is a popular science article published in a scientific magazine, therefore apparent signs of publicist style are also to be seen. The text is divided into a number of paragraphs forming boundaries of the different topics. Sometimes the text is enriched with photographs with extra explanations to support the explanation of the particular topic. Starting a new paragraph, usually capital letters are used for the first part of the sentence to clearly separate it from the previous paragraph. At some places, we can find a quote or an important statement written in bold to attract attention immediately at first sight.

1.2.2 *Microstructure*

Microstructure represents linguistic features of the text and analysis at the word and sentence construction level. We are going to analyse the text from morphological, lexical and syntactical point of view.

1.2.3 *Lexical analysis*

In this chapter, we are going to analyse the ST on the lexical level, the level of words and their meanings. Every language has a specific vocabulary and the lexis varies from language to language. According to Popovič, popular scientific style belongs to secondary literary styles. “It is a transitive style between scientific and colloquial style” (A. Popovič, 1983:82, free translation). This can be seen in the lexical level, the level of the words. As already mentioned the ST disposes of vocabulary consisting both of terms and scientific concepts but also of words and phrases typical of formal spoken style. Popovič describes the publicist style as a unit consisting of characteristics such as information function, variability and the most up-to date facts (A. Popovič, 1983, free translation). For popular science articles objectivity is typical, also using neologisms and many technical and scientific terms. In difference to scientific style the terms are used in a more understandable way, the author anticipates that the recipient has some prior knowledge about the topic but is not an expert and needs some further explanations and clarification. The author is creative and uses synonyms, examples and further explanation instead of only enumerating a list of terms.

In our ST, we find terminology mainly from the field of ecology, environment, biology, chemistry and marine life: *nanoplastics, amphipods, limpets, microalgae, polymer, celluloid, monomers, circular economy, garbage patch, ocean-sweeping machine, microplastics, microbial slime, current system, manta trawl*. Apart from this terminology, there is also a great number of proper nouns, not only names of geographical locations (toponyms) and persons (antroponyms) but also names of universities, institutions, magazines and companies. The geographical proper nouns in our text are names of countries and continents but also names of islands, beaches and oceans: *Hawaii’s Big Island, Plymouth, Kamilo Point Beach, Henderson Island, South Pacific, Pasig River and the Freedom Island*. Names of universities and institutions are also very common and make up a significant part of the proper nouns in our ST: *Plymouth*

University, University of Georgia, Michigan State University, The Pasig River Rehabilitation Commission, and Plastic Bank of Vancouver, National Solid Waste Management Commission, Earth and Space Research in Seattle. Additionally, we can also find titles of books and magazines and names of companies: Plastic: A Toxic Love Story, Life magazine, Nature magazine, Coca-Cola, Nestlé, Unilever and PepsiCo.

In contrast to non-literary texts, special terminology is combined with an easy understandable one because of the popular science character of the text.

1.2.4 Morphological analysis

The next level on which it is important to study the ST before starting the translation is the morphological level. Morphology studies words, parts of word (prefixes, suffixes), word classes, the way they are formed and grammar they build. There are various types of languages, which are determined by the differences in the morphological structure of the language. Morphology of the ST language differs from the TT language. English belongs to the German family group and is an analytical language. Lexical and grammatical meaning tends to be separated; this means that lexical and grammatical meaning is expressed by intonation, word order and utility words. On the other hand, Slovak is one of the Slavic languages whereby grammatical meaning is expressed by means of inflections and form-building affixes (synthetic language). Here we need to realize differences between both languages and be aware of potential difficulties and problems that could emerge in the translation process.

Present tenses are the most frequently used tenses in the text. In English present simple is used to describe commonly known truths and facts. As already mentioned author uses this tense to describe facts, scientifically proven truths and to depict the current situation. *Ocean plastic is not as complicated as climate change.* Furthermore, present perfect is used to describe recent actions and events and also is one of the prevailing tenses in the ST. *In recent years, the surge in production has been driven largely by the expanded use of disposable plastic packaging in the growing economies of Asia.* Past simple is used to describe past events, which happened at a specified time in the past. *In one of their early applications, they saved wildlife.* The author also describes a number of past events and interviews made while writing the article; here we can find past tense as well. *As Thompson and I talked about all this, a day boat called the Dolphin was carrying us through a light chop in the Sound, off Plymouth.*

In difference to non-literary texts, popular science articles use personal pronouns such as ‘I’, ‘we’, and ‘you’. The author prefers a more subjective style of writing and expresses this in the means of personal pronouns. *I walked ankle-deep in microplastics. We should give thanks that the Pilgrims didn’t have plastic, I thought recently as I rode a train to Plymouth along England’s south coast.*

The number and distribution of word classes influence the dynamics of the text. In popular science articles, dynamic verbs predominate. Furthermore, there is a great representation of nouns.

Both passive and active voice are used. Most research articles are written in passive voice, however in popular science articles also active voice should be used to express action. *Marine species of all sizes, from zooplankton to whales, now eat microplastics. Many more are probably harmed invisibly. The river is fed by 51 tributaries, some of them overflowing with plastic waste from squatter settlements that cantilever precariously over creek banks.*

Numerals are typical of scientific style and research articles, we can also find a great many of them in our ST. They are used to express amount (*9.2 billion tons*), years (*in 2017*), value (*six billion dollars*), age (*a man of 54*) and percentage (*40 percent*). In some cases, they are written out in full (*six billion dollars*) but in the most cases, they are written in numerals (*128 billion, \$10,000*).

1.2.5 Syntactical analysis

Syntactical analysis is related to morphological analysis, which is the topic of our previous chapter. As already mentioned above, English belongs to a different language family as Slovak, therefore sentences in English are also built differently than in Slovak and have a different structure. Before starting the translation from the SL into TL it is vital to analyse the syntactical level of the text and be aware of possible problems which could occur. E. Gromová states that in the process of syntactical analysis the translator has to prove his ability to distinguish between lexical composition and sentence composition (E.Gromová, 2003). It is not only important to analyse the sentence structure in the ST but also be able to use a correct sentence composition in the TT.

“In publicist and popular science texts there is a larger number of longer sentences” (Mistrík, 1997:206, free translation). Syntactical structure is closely related to the text type, in our Source text, we can find many long sentences structured in a

complicated way. For instance, there are many compound sentences: *The Pasig River once flowed majestically through downtown Manila, capital of the Philippines, and emptied into pristine Manila Bay.* Moreover a huge number of complex sentences: *they are sold by the millions to poor people like Siena and his family, who can't afford to buy more than one serving at a time.* Among the long compound and complex sentences there are also simple sentences to be found, sentences with only one independent clause: *It captivated a global audience for weeks. No sign of the wreckage appeared.* The complicated structure of sentences in our ST is among other things caused by an extensive use of appositions. They are usually used to closely describe the first noun phrase: *Siegler, the Vermont economist, has worked in enough countries and run enough numbers to be sceptical of such themes.*

Concerning sentences according to purpose, we can see that the most sentences are declarative: *No one knows how much unrecycled plastic waste ends up in the ocean, Earth's last sink.* Although our ST is rather objective, the author also expresses her opinion in a subjective way and wants to show emotion. One way to express this is by using interrogative sentences: *How did we get there? When did the dark side of the miracle of plastic first show itself?* When talking about rhetorical questions it is important to mention that they are characteristic of publicist style.

2 Anticipation of translation problems

Having completed the first phase of the translation process we can move to the next phase, which is the anticipation of translation problems. "In Slovak/English as well as in other languages, every translation is faced with specific individual problems of culture specific expressions connected with naming extra linguistic reality (social and cultural context) and use of language, for example in translation of names (proper names, names of institutions, geographical names), idioms, metaphors, nonstandard and similar expressions (regional and social dialects), abbreviations, puns, foreign expression, onomatopoeic words, neologisms, etc" (P Kvetko, 2012:54, free translation). In our Source text we need to take all of these factors in consideration and anticipate translation problems which could occur following from linguistic and cultural dissimilarities of both languages. The process of translation is very complex and difficult as Gromová states. Even though it seemingly appears in the translation process that the translator works only

with the language and the main substance is only secondary, actually it is an in-depth recoding of the substance and cultural core (E. Gromová, 2003, free translation). In our translation, we are not only going to transfer morphemes, words and phrases from the SL into TL, but moreover we will decode and transfer meaning and consider cultural dissimilarities. However, how can this be effectively done and how can mistakes in translation be prevented? One of the answers is the anticipation of translation problems, we need to analyse where and how they are likely to occur. This is very closely related to the structure and type of both the SL and TL. In our case, it is English and Slovak; they both belong to a different language family and therefore have different morphological and syntactical structure. Furthermore, lexical level is to be considered, especially because our ST contains a lot of terms and scientific concepts, which must be translated correctly. Not only this but also knowledge of the cultural background is very important for the translator.

It can come to shifts in the process of translation; they represent changes occurring in the translation process. Shifts arise in the process of interpretation and in paradox do not have to mean incorrectness and departure from correspondence between the SL and TL. Levý distinguishes three main reasons for shifts in translation: incorrect understanding of the original text, the process of interpretation and in the process of restyling the original text (Levý 1983: 51-58). To avoid shifts in translation occurring because of incorrect understanding of the ST and to reach equivalence between both languages it is important to anticipate the translation problems.

2.1 Linguistic problems

At the beginning, we are going to look at problems from the linguistic point of view. As already mentioned the reason for linguistic problems is the difference between the SL and the TL system. “The vocabulary of two languages is not the same. The differences and difficulties may occur at word level or above word level- collocations, set expressions- idiomatic or non-idiomatic” (P. Kvetko. 2012: 31, free translation). The difference can be in form of vocabulary or structure. Shift caused by vocabulary may result in shift of meaning; however shift in structure does not normally change the meaning of the original text. As we will see it can come to many shifts during the translation process, e.g. changing the word sequence in a sentence, change from one word

class to another, shifts in tenses, sentence structure and lexis. The translator has to find the best equivalent; he has to know the structure of both languages.

We need to consider that our ST is a popular science article with a lot of terms and specialized terminology. The ST deals with special terminology from the area of ecology and natural environment with many expressions from biology and chemistry. We will need to make a background research before starting the translation and we will also work with other parallel texts dealing with the same topic. Considering the lexis, there are many professionalisms and international words, which need to be translated correctly into the source language. We also need to be aware of false friends because of similarities of a word in TL in form or pronunciation to a word in SL, it can lead us to believe that they have the same meaning. As Munday says, “there are lexical and grammatical false friends, the former being the more frequent and important type” (J. Munday, 2009:188). Moreover, there is a huge number of proper nouns; the usage of capital letters is different in Slovak than it is in English. We need to follow the rules of the Slovak language.

The next problem we may encounter is of morphological character, more specifically the substitution of word classes. The reason for this is that word classes do not always have the same word function in the SL and TL. In English, it often comes to conversion of word classes meaning that one word can be of different word classes according to the position and word order of the sentence. For example, a noun can change into a verb or an adjective.

Furthermore, we need to consider the syntactical character of both languages. English language has a given word order; the word order of an English sentence is Subject + verb + object. Grammatical relations are expressed in the means of word order and prepositions. On the other hand, Slovak language does not have a strictly given word order, which would have to be followed in each sentence. Grammar is expressed in means of endings, what is typical of analytic languages. We need to be aware of all these facts before starting the translation.

In the previous chapter, we analysed the source text and found out that there are many difficult and long sentence constructions in the ST. This is typical of popular science and publicist articles. In some cases, we will be forced to change the sentence construction and word order to maintain the grammatical rules of Slovak language.

“While the original text is determined by the source language grammatical norms, the target text is determined by the grammatical principals/norms of the target language. However, grammatical systems in two languages may be different. Problems with

grammar equivalence may occur because of the absence of certain grammatical categories or a different application of these categories” (P. Kvetko, 2012: 41, free translation). Concerning grammar norms of English and Slovak, differences may occur with different use and distinction in number, gender and person.

The next problem is concerning grammatical voices. English language prefers the usage of passive voice whereas Slovak language usually avoids passive and prefers active voice. Excessive usage of passive voice is unnatural for Slovak language. Here we need to be especially watchful because in some cases, using the passive voice is part of the author’s intention to create a scientific and research type of text and in these cases it might be needed to also use passive voice in the TT.

We must not forget anticipating problems of grammar tenses. Using a bigger variety of tenses is a typical feature for English language. This needs to be considered in the translation process and we need to be aware of the fact that this often results in shifting grammatical tenses. We will need to differentiate between present tenses and present perfect tenses as well as past tense, which is used very frequently in our ST.

Thanks to the analysis of the ST, we know that there is a considerable number of proper nouns, names of institutions and companies. There could be a problem when translating some of them. We will need to work with parallel sources and verify if any of them have already been translated into the TL. In our ST, we can also find many names of persons; we need to be aware that translation of names can often be problematic. “Names belong to the most specific parts of the original text since they represent the most typical side of a particular culture, for this reason, the original names are used, they are just accommodated to Slovak norms and conventions”(P. Kvetko, 2012:54, free translation).

2.2 Contextual problems

In order to understand the ST, we will need to work with other parallel articles written on the same topic. Correct understanding of the ST requires possession of specific vocabulary and knowledge of latest scientific research. Some expressions, mostly neologisms, might not exist in the SL or not have a proper equivalent. We will need to work with dictionaries and other specialized sources to gain the required background knowledge of the problematic. As mentioned in the previous chapters, we are dealing with a popular science article, it has many features in common with technical/scientific

texts and therefore needs exactness, it works with unambiguous notions and terms. We assume that these factors and features could possibly lead to misunderstanding and misinterpreting the text and cause contextual problems. “From the translation point of view, the main problem in these texts is exactness and terminology (esp. absence of some terms, neologisms, or the terms which are not yet fixed in the target language), which may not necessarily correspond in the two languages” (P. Kvetko, 2012:106, free translation). Insufficient knowledge could lead to an incorrect interpretation and to unwanted shifts in the translation. Our article would be published in the National Geographic magazine and therefore credibility and the correct interpretation of scientific facts is necessary.

2.3 Cultural problems

After considering the linguistic and contextual problems, we can anticipate cultural problems. Here needs to be taken into consideration, as Kvetko states, that SL has specific culture, tradition and norms which are different to the culture, tradition and norms of the TL (P. Kvetko. 2012: 18, free translation). We need to be aware that the ST comes from a different culture with a different background. To make the TT more understandable for the recipient it is needed to work with exotization and naturalization, the ST has to be kept in balance, which leads to a creolization of the translation.

Another point to be made is the different usage of units of measurement. We will need to convert some units into the ones commonly used in the Slovak language-culture context.

2.4 Typographical problems

Finally yet importantly, before starting the translation we need to anticipate typographical problems. By typographical problems, we mainly mean the correct usage of punctuation marks, which are different in both the SL and TL. Punctuation consists of rules and conventions, rules must be followed, conventions give the writer a greater choice. Although proceeding from the rules of English, we must follow the rules of Slovak in the TT.

As first we can have a look at the different use of dash and comma. In our ST we can find a huge number of dashes. We need to be aware that they are used differently in

English than in Slovak. In English, they are relatively common and have various functions. Dashes are used to set off phrases or words for emphasis, to introduce sentence conclusions or introductions, to mark extra phrases and to break up dialogue. In contrary, in Slovak they are not used so frequently and therefore we will usually replace them with a comma or a full stop, and divide the sentence in two. A frequent use of dashes, semicolons and colons could have a disruptive effect in a Slovak text.

Another problem could be writing of capital letters. Once again, we need to consider different rules in both the SL and TL. In English names of languages are written with a capital letter at the beginning (Russian, German, French), on the other hand names of languages are written with small letters in Slovak. Similarly, in English names of days and months are written with a capital at the beginning and in Slovak this is not the case. Furthermore, we have to consider different usage of quotation marks. The usage is similar in both languages; quotation marks are used mainly in direct speech, but also to draw attention to a word, to indicate an unusual use of word, and to show that the writer wants to be distanced from a word. In our Source text we can find a big number of direct speeches which need to be transferred into the TT correctly, therefore we need to know the rules for writing quotation marks in Slovak. In English single quotation marks are placed around an expression, whereas in Slovak double quotation marks are used down left at the beginning of the quote and up right at the end.

The different usage of comma could also be a problem. In compound sentences, it is obligatory to write a comma before a subordinate conjunction, the most common one in our ST is 'that'. On the contrary, according to English rules we do not write a comma in a case like this. Because of this, we will need to be especially careful when writing commas in our ST.

Because of the fact that we are dealing with a popular science article, in the ST there is a number of exact digital data. As Kvetko says in non-literary texts, the most important function is the informative function, based on notions (P. Kvetko. 2012.106, free translation). We need to be careful when rewriting numbers and we need to stay accurate and watch out for any mistake. One of the differences between the SL and TL is in the writing of decimal numbers. In English decimal point is used to separate the whole number part from the fractional part of the number. Slovak language uses a comma when referring to decimal numbers. In our ST, we can find a lot of decimal numbers, percentage rates and measurements data.

3 Translation into the source language

PLAST

Stvorili sme ho

ľahký, pevný a lacný materiál, ktorý sme vynali pred 150 rokmi

sme od neho závislí

dnes nám pomáha zachraňovať ľudské životy a vďaka nemu môžeme lietať

a teraz sa v ňom topíme

viac ako 40% plastu je určených len na jednorazové použitie, v oceáne každý rok skončí približne 9 miliónov ton

Doba využitia plastovej tašky je v priemere 15 minút

Laura Parkerová

Photographer: Randy Olson

Published in National Geographic in June 2018



Noorjahan vystiera kusy plastov umyté v rieke Buriganga v meste Dháka v Bangladéši, aby sa usušili, pričom ich musí pravidelne otáčať a popritom sa venovať synovi Momo. Nakoniec sa plast predá recyklačnej spoločnosti. Celosvetovo sa recykluje menej ako pätina všetkého plastu. V USA je to menej ako 10 percent.



Takto vyzerá fontána Cibeles pred radnicou v centre Madridu, je preplnená plastovými fľašami. Umelci zo spolku Luz-interruptus naplnili túto a ďalšie dve fontány v Madride šesťdesiatimi tisícmi odhodnených plastových fliaš, aby upriamili pozornosť na to, aký dopad má jednorazový plast na životné prostredie.

Ak by bol plast vynájdený v dobe, keď sa prví osadníci plavili z anglického mesta Plymouth do Severnej Ameriky a na lodi Mayflower by mali plno PET fliaš s vodou a jedlo v plastových obaloch, je veľmi pravdepodobné, že by sme aj o stáročia neskôr stále nachádzali plastový odpad.

Ak by sa vtedy osadníci správali ako mnohí ľudia dnes a cez palubu by jednoducho vyhadzovali prázdne fľaše a obaly, vlny Atlantiku a slnko by plast postupne rozložili na drobné kúsky. V oceánoch by plávali ešte dnes a boli by plné toxínov. Zhltna by ich buď nejaká nešťastná ryba alebo ustrica, a nakoniec možno aj jeden z nás.

Keď som nedávno cestoval vlakom pozdĺž južného pobrežia Anglicka do Plymouthu, uvažoval som, že by sme mali byť radi, že osadníci plast ešte nepoznali. Mal som sa stretnúť s niekým, kto by mi mohol pomôcť pochopiť do akej šlamastiky sme sa dostali so všetkým tým plastom, ktorý sa nachádza hlavne v oceánoch.

Keďže sme plast vynašli až koncom 19. storočia, a vo veľkom sa začal vyrábať až v roku 1950, máme teraz "iba" 9.2 miliardy ton plastu. Z toho 6.9 miliardy ton sa už zmenilo na odpad. Vedci boli šokovaní keď v roku 2017 vypočítali, že neuveriteľných 6,3 miliardy ton sa nikdy nedostalo do košov určených na recykláciu.

Nikto presne nevie koľko nerecyklovaného odpadu končí v oceáne, smetisku našej Zeme. V roku 2015 upútala svojim odhadom pozornosť Jenna Jambecková, profesorka environmentálneho inžinierstva na Univerzite v Georgii. Len z pobrežných oblastí skončí v oceáne každý rok 5,3 až 14 miliónov ton plastového odpadu. Ona a jej kolegovia tvrdia, že väčšina tohto odpadu nepochádza z lodí. Najmä v Ázii ho ľudia ľahkomyselne odhadzujú na zem alebo do riek. Do mora ho buď zaveje vietor alebo sa tam dostane vodou. Profesorka Jambecková hovorí, predstavte si päť igelitových nákupných tašiek plných plastového odpadu, ktoré by boli rozložené na každom metri po pobreží na celom svete. Zodpovedá to približne 8,8 miliónom ton, takéto množstvo podľa jej odhadu končí každý rok v oceáne. Zatiaľ nie je známe, ako dlho bude trvať kým sa tento plast úplne rozloží na základné molekuly. Podľa odhadov to môže trvať viac ako 450 rokov, dokonca sa plast nemusí rozložiť nikdy.

Kvôli plastu každý rok v oceánoch zomierajú milióny morských živočíchov. Vieme, že plastový odpad má dopad na takmer 700 druhov živočíchov, medzi ktoré patria aj ohrozené druhy. Pre niektoré plast predstavuje viditeľnú hrozbu, pretože sa zamotávajú do odhodnených rybárskych sietí alebo plastových obalov. Oveľa viac je ich

pravdepodobne ohrozených neviditeľne. Morské živočíchy všetkých veľkostí, od planktónu až po veľryby, požírajú čiastočky mikroplastov, ktoré nemajú ani pol centimetra. Po jednej z havajských pláží som sa prechádzala po členky zaborená v mikroplastoch. Táto pláž sa na prvý pohľad zdala nedotknutá, keďže ku nej neviedla žiadna udržiavaná cesta. Plasty mi pod nohami praskali ako chrumkavé cereálie. Po tomto zážitku som pochopila, prečo niektorí ľudia považujú plasty v oceáne za vynárajúcu sa hrozivú katastrofu, o ktorej by sa malo hovoriť v rovnakom duchu ako o klimatickej zmene. Na konferencii OSN, ktorá sa uskutočnila minulý rok v decembri v kenskom Nairobi, označil riaditeľ Programu pre ochranu životného prostredia tento problém ako „Armagedon oceánov“.



Morské koníky sa prichytávajú na chaluhy alebo iné prírodné časti, ktoré plávajú v morských prúdoch, aby sa nimi mohli nechať unášať. Tento morský koník zvierá plastovú vatovú tyčinku niekde v znečistených vodách pri indonézskom ostrove Sumbawa. „Želal by som si, aby táto fotografia radšej neexistovala.“ Hovorí fotograf Justin Hoffman.

A predsa je medzi nimi kľúčový rozdiel: plast v oceánoch nie je taký komplikovaný problém ako klimatická zmena. Nikto nepopiera množstvo odpadu v oceánoch, teda aspoň zatiaľ nie. Nato, aby sme s tým niečo urobili, nemusíme pretvoriť celý energetický systém našej planéty.

„Toto nie je jeden z tých problémov, na ktorý by sme nepoznali riešenie,“ hovorí Ted Siegler, ekonóm z Vermontu, ktorý už viac ako 25 rokov pomáha riešiť otázku odpadu v rozvojových krajinách. „Vieme ako zbierať odpadky. Každý to dokáže. Vieme ako sa odpadu treba zbaviť. Vieme recyklovať.“ Ide o to, že je potrebné vybudovať inštitúcie a systémy, hovorí. V najlepšom prípade ešte predtým, ako sa oceány na celé stáročia stihnú zmeniť na riedku polievku plnú plastov, čo sa už nebude dať zmeniť.

V šere anglickej jesene, na kraji prístavu, v žltom pršiplášti čakal Richard Thompson pred námornou stanicou Univerzity Plymouth v Coxside. Štíhly 54-ročný muž, čelo mu

lemovali šedivé vlasy. Thompson pracoval ako bežný morský ekológ. Vo svojej doktorandskej práci sa venoval výskumu prílipiek a mikrorias rastúcich na pobrežných skalách, keď sa v roku 1993 po prvýkrát zúčastnil na čistení pláže na ostrove Man. Zatiaľ čo sa ostatní dobrovoľníci zameriavali len na plastové fľaše, tašky a siete, Thompson si všímal drobné čiastočky, ktoré im pri vysokom prílive nepovšimnuté ležali pod nohami. Najprv si nebol ani istý, či ide o plast. Musel sa obrátiť na forenzných chemikov, aby mu to potvrdili

V tej dobe sa objavila v akademických kruhoch záhada, ktorú bolo treba vyriešiť: Vedci sa čudovali prečo v mori nenachádzajú ešte viac plastov. Svetová produkcia plastov sa exponenciálne zvýšila, v roku 1950 predstavovala 2,3 miliónov ton, v roku 1993 narástla na 162 miliónov a v roku 2015 až na 448 miliónov ton. Znepokojujúce bolo, že sa v takejto miere úmerne nezvyšovalo množstvo plastov plávajúcich v oceáne a vyplavených na pláže. „Preto vzniká otázka: Kde je všetok ten plast?“ hovorí Thompson. „To, do akej miery plast škodí životnému prostrediu nedokážeme zistiť, pokiaľ nebudeme vedieť, kde sa všetok nachádza.“

Počas rokov, ktoré nasledovali po jeho prvom čistení pláže, sa Thompson podieľal na zodpovedaní tejto otázky: Stratený plast sa láme na čiastočky tak malé, že ich je len ťažko zbadať. V štúdiu z roku 2004 použil Thompson, na označenie týchto drobných čiastočiek, po prvýkrát pojem mikroplasty. Jeho predpoklad, že by sa mohli v oceánoch rozsiahle hromadiť, sa ukázal ako pravdivý.

Keď sme sa minulú jeseň stretli v Plymouthe, Thompson a dvaja jeho študenti práve dokončili štúdiu, v ktorej poukazujú na to, že vlny a slnečné žiarenie nie sú jedinými faktormi, ktoré rozkladajú plast. V laboratóriu pozorovali rôznonožky druhu *Orchestia gammarellus*, malé kôrovce podobné krevetám žijúce v európskych pobrežných vodách, ako požierajú kúsky plastových tašiek. Zistili, že dokážu rozložiť jedinú tašku na 1,75 miliónov mikroskopických úlomkov. Thompsonov tím zistil, že tieto malé tvory dokážu plast rozožrať rýchlo najmä vtedy, keď je pokrytý mikrobiálnym slizom, ktorý je ich normálnou potravou. Plastové časti nakoniec buď vyplávajú alebo vylúčia.

Mikroplasty sme našli na každom mieste v oceáne kam sme sa dostali, od usadenín v hĺbinách na morskom dne až po ľadovce plávajúce na Arktíde. Ak sa tieto ľadovce začnú topiť, mohlo by sa podľa jedného odhadu počas nasledujúcich desiatich rokov uvoľniť do vody až bilión častíc plastu. Na niektorých havajských plážach tvoria zrná

mikroplastov až 15% piesku. Na pláži Kamilo, po ktorej som sa prechádzal, sa zachytávajú plasty zo severoatlantického prúdu, najznečistenejšieho z piatich prúdov, ktorými sa plast prepravuje naprieč oceánmi, a potom sa hromadí v obrovských zhľukoch. Pláž Kamilo je zaplnená košmi na bielizeň, fľašami a nádobami s čínskymi, japonskými, kórejskými, anglickými a občas aj ruskými etiketami. Na Hendersonovom ostrove, neobývanom korálovom ostrove v Tichom oceáne, sa našlo neuveriteľné množstvo plastového odpadu z Južnej Ameriky, Ázie, Nového Zélandu, Ruska a dokonca aj z ďalekého Škótska.



„Plastiglomerát“ nájdený na pláži Kamilo. Je to druh horniny, ktorý vzniká zlepením plastových úlomkov s pieskom, kameňmi, mušľami a korálmi. Môže vzniknúť pôsobením tepla, napríklad pri opekačke na pláži. Geológovia si myslia, že by sa mohol stať trvalým znakom toho, aký máme vplyv na našu planétu.

Počas nášho rozhovoru s Thompsonom, nás prielivom z Plymouthu po mierne sčerených vodách unáša loď s menom Delfín. Thompson rozvinul jemnú sieť, ktorú označujú ako manta trawl a ktorá sa väčšinou používa na chytanie planktónu. Nachádzali sme sa blízko miesta, kde pred niekoľkými rokmi iní výskumníci chytili 504 rýb desiatich rôznych druhov a dali ich Thompsonovi. Pri ich pitvaní s prekvapením zistil, že sa v črevách, až tretiny týchto rýb nachádzajú mikroplasty. Tento nález sa objavil na titulných stranách médií po celom svete.

Potom čo sme sa chvíľu plavili, vytiahol Thompson sieť na planktón von z vody. Na spodku ležali roztrúsené farebné konfety plastu. Thompson si nerobí ťažkú hlavu z toho, že by mohli mikroplasty skončiť na jeho tanieri. Zatiaľ nemáme dost' dôkazov o tom, že by mikroplasty mohli preniknúť z vnútorností rýb do samotného mäsa, ktoré konzumujeme. (Viac v článku na strane 84.) Starosti mu však robí niečo iné. Je to práve, to čo nikto z nás nedokáže vidieť. Ide o chemikálie pridávané do plastov, ktoré majú

zlepšiť ich vlastnosti, napríklad zabezpečiť tvárnosť, a dokonca ešte menšie nanoplasty, ktoré pravdepodobne vznikajú rozkladom mikroplastov. Tieto by mohli preniknúť až do tkanív rýb a ľudí.

„Vieme, že koncentrácia chemických látok je pri výrobe v niektorých prípadoch veľmi vysoká,“ hovorí Thompson. „Nevieme však, koľko z týchto chemikálií zostane v malých úlomkoch plastov, ktoré môžu zožrať ryby. “Nanočastice zatiaľ nikto reálne nenašiel, nedajú sa ešte zaznamenať analytickými prístrojmi. O ich existencii sa ľudia zatiaľ len domnievajú. Je vysoko pravdepodobné, že by sa mohli ukladať v tkanivách, čo by bolo už oveľa horšie“

Thompson si pri tejto téme dáva pozor, aby nepredbiehal vedecké dôkazy. Nechce spôsobovať rozruch, ale je presvedčený, že plastový odpad v oceánoch zďaleka nie je len estetickým problémom. „Podľa mňa by sme nemali čakať na nejaké kľúčové zistenie o tom, či je alebo nie je nebezpečné jesť ryby,“ hovorí. „Máme dosť dôkazov na to aby sme konali.“



V magazíne Life z roku 1955, oslavuje rodina zrod konzumného života, ktorý z časti umožnili práve jednorazové plasty. Plasty určené na jedno použitie uľahčili život ľuďom po celom svete, ale taktiež tvoria väčšinu plastu, ktorým sú teraz zaplnené oceány.

ŽIVOTNOSŤ PLASTU

Už je to viac ako jedno storočie, odkedy boli vyrobené prvé plasty z fosilného paliva. Vo veľkom sa začali používať po Druhej svetovej vojne, a dnes sú súčasťou všetkého od áut, cez zdravotnícke zariadenia, až po obaly potravín. Doba ich použitia je rozličná. Keď ich zahodíme, začínú sa rozpadáť na menšie čiastočky, pokiaľ sa úplne rozložia a zmiznú trvá celé stáročia.

Celosvetová produkcia plastu v priemysle v miliónoch ton

Môže za to aj Druhá svetová vojna
Nedostatok prírodných materiálov počas vojny zapríčinil to, že ľudia začali hľadať iné syntetické alternatívy. Produkcia plastov sa enormne zvýšila, čo trvá až do dnešnej doby.

1973 ropná kríza

Rast v Ázii
S rastúcou ekonomikou v Ázii rastie dopyt po spotrebných tovaroch, a tým aj dopyt po plastoch. Polovica všetkých plastov sa vyrobí práve tu, z toho 29 % v Číne.

2008
recesia

Celkový počet
448 miliónov ton vyprodukovaných v roku 2015

Ostatné
52 miliónov
súčasťou je zdravotníctvo a poľnohospodárstvo

5 rokov ◀ Priemerná doba využitia plastu pred vyhodením.

Stavebníctvo
72 miliónov

35 rokov

Priemyselné stroje
3 milióny

20 rokov

Doprava
30 miliónov

13 rokov

Elektrárenský priemysel
19 miliónov

8 rokov

Textílie
65 miliónov

5 rokov

Spotrebné tovary
46 miliónov

3 roky

Obaly
161 miliónov

Menej než šesť mesiacov

V súčasnosti sa najväčšie množstvo plastu používa na výrobu obalov. Tie tvoria takmer polovicu plastového odpadu, ktorý sa celosvetovo vyprodukuje, väčšina sa vôbec nerecykluje ani nespracuje v spaľovni.

1950 1960 1970 1980 1990 2000 2010 2015



Táto biliardová guľa z 19. storočia je vyrobená z celuloиду, jedného z prvých plastov, ktoré nahradili slonovinu; už v tej dobe bola slonovina čoraz vzácnejšia a bol jej nedostatok.

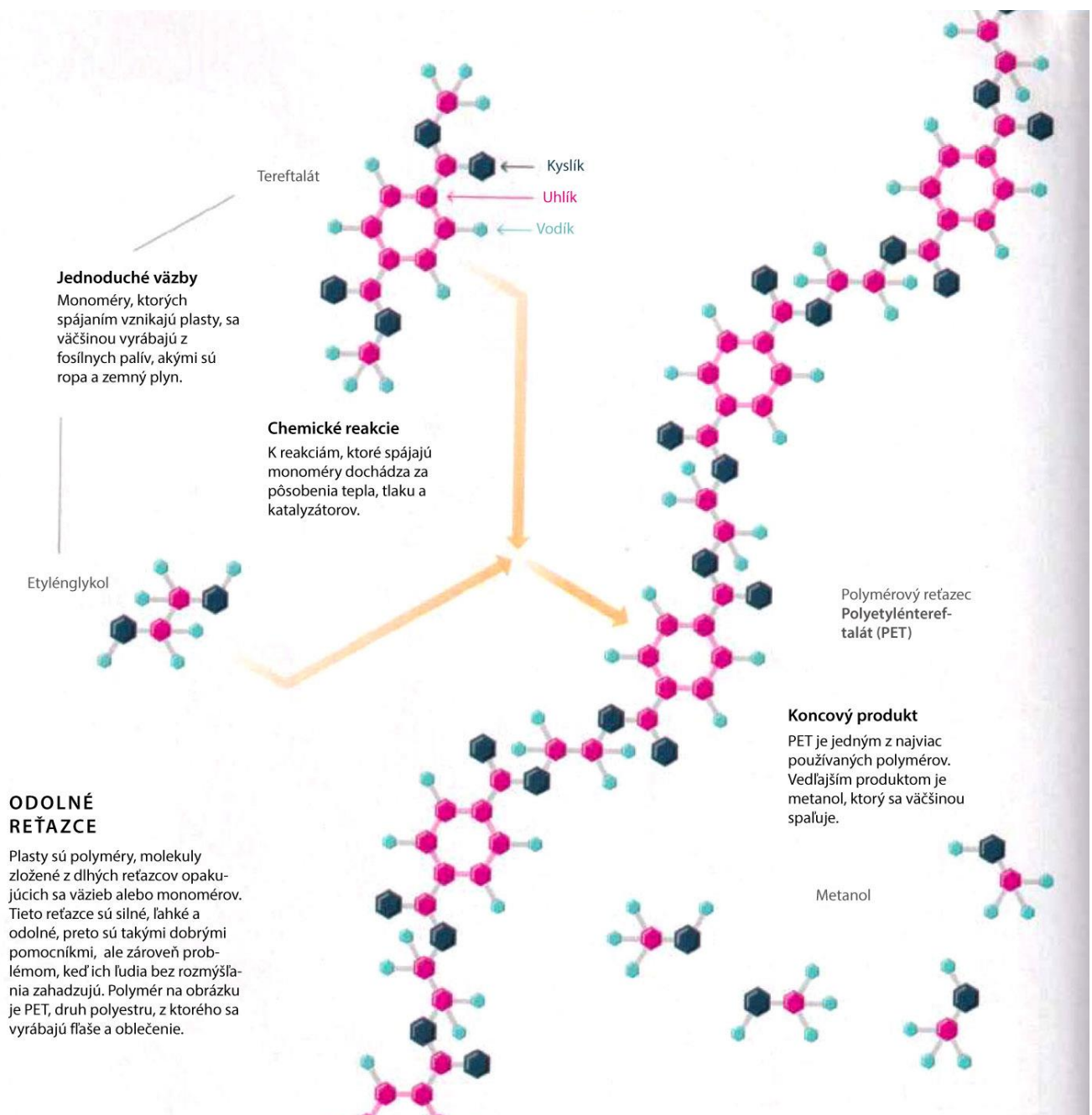
Ako sme sa dostali až sem? Kedy nám zázračné plasty ukázali svoju temnú stránku? Rovnakú otázku by sme si mohli položiť o mnohých zázrakoch našej doby plnej technických vynálezov. Odvtedy, kedy plasty pomohli spojencom vyhrať Druhú svetovú vojnu, napríklad vďaka výdobytkom ako nylónové padáky a ľahké súčiastky do lietadiel, plasty zmenili životy všetkých nás v takom rozsahu, ako len málokterý objav predtým, a to vo väčšine prípadov k lepšiemu. Uľahčili nám cestovať do vesmíru, a taktiež znamenali prevrat v medicíne. V dnešnej dobe sú súčasťou každého auta a lietadla, čím ich odľahčujú, a tým šetria palivo a zároveň životné prostredie. Vyrábajú sa z nich obaly ľahké ako pierko, ktoré predlžujú životnosť čerstvých potravín. Plasty zachraňujú životy každý deň ako súčasť airbagov, inkubátorov, prilieb alebo obyčajných, dnes už často nenávidených, jednorazových fliaš, pomocou ktorých sa voda dostáva k chudobným ľuďom.

Práve jedno z ich prvých použití zachránilo život veľkému množstvu divých zvierat. V polovici 18. storočia sa klavírne klávesy, biliardové loptičky, hrebene a rôzne druhy bižutérie vyrábali zo vzácného prírodného materiálu slonoviny. Keďže populácia slonov bola v ohrození a slonovina drahá a málo dostupná, ponúkla newyorská biliardová spoločnosť odmenu 10 000 dolárov tomu, kto vymyslí alternatívu.

Ako píše Susan Freinkelová vo svojej knihe *Plastic: A toxic love story* (Plast: toxický príbeh lásky, preklad: S.K.), amatérsky vynálezca John Wesley Hyatt túto výzvu prijal. Vynašiel nový materiál celuloid, ktorý sa vyrábala z celulózy, polyméru, ktorý sa nachádza vo všetkých rastlinách. Hyattova obchodná spoločnosť sa chválila tým, že už nebude nutné „plieniť zem“ v snahe získať prírodné materiály, ktorých je stále menej a menej. Okrem toho, že tento objav zachránil aspoň zopár slonov, prestal byť biliard vďaka

celuloidu len kratochvíľou aristokracie, ktorú dovtedy predstavoval, a začali ho v baroch hrávať aj obyčajní chudobní ľudia.

Toto je len triviálny príklad toho, čo spôsobila revolúcia plastov, znamenala vstup do éry nadbytku. Na obrátkach nabrala začiatkom 20. storočia, keď sa plasty začali vyrábať z ropy, nového zdroja veľkého množstva lacnej energie. Komínmi ropných spoločností unikali odpadové plyny ako napríklad etylén. Chemici zistili, že tieto plyny sa dajú použiť ako stavebné bloky, monoméry, na tvorbu nových polymérov, akými sú napríklad polyetyléntereftalát alebo PET. Nemuseli tak pracovať len s polymermi, ktoré existujú v prírode. Otvoril sa im svet plný možností. Z plastu sa dalo vyrobiť skutočne všetko, a tak sa vďaka ich nízkej cene aj stalo.



Boli až také lacné, že sa začali vyrábať veci na jednorazové použitie. V roku 1955 ospevoval časopis "Life" oslobodenie americkej ženy od otroctva domácich prác. "Život s produktami na jedno použitie", znel titulok, pod ktorým bola zobrazená rodina ako do vzduchu vyhadzuje tanier, poháre a príbor. V texte sa písalo, že ich umytie by trvalo štyridsať hodín. „Teraz si však s tým žiadna žena v domácnosti nemusí robiť starosti.“ Kedy začali plasty odhaľovať svoju temnú stránku? Dalo by sa povedať, že v momente, keď odpad na fotke dopadol na zem.“

Produkcia rastie takým tempom, že polovica doteraz vyprodukovaných plastov bola vyrobená za posledných 15 rokov.

O šesť desaťročí neskôr, je zo 448 miliónov ton plastu, ktorý sa každý rok vyrobí, približne 40% určených na jednorazové použitie. Väčšinu tvoria obaly, ktoré zahodíme chvíľku po tom ako si tovar kúpime. Produkcia rastie takým tempom, že polovica doteraz vyprodukovaných plastov bola vyrobená za posledných 15 rokov. Spoločnosť Coca-Cola, ktorá je pravdepodobne najväčším producentom plastových fliaš, minulý rok po prvýkrát priznala aké množstvo ich vyrobí. Je to 128 miliárd fliaš ročne.

Naše možnosti hospodárenia s odpadom nestíhajú držať krok s takou enormnou produkciou plastov. Kvôli tomu sú ohrozené oceány. „Nie je prekvapujúce, že sme narušili systém,“ hovorí Jambecková. „Taký nárast by nevydržal žiaden systém, ak by na to nebol pripravený. V roku 2013 uverejnila skupina vedcov nový článok o konzumnom životnom štýle. V časopise Nature vyhlásili, že plast určený na jednorazové použitie by sa nemal označovať ako pomocník v domácnosti, ale ako nebezpečný materiál.“

Za posledné roky sa zvýšila produkcia plastov najmä kvôli jednorazovým plastovým obalom, ktoré sa v rozvíjajúcich ázijských krajinách používajú stále viac. Systém zberu a triedenia odpadu je v týchto krajinách často zaostalý alebo vôbec neexistuje. Jambecková odhaduje, že v roku 2010 pochádzala polovica netriedeného odpadu len z piatich ázijských krajín, a to Číny, Indonézie, Filipín, Vietnamu a Srí Lanky.

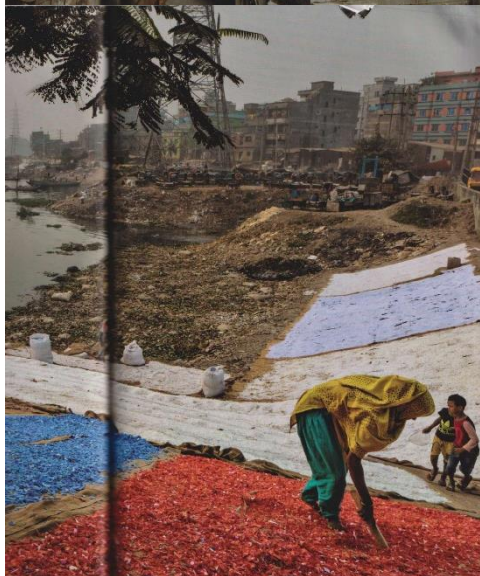
„Predpokladajme, že by sa v celej Amerike a Európe recykloval odpad na 100%,“ hovorí Ramani Narayan, profesor chemického inžinierstva na Michiganskej univerzite, ktorý taktiež pracuje v jeho rodnej Indii. „Stále by sme nedokázali znížiť množstvo plastov v oceáne. Ak chceme naozaj niečo zmeniť, musíme ísť do týchto problémových krajín, a tam riešiť problém nerecyklovaného odpadu.“



Pod mostom pri ramene rieky Buriganga v Bangladéši pracuje rodina, ktorej činnosť spočíva v tom, že odlepuje etikety z plastových fliaš a triedi zelené fľaše od bielych, aby ich mohla predat' obchodníkovi s odpadom. Zberači odpadu zarábajú mesačne v priemere 100 dolárov.



Do recyklačného zariadenia vo Valenzuele na Filipínach prichádzajú nákladné autá plné plastových fliaš. Pochádzajú z ulíc Manily, kde ich pozbierali zberači odpadu a následne predali obchodníkom s odpadom, ktorí ich privážajú až sem. Tu plastové fľaše a vrchnáky putujú do drvičky, potom ich predajú do ďalšieho zariadenia, kde recyklácia pokračuje, a nakoniec sa exportujú.



Na brehoch rieky Buriganga sa sušia farebné plastové úlomky. Zbierajú, umývajú a triedia sa ručne. Približne 120 000 ľudí pracuje v neoficiálnom recyklačnom priemysle v Dháke a jej okolí. 18 miliónov obyvateľov Dháky vyprodukuje denne približne 11 000 ton odpadu.

Kedysi rieka Pasig veľkolepo pretekala centrom Manily, hlavného mesta Filipín, a vlievala sa do Manilského zálivu. Bola vzácnou vodnou cestou a pýchou obyvateľov Manily. Teraz je jednou z desiatich riek, ktorými sa do oceána dostane najviac plastového odpadu. Každý rok sa ňou plaví až 72 000 ton, a to najmä v období monzúnových dažďov. V roku 1990 rieku Pasig vyhlásili za biologicky mŕtvu.

V roku 1999 bola založená Komisia pre obnovu rieky Pasig, ktorá sa ju snaží vyčistiť a už možno vidieť niektoré zmeny k lepšiemu. Jose Antonio Goatia, výkonný riaditeľ, nestráca optimizmus a verí, že sa im jedného dňa podarí rieku vrátiť do pôvodného stavu. Pritom je mu jasné, že ich nečaká ľahká úloha. „Najlepšie by asi bolo plastové tašky zakázať,“ hovorí.

To, že zostáva veľa práce sa dá jasne vidieť každý deň. Pasig má 51 prítokov, niektoré z nich sú preplnené plastovým odpadom z nelegálnych osád, ktorých chatrče sa nakláňajú ponad brehy riek. Jeden z týchto prítokov neďaleko Chinatown, kde sú polorozpadnuté chatrče roztrúsené medzi modernými budovami, je taký zapchaný plastovým odpadom, že vytvára akýsi pomyselný most a dá sa po ňom prechádzať z jednej strany na druhú. Pláže Manilského zálivu boli kedysi miestom oddychu pre 13 miliónov manilských obyvateľov, dnes sú znečistené odpadom, väčšinu ktorého tvoria plasty. Minulú jeseň sa organizácia Break Free From Plastic (Oslobodenie od plastu, preklad:S.K.), ktorej súčasťou je Greenpeace a ďalšie skupiny, rozhodla vyčistiť pláž na ostrove Freedom, ktorá je vyhlásená za ekoturistickú destináciu. Dobrovoľníci vyzbierali 54 260 kusov plastu, od topánok až po obaly z potravín. Za ten čas, čo som pláž znova navštívila, bola opäť zahádzaná fľašami, obalmi a nákupnými taškami.

Rovnaká scenéria ako na Manile je typická pre obrovské, preľudnené mestské centrá naprieč Áziou. V husto zaľudnených Filipínach, kde žije 105 miliónov obyvateľov, sú základné otázky verejného zdravia ešte stále problémom. Vyskytujú sa tam choroby prenášané vodou ako napríklad brušný týfus a bakteriálna hnačka. Niet sa čomu čudovať, že majú problém zvládnuť nával plastového odpadu. V Manile a v ďalších sedemnástich samosprávach existuje metropolitný systém hospodárenia s odpadom, ktorý je však chaotický a neefektívny. Už v roku 2004 nemali dostatok územia na prevádzku bezpečných skládok. Krízová situácia, spôsobená týmto nedostatkom pretrváva až dodnes.

Aspoň z časti to zachraňuje neoficiálny recyklačný priemysel, ktorý tvoria tisíce zberačov odpadu. Jedným z nich je tridsaťštyriročný Armando Siena. Spolu s jeho o tri roky mladšou ženou strávili celý život obklopení odpadom. Narodili sa na mieste s názvom Smokey Mountain, je to celosvetovo známa skládka, ktorú oficiálne zrušili v deväťdesiatych rokoch. Spolu so svojimi tromi deťmi žijú teraz na pobreží v jednoizbovom byte, ktorý osvetľuje jediná žiarovka, zariadenie tvoria plastové stoličky, nemajú zavedenú vodu, plyn a ani kanalizáciu, nevlastnia posteľ ani chladničku. Bývajú

v slume Aroma, ktorý je tak isto ako aj susedný slum Happyland (Šťastná zem), zahádzaný odpadom. Každý deň sa Siena odvezie na svojom polorozpadnutom bicykli za hranice Aromy, kde po okolí hľadá recyklovateľný odpad a zbiera ho do prívesného vozíka za bicyklom. Najlepšie úlovky sú plastové nádoby na polievku, za ktoré dostáva 20 pesos (38 centov) na kilogram. Siena potom tento odpad triedi a následne predáva do zberne odpadu, ktorú vlastní jeho strýko. On ho odváža do recyklačných závodov v okrajových častiach Manily.

Zberači odpadu sú tiež súčasťou riešenia. Niektorí aktivisti namietajú, že jediné čo potrebujú je dostatok peňazí na prežitie. Organizácia Plastic Bank z Britskej Kolumbie prevádzkuje v pobrežnom slame Baseco malú zberňu, kde môžu zberači odovzdať fľaše a tvrdý plast a tak si trochu privyrobiť. Tento plast sa potom za vyššiu cenu predáva nadnárodným spoločnostiam, ktoré z neho vyrábajú produkty a prezentujú ich ako spoločensky zodpovedné.

Siegler, ekonóm z Vermontu, k podobným projektom pristupuje skepticky, pretože má dostatok skúseností a pracoval už v mnohých krajinách. „Plasty nemajú dostatočnú hodnotu, aby to mohlo fungovať,“ tvrdí. „Výhodnejšie je financovať spoľahlivý systém spracovania odpadu, ako podporovať zbieranie plastu.“

Sieglerovi dáva za pravdu aj skutočnosť, akým plastom sú zaplavené manilské pláže a rieky. Väčšinu tvoria malé vrecúška, obaly produktov určených na jedno použitie, akými sú napríklad šampóny, zubná pasta, koreniny alebo iné výrobky. Milióny takýchto produktov sa predávajú chudobným ľuďom akým je Siena a jeho rodina, keďže si naraz nemôžu dovoliť kúpiť väčšie balenie. Po Manile poletujú obaly týchto výrobkov ako listy na jeseň. Nedajú sa recyklovať, zberači odpadu ich preto neodovzdávajú. Národná komisia pre nakladanie s pevným odpadom hovorí, „Takýto typ balenia je stále častejší a predstavuje veľkú výzvu, s ktorou sa pri spracovaní pevného odpadu musíme popasovať.“

Potom čo dobrovoľníci z Greenpeace vyčistili pláž na ostrove Freedom, uverejnili zoznam značiek obalov, ktoré pozbierali. Na prvom mieste skončila spoločnosť Nestlé, hneď za ňou Unilever. Na vine nie sú len ľudia, ktorí odpad odhadzujú, hovorí členka Greenpeace, Abigail Aguilarová. „Sme presvedčení, že tí, ktorí vyrábajú a propagujú plasty na jedno použitie sú hlavnými vinníkmi.“ Hovorkyňa spoločnosti

Unilever v Manile mi povedala, že spoločnosť pracuje na zavedení recyklovateľných obalov.

Keď v marci 2014 zmizol Boeing 370 spoločnosti Malaysia Airlines počas letu z Kuala Lumpur do Peking, pátralo sa po ňom od Indonézie až po Indický oceán. Táto udalosť bola stredobodom pozornosti médií celé týždne. Žiadne známky strokotaného lietadla sa neobjavili. Keď sa pri rozličných príležitostiach podarilo pomocou satelitných snímok odhaliť nahromadené predmety plávajúce na hladine, vždy skrsla nová nádej, že by mohlo ísť o trosky lietadla. Ale nebolo to tak. Všetko bol odpad, kusy dolámaných nákladných kontajnerov, odhodené rybárske náradie, a pravdaže plastové tašky.

Kathleen Dohanová, vedkyňa a riaditeľka Earth and space Research v Seattli, v celej tejto hrôzostrašnej situácii uvidela príležitosť. Satelitné snímky upútali pozornosť a poukázali na problém, o ktorý sa pred tým nikto nezaujímal. Vtedy mi povedala: „Po prvýkrát sa pozerá na to celý svet. Dobrá príležitosť, aby si ľudia uvedomili, že z oceánov sa stala skládka smetí.“ Dohanová vycítila, že nastal zlomový bod v povedomí verejnosti. Mnohé udalosti, ktoré nasledovali dokázali, že má pravdu.



Najväčší recyklačný podnik spoločnosti Recology v San Franciscu spracuje denne 500 až 600 ton odpadu. Je jedným z mála zariadení, ktoré prijímajú aj igelitové tašky. Za posledných dvadsať rokov zvýšili objem odpadu, ktorý dokážu recyklovať na viac než dvojnásobné množstvo. Zmiešaný plast putuje na dopravnom páse do optickej triedičky.



Spoločnosť Nestlé Waters, ktorá produkuje 11% všetkých balených nápojov na svete tvrdí, že od roku 1994 znížili množstvo plastu, ktoré sa používa na výroby pollitrových fliaš o 62%. Závod v Hollis, Maine, je najväčším závodom spoločnosti v Severnej Amerike.

RECYKLÁCIA AKO VÝZVA

Na rozdiel od roku 1980, kedy sa takmer vôbec nerecyklovalo, sa v súčasnosti celosvetovo recykluje 18% plastu. Plastové fľaše patria k najviac recyklovanému odpadu. Iné výrobky, napríklad plastové slamky, sa recyklujú ťažšie, a ľudia ich často len vyhadzujú.

Recyklovateľnosť podľa druhu plastu.*

-  Jednoduchá
-  Zvládnuteľná
-  Zložitá
-  Veľmi náročná

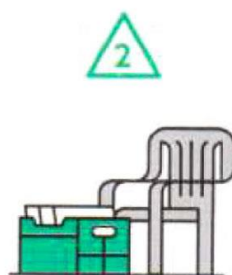
Percentuálne zastúpenie medzi celosvetovým plastovým odpadom, 2015



PET
Polyetylén tereftalát

Fľaše z nápojov, nádoby na jedlo, vlákna v oblečení a kobercoch, niektoré obaly zo šampónu a ústnej vody

11%



HDPE
High-density polyethylene
(plast s vysokou hustotou)

fľaše čistiacich a bieliacich prostriedkov, dózy na jedlo, obaly na mlieko, hračky, vedrá, plastové prepravky, črepníky, záhradný nábytok, odpadkové koše

14%



PVC
Polyvinyl chlorid

platobné karty, okenné rámy, zárubne, odkvapové rúry a potrubie, izolačné obaly drôtov a káblov, syntetická koža

5%

* Recyklovateľnosť je rozdielna v závislosti od regiónu, graf zobrazuje stav v Severnej Amerike. Všetok plast nie je recyklovateľný.



LDPE
Low-density polyethylene
(plast s nízkou hustotou)

fólie, igelitové tašky, bublinkové fólie, skladacie fľaše, izolačný materiál káblov a drôtov

20%



PP
Polypropylén

vrchnáky, slamky na pitie, prepravné nádoby na jedlo, chladiace boxy, textilné vlákna a vlákna kobercov, vode odolné materiály, plienky

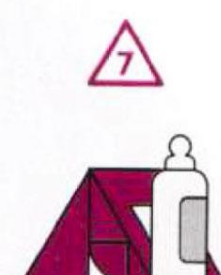
19%



PS
Polystyrén

plastové poháriky, obaly na vajcia, výplňový materiál do balíkov, vešiaky na oblečenie, obaly z jogurtov, izolácia, hračky

6%



OSTATNÉ

nylónové textílie, dojčenské fľaše, CD disky, nádoby na skladovanie medicínskych výrobkov, autosúčiastky, fľaše z automatov na vodu

24%

Na celom probléme s plastom nás môže najviac povzbudiť to, že sa mu v poslednom čase venuje tak veľa pozornosti. Taktiež vidieť reálnu, aj keď možno ešte nekonzistentnú snahu niečo zmeniť. Medzi dobré správy, ktoré sa stali od roku 2014 by sme mohli zaradiť všetky nasledujúce udalosti: Keňa sa stala jednou z mnohých krajín, ktoré zakázali používanie plastových tašiek, za porušenie zaviedla masťné pokuty a trest odňatia slobody. Francúzsko vyhlásilo, že do roku 2020 zakáže používať plastové tanier a poháre. V USA, Kanade, Spojenom Kráľovstve a štyroch ďalších krajinách vstúpi tento rok do platnosti zákaz používania mikroplastov v kozmetike. Z priemyselnej výroby sa postupne vyradujú .

Spoločnosti reagujú na ohlas verejnosti. Coca-Cola, ktorá taktiež vyrába vodu Dasani, si do roku 2030 určila za cieľ vyzbierať a recyklovať 100 % množstvo fliaš, ktoré vyrobí. Spolu s ďalšími nadnárodnými spoločnosťami ako je PepsiCo, Amcor a Unilever sa zaviazali do roku 2025 začať používať balenia, ktoré sa dajú úplne recyklovať, znova použiť alebo rozložiť. Pri výrobe vatových tyčiniek sa spoločnosť Johnson & Johnson vracia späť k papierovým paličkám namiesto plastových.

Zmeny robia aj jednotlivci. Britská jachtárka Ellen McArthurová založila nadáciu, ktorá propaguje „kruhovú ekonomiku“, v ktorej sú všetky materiály vrátane plastov navrhnuté tak, aby sa dali znova použiť alebo recyklovať a nie zahodiť. Herec Adrian Grenier sa zapojil do kampane proti používaniu plastových slamiek. Dvadsaťtriročný Boyan Slat z Holandska pokračuje v plnení svojho sľubu, ktorý si dal ako tínedžer- vyčistiť tzv. veľkú tichomorskú odpadkovú škvrnu. So svojou organizáciou sa mu podarilo vyzbierať 30 miliónov dolárov na zostrojenie zariadenia na čistenie oceánov, na ktorom sa momentálne ešte pracuje.

Všetky kroky, ktoré robíme majú zmysel, dokonca aj čistenia pláží, ktoré sa niekedy zdajú zbytočné. Práve vďaka jednému takému čisteniu pláže sa pred štvrtstoročím dostal Richard Thompson k problematike plastov. Skutočné riešenie spočíva podľa neho v tom, že by sme mali v prvom rade zabrániť tomu, aby sa plasty dostali do oceánov. Taktiež by sme mali zmeniť svoj celkový prístup k plastu – k tomuto neuveriteľnému produktu. „Vynaložili sme veľa úsilia na to, aby sa dali plasty čo najefektívnejšie využiť, ale na to, čo sa s nimi stane na konci ich používania sme akosi zabudli,“ hovorí. „Netvrdím, že plasty sú naším nepriateľom, len si myslím, že existuje veľa možností, ktorými by priemysel mohol prispieť k riešeniu tejto problematiky.“

Existujú dva základné spôsoby, akými môže priemysel pomôcť. Ak sám vyvinie iniciatívu alebo bude k tomu donútený. Po prvé môže spolu s vedcami, akými je Jambecková, vyvinúť plasty a plastové produkty, ktoré budú buď bio-rozložiteľné alebo sa budú dať lepšie recyklovať (viac v článku na strane 88). Z dlhodobého hľadiska je riešením problému plastov, jednak zavedenie nových materiálov, väčšia miera recyklácie alebo jednoducho to, že budeme plasty používať naozaj len v nevyhnutných prípadoch. Siegler hovorí, že najrýchlejším riešením na dosiahnutie skutočnej zmeny je používať nenáročné technológie. Potrebujeme jednoducho viac smetiarskych áut a odpadových skládok.

„Každý očakáva veľkolepé riešenia,“ hovorí. „Realita je však taká, že odpad musíme jednoducho pozbierať. Vo väčšine krajín kde pracujem, sa im odpad nedarí ani len pozbierať z ulíc. Potrebujeme smetiarske autá a taktiež zákony, ktoré zabezpečia aby sa odpad pravidelne odvážal na skládky, recykloval alebo spaľoval, a aby sa nestávalo, že sa bude hocikde povalovať.“

Druhý spôsob, akým by mohol priemysel pomôcť je, že bude finančne prispievať. Siegler navrhol zavedie celosvetovej dane, približne pol kila vyprodukovaného plastu by malo byť zdanené jedným centom. Takto by sa vyzbieralo okolo šesť miliárd dolárov, ktorými by sa potom mohol financovať systém triedenia odpadu v rozvojových krajinách. Tento návrh sa však nikdy neujal. Na jeseň 2017 skupina vedcov znovu predniesla myšlienku založiť celosvetový fond. Vedci trvali na tom, aby sa zostavila medzinárodná dohoda, a to podľa vzoru Parížskej klimatickej dohody.

Podobnú dohodu prijalo 103 krajín vrátane USA v decembri na stretnutí v Nairobi. OSN v Dohode o čistote oceánov nezaviedla daň z plastov. Je nezáväzná a nie je v jej právomoci vecami reálne pohnúť. V skutočnosti ide len o deklaráciu s dobrým zámerom, so zámerom skončiť so znečisťovaním oceánov plastami. Tým pádom sa menej podobá Parížskej dohode a má bližšie k Paktu v Rio de Janeiro, ktorým sa v roku 1992 zaviazal celý svet bojovať proti klimatickej zmene. Nórske minister životného prostredia, Vidar Helgesen, označil túto dohodu ako dôležitý prvý krok.

4 Analysis of the target text

The last chapter of our work concentrates on the analysis of the TT. We are going to comment on translation solutions we have used to solve the translation problems, which were anticipated in the second chapter of our thesis. We are not only going to analyse the anticipated problems but also other problems, which we have encountered in the translation process. Furthermore, we will examine translation procedures, which were used to solve the problems and to find the correct equivalent. We can categorize translation procedures from the view of different scholars. Chesterman speaks of grammatical translation procedures, semantic and pragmatic translation procedures. Newmark says “while translation methods relate to whole texts, translation procedures are used for sentences and smaller units” (P.Newmark.1998:81). Based on this theory we will proceed and analyse the TT starting with linguistic problems and moving on to typographical, cultural and contextual problems at the end of the chapter.

The next concept we took into consideration is dynamic equivalence introduced by Nida (Nida, 1964). Munday further describes it: “The dynamic equivalence model focuses on the receptor of the TT, i.e. the audience. This focus requires translators to adjust their texts to the target culture, to harmonize them linguistically in terms of grammar and lexis, and to make them sound natural” (J.Munday, 2009:184). According to this, we adjusted our TT to Slovak culture and adapted it to the conventions of Slovak language from the linguistic point of view.

4.1 Lexical-semantic analysis

In this chapter, we are going to focus on the solutions to translation problems that we encountered in the translation of vocabulary and terminology. While some of these problems occur because an expression has no direct equivalent in the TL, others are result of different semantic meaning and connotation. “Specific examples of individual words really show that some items have no straightforward equivalents in two languages: they do not have the same semantic content (semantic structure) and emotional charge” (Ch. Nord. 2010:17, free translation).

Focusing on the terminology, we can see that in our ST there is a significant number of terms and specialized expressions that need to be translated properly. In some cases, we had to first find out what the term actually refers to and then find the proper

equivalent. There were many terms from the field of biology and chemistry; therefore, we had to work with specialized dictionaries. Following examples illustrate some of the terms: limpets and microalgae- *mikroriasy a prílipy*, amphipods- *rôznonožky*, monomers- *monoméry*, polymers- *polyméry*, polyethylene terephthalate- *polyetyléntereftalát*. The most frequent term used throughout the entire text is microplastics and secondly nanoplastics. The word microplastic (*mikroplasty*) is nowadays also frequently used in Slovak language, the expression nanoplastics is not used as frequently but we decided to use the Slovak equivalent *nanoplasty* which we had found in a number of parallel texts. We also needed to be watchful when translating the word “billion”, this word has a similarity in form to a word in Slovak and we had to be aware that false friends need to be translated correctly. In our TT we translated billion as *miliarda* and not as similarly sounding Slovak word *bilión*.

We needed to be especially careful when translating geographical proper nouns and names of institutions and organisations. Most of the geographical proper nouns have a Slovak equivalent e.g. Atlantic Ocean- *Atlantický oceán*, England- *Anglicko*, Netherlands- *Holandsko*, Beijing- *Peking*. We would especially like to mention the translation of the proper noun “Big Island of Hawaii”. In this case, we decided to omit the translation of “Big Island” and only use the name Hawaii: On Hawaii’s Big Island- *na Havaji*. We decided to do so because “Big Island” does not only refer to a specific Island but is also the second name of Hawaii. It is more natural to only use the name “Havaj” in the Slovak language. Further problem arose in the translation of particular names of institutions and organisations, especially when we had difficulties to find an equivalent in Slovak. To solve this problem we searched in different sources and parallel texts but in some cases had not found any Slovak equivalent and decided to use literal translation: National Solid Waste Management Commission- *Národná komisia pre nakladanie s pevným odpadom*, The Pasig River Rehabilitation Commission- *Komisia pre obnovu rieky Pasig*, University of Georgia- *Univerzita v Georgii*.

On the other hand, in some cases when there was no direct equivalent we decided for the description of word or phrase. The following examples illustrate the case, when there are no equivalents in Slovak and we decided to describe the expression in a way easily understandable for the recipient of the TT or substituting it for a different word. Low-tech- *nenáročné technológie*, ocean-sweeping machine- *zariadenie na čistenie oceánov*, toothless- *nie je v jej právomoci vecami reálne pohnúť*. In the last example, it

would not be appropriate to use a word for word translation because in the Source text the adjective “toothless” has a metaphorical meaning and is used in a figurative sense.

Concerning naturalization and exotization, we had to keep in mind that our Source text is a popular science article and excessive naturalization would have a disruptive effect. The following examples illustrate that we decided to use an adopted foreign word and not use the Slovak equivalent. We decided to translate “forensic” as *forenzný* not using the Slovak word *súdny*, similarly in the translation of the word exponentially-*exponenciálne*. However, in some cases it was necessary to use the process of naturalization to simplify understanding of the text for Slovak recipients. We applied naturalization in translation of all the units of measurement to clarify the meaning for Slovak readers: foot-*meter*, pound-*pol kila*.

In some cases, we decided for weakening and neutralization of the stylistic value and emotionality. As Kvetko says, it is “the use of a more neutral, less emotional expression in the target language” (P. Kvetko.2012:139, free translation). As an example we used neutralization in the translation of the following phrase: production has grown at such a breakneck pace- *produkcia rastie takým tempom*. In other cases, we tried to maintain agreement in stylistic equivalence: light-as-air wraps- *obaly ľahké ako pierko*, sexy answer-*veľkolepé riešenia*, demonized disposable bottles- *nenávidené jednorazové fľaše*.

We found it necessary to use the translation procedure of expansion to additionally explain some expressions in order to clarify the meaning. As Kvetko states “Expansion is a pragmatic procedure in which the translator expands the target text by using additional words, frequently filling gaps in the readers knowledge or introducing information into the target language which is present implicitly in the source language and which can be derived from the context or the situation” (P. Kvetko.2012: 83, free translation). The following examples illustrate the cases when we found it required to add some extra information into the TT: Hyatt’s company- *Hyattova obchodná spoločnosť*, to these countries- *do týchto problémových krajín*, working people- *obyčajní chudobní ľudia*.

Another case was concerning the translation of the name manta trawl. After describing this word in the previous sentence and stating the English expression “manta trawl”, we found it unnecessary to use this foreign term in the following sentence. Therefore, we decided for the omission of the word and substituted it for a description because the term has no direct Slovak equivalent: After we’d steamed along for a while,

Thompson reeled the manta trawl back in- *Potom čo sme sa chvíľu plavili, vytiahol Thompson sieť na planktón von z vody.*

4.2 Morpho-syntax analysis

In the following chapter we are going to analyse our TT from the morphological and syntactical point of view. English and Slovak are languages with different word and sentence structure. English is an analytic language, syntax and meaning are formed more by use of word order and particles than by inflection. In contrary, Slovak is a synthetic language, which is the opposite of an analytic language. Synthetic languages use appositions, affixes and internal modifications of roots of the words. Analytic languages have stricter and more elaborate syntactic rules, whereas synthetic languages depend on agreement and cross-reference between different parts of the sentence. For instance, in English word order is used to show object-subject relationships. All of this needed to be taken into consideration in our translation, following examples illustrate translations solutions to problems we had anticipated.

In the ST we can find many non-finite verb forms. Usage of non-finite verb forms is more typical of English language than of Slovak. Therefore, in some cases we decided to substitute non-finite verbs and replace them with finite verbs, which are more commonly used in Slovak language. In difference to finite verb forms, non-finite verbs do not show tense, person and number. In our ST we could find a big number of infinitives with and without *to*, *-ing* and *-ed* forms. In many cases we decided to replace them with finite forms that show tense, person and number.

Saving fuel- and pollution- *šetriť palivo a zároveň životné prostredie*

a coalition including Greenpeace and other groups- *ktorej súčasťou je Greenpeace a ďalšie skupiny*

imposing steep fines and jail time on violators- *za porušenie zaviedla masťné pokuty a trest odňatia slobody*

it is a good time for people to understand- *dobrá príležitosť, aby si ľudia uvedomili*

sorting green from clear ones to sell to a scrap dealer- *triedi zelené fľaše od bielych, aby ich mohli predat obchodníkovi s odpadom*

Furthermore, we made many changes in word classes in order to make our TT sound more naturally to Slovak readers.

Noun —> verb

There are no ocean trash **deniers**, at least so far. *Nikto **nepopiera** množstvo plastu v oceánoch, teda spoň zatiaľ nie.*

In recent years the **surge** in production has been driven...za posledné roky sa **zvýšila** produkcia...

Verb —> noun

Dissecting the fish, he was surprised to find microplastics in the guts of more than one third of them. *Pri ich **pitvaní** s prekvapením zistil, že sa v črevách až tretiny týchto rýb nachádzajú mikroplasty.*

He **worries** more about... **starosti** mu však robí niečo iné...

Noun —> adjective

That is why the oceans are under **assault**. *Kvôli tomu sú **ohrozené** oceány.*

Adjective —> verb

Bite-size to a fish- *ktoré by **mohli zožrat'** ryby*

In our TT there is a great number of changes from the linguistic point of view. We have already mentioned some of them and in the following paragraphs we will further analyse changes done in the translation process. One of them are constitutive shifts, Popovič defines a constitutive shift as “an inevitable shift that takes place in the translation as a consequence of differences between the two languages, the two poetics and the two styles of original and translation” (A. Popovič, 1976: 16, free translation). Gromová states that a constitutive shift is objective, inevitable and that it comes to those shifts because of the differences between the language code of the original and the translation. She further says that constitutive shifts are determined by different language and stylistic norms of source and target language, this concerns the microstructure of the text e.g. different number of grammatical cases, tenses, existence/nonexistence of articles, infinitive and gerundial constructions (E. Gromová, 2003, free translation). Some of these differences occurred also in our translation and the following examples illustrate the shifts we have done because of the differences between the source and target language.

...in which all materials, including plastics, are designed **to be reused** or recycled, not dumped- *v ktorej sú všetky materiály vrátane plastov navrhnuté tak, aby sa dali znova použiť alebo recyklovať, a nie zahodiť.*

In this case we can see translation of an infinitive construction by a subordinate clause.

They lighten every car and jumbo yet today, **saving** fuel-and pollution. V dnešnej dobe sú súčasťou každého auta a lietadla, čím ich odľahčujú, **a tým šetria** palivo a zároveň životné prostredie.

Here we replaced a gerund form by a subordinate clause.

However, there was a great number of changes on the morphological level, the most changes needed to be done on the level of syntax. This is because of the different syntactical structure of English and Slovak language. In our ST we can find many complex and compound sentences, the sentence structure is very complicated with a variety of predicative and semi-predicative constructions. As already mentioned, English uses more non-definite verbal forms as Slovak, this is something we needed to take especially into consideration. We also needed to pay attention to the stylistic categorization of the ST. As Mistrík says, syntax of a popular science article is not as stereotypical and monotonous as syntax of pure scientific articles. To make the text more interesting for the recipients, expressive syntactic constructions are used e.g. subjective sentence structure with sentence core at the beginning, interrogative and exclamatory sentences (J. Mistrík, 1984, free translation). Popular science articles have a greater syntactic dynamics than scientific articles, this is also the case of our ST. We can see this in the title and the explanatory titles and subtitle of the article. Mistrík defines syntactic dynamics as “usage of verbs, prepositions, modal factor, intonation (questions, exclamations), ellipsis, aposiopesis and other expressive means” (J. Mistrík, 1984:440, free translation). Concerning the syntax, we had to pay attention and translate the sentence constructions correctly to avoid stylistic shifts.

Furthermore, we needed to consider that English uses passive voice more often than Slovak does. In the translation process we followed the norms of Slovak language that prefers active voice to passive sentence constructions. We decided to use passive voice only in a few specific cases, where the action and the object is really to be emphasized rather than the subject. In the most cases we decided to replace passive voice with active voice.

Passive voice —→ active voice

- The missing plastic **is getting broken** into pieces so small they're hard to see. *Stratený plast sa láme na čiastočky tak malé, že ich je len ťažko zbadat'.*
- Microplastics **have been found** everywhere in the ocean that people have looked, from sediments on the deepest seafloor to ice floating in the Arctic. *Mikroplasty sme našli na každom mieste v oceáne kam sme sa dostali, od usadenín v hĺbinách na morskom dne, až po ľadovce plávajúce na Anktartíde.*

As already mentioned, in the ST there are many long and complicated sentence constructions. In many cases we decided to simplify the sentences to make them sound more natural for Slovak recipients. For instance, we decided to divide some sentences into two for better understanding.

Six decades later, roughly 40 percent of the now more than 448 million tons of plastic produced every year is disposable, much of it used as packaging intended to be discarded within minutes after purchase. *O šesť desaťročí neskôr je zo 448 miliónov ton plastu, ktorý sa každý rok vyrobí, približne 40% určených na jednorazové použitie. Väčšinu tvoria obaly, ktoré zahodíme chvíľku po tom, ako si tovar kúpime.*

Chemists discovered they could use those gases as building blocks, or monomers, to create or sorts of novel polymers- polyethylene terephthalate, for example, or PET- instead of working only with polymers that already existed in nature. *Chemici zistili, že tieto plyny sa dajú použiť ako stavebné bloky, monoméry, na tvorbu nových polymérov, akými sú napríklad polyetyléntereftalát alebo PET. Nemuseli tak pracovať len s polymérmi, ktoré existujú v prírode.*

There were also sentences, where we decided to change the sentence structure and exchange the sentence components. We did this mainly of semantic reasons and also because of the different syntactic conventions of English and Slovak language. In the following example we decided to use the object in the ST as a subject in the translation. We did not change the meaning of the sentence, but used a different verb in Slovak. That kind (subject) of increase would break any system (object) not prepared for it. *Taký nárast (object) by nevydržal žiaden systém (subject), ak by nebol na to pripravený.*

4.3 Typographical analysis

In the process of translation we needed to solve a number of typographical problems. We made a lot of changes concerning writing of punctuation marks and capitalisation. In English the norms for writing commas, colons, apostrophes and quotation marks are different to Slovak conventions.

We had to be especially cautious when translating proper nouns, names of people, organisations, geographical names and also names of languages. Following the norms of Slovak language, in many cases we had to replace capital letters with small letters at the beginning of a word or phrase. For instance, In English the names of languages are written with capital letters, whereas in Slovak small letters are used at the beginning. The following example illustrates translation of names of languages, in our TT we decided to use adjectives instead of nouns.

At Kamilo Point the beach is piled with laundry baskets, bottles, and containers with labels in **Chinese, Japanese, Korean, English**, and occasionally, **Russian**. *Pláž Kamilo je zaplnená košmi na bielizeň, fľašami a nádobami s čínskymi, japonskými, kórejskými, anglickými a občas aj ruskými etiketami.*

In English a capital letter is used for days of the week, months of the year and holidays. In Slovak we do not use a capital letter for days of the week and names of the months, we can see this in the following example.

At the Nairobi meeting in **December**, 193 nations, including the U.S., actually passed one. *Podobnú dohodu prijalo 103 krajín vrátane USA v **decembri** na stretnutí v Nairobi.* The next difference in writing of capital letters in English and Slovak is in the names of organisations, titles of books and periodicals. In titles in English all the words are written with a capital letter apart from the minor words. On the other hand, in Slovak only the first word of the title is written with a capital letter if no proper nouns are part of it.

As Susan Freinkel tells the tale in her book, **Plastic: A Toxic Love Story**... *Ako píše Susan Freinkel vo svojej knihe Plastic: A Toxic Love Story (**Plast: toxický príbeh lásky**, preklad: S.K.)...*

The Pasig River Rehabilitation Commission, established in 1999... *V roku 1999 bola založená **Komisia pre obnovu rieky Pasig**...*

The following examples show that there are different conventions for English and Slovak concerning writing of commas. While in English it is not necessary to write a

comma before a subordinate clause, in Slovak it is obligatory to write a comma before subordinate conjunctions (that, or...).

We should give thanks **that** the Pilgrims didn't have plastic....by sme mali byť radi, **že** osadníci plast ešte nepoznali.

...says he is optimistic **that** the Pasig could be restored someday...*nestráca optimizmus a verí, že sa im jedného dňa podarí rieku vrátiť do pôvodného stavu...*

Furthermore, we needed to be cautious in the case of writing quotation marks. According to Slovak conventions, double quotation marks are used down at the beginning of the quote and up at the end, whereas in English single or double quotation marks are placed in the top corner around an expression.

"Maybe the best thing to do is ban plastic bags," he says. „*Najlepšie by asi bolo plastové tašky zakázať*,“ *hovorí.*

Another problem we had to face, was the writing of colons and dashes. In the ST there is a big number of dashes but in the most cases we decided to replace them with a comma or a conjunction. Slovak texts usually prefer writing a comma in place of a dash in English. The following examples illustrate some cases, where we decided to replace a dash with a comma or a conjunction, in some cases even decided to divide a complicated sentence into two sentences.

On Hawaii's Big Island, on a beach that seemingly should have been pristine-no paved road leads to it- I walked ankle-deep through microplastics. *Po jednej z havajských pláží som sa prechádzala po členky zaborená v mikroplastoch. Táto pláž sa na pohľad zdala nedotknutá, keďže ku nej neviedla žiadna udržiavaná cesta.*

It was all **trash**- pieces of broken shipping containers, abandoned fishing gear, and of course, plastic shopping bags. *Všetko bol odpad, kusy dolámaných nákladných kontajnerov, odhodené rybárske náradie, a pravdaže plastové tašky.*

Some are harmed **visibly**- strangled by abandoned fishing nets or discarded six-pack rings. Pre niektoré plast predstavuje viditeľnú hrozbu, **pretože** sa zamotávajú do odhodených rybárskych sietí alebo plastových obalov.

4.4 Solutions to cultural problems

In the process of translation it is important to be aware of the differences between the cultures of recipients both of the source and target text. As Jeremy Munday says, "In translating, a new text will be created which will be read according to a different map or

model of the world, through a series of different set of perception filters” (J. Munday, 2009: 91). The most changes we made were concerning transferring the units of measurement: ...on every **foot** of coastline... *na každom metri po pobreží*.

Furthermore, we decided to substitute the word “Rice Krispies” with “chrumkavé cereálie”. We decided to replace the name of the cereals after considering that they are not so well known to a Slovak recipient. We rather used a description to evoke the same feeling for the readers, as the author initially intended. The most important factor for us was to keep the meaning identical to the ST.

They crunched like **Rice Krispies** under my feet. *Plasty mi pod nohami praskali ako chrumkavé cereálie*.

The last cultural specific we are going to analyse in this chapter is the writing of female names. In Slovak, surnames of female persons have the suffix –ová. In our ST there are many female names which we decided to translate according to the conventions of Slovak language and culture and use naturalization.

Jenna Jambeck-Jenna Jambecková, Susan Freinkel- Susan Freinkelová, Abigail Aguilar- Abigal Aguilarová, Kathleen Dohan- Kathleen Dohanová

4.5 Solutions to contextual problems

In this chapter, we will analyse the Target text from the point of view of contextual problems. We only decided to make changes in the TT when it was necessary and did not change the meaning and content of the ST. Concerning the fact that we were dealing with a popular science article, it was important to convey the same message and accurate data to the recipient without omitting any information. As Mistrík states “article is a contextual whole of a smaller extent, in which outcomes of scientific research are explained, applied, popularized in a style generally understandable” (J. Mistrík, 1989: 439, free translation).

The only changes made, were in some cases, when we decided to add some information into the sentence to simplify the understanding for the recipient. For instance, by adding an extra word, explanation or adding a Slovak translation.

Hyatt’s company boasted that it would eliminate the need “to ransack the Earth in pursuit of substances which are constantly growing scarcer.” *Hyattova obchodná spoločnosť sa chválila tým, že už nebude nutné “plieniť zem” v snahe získať prírodné materiály, ktorých je stále menej a menej.*

That's a trivial example of a profound revolution ushered in by plastic- an era of material abundance. *Toto je len triviálny príklad toho, čo spôsobila revolúcia plastov, **znamenal** vstup do éry nadbytku.*

...tells the tale in her book, Plastic: A Toxic Love Story... *ako... píše vo svojej knihe Plastic: A Toxic Love Story (**Plast: toxický príbeh lásky**, preklad: S.K.)...*

Last fall Break Free From Plastic... *Minulú jeseň sa organizácia Break Free From Plastic (**Oslobodenie od plastu**, preklad: S.K.)*

Conclusion

The aim of our bachelor thesis was to translate a popular science article from English into Slovak language and analyse the translation. Furthermore, we commented on translation procedures and solutions to various translation problems, which we anticipated after the analysis of the source text. Our aim was to illustrate how important the particular stages of the translation process are, starting with the analysis of the source text and followed by the anticipation of translation problems. In conclusion we can say that each stage of the translation process is very important, the analysis of the source text enabled us to anticipate problems and these could be solved in the translation itself.

In the last chapter we analyse the target text, here we commented on solutions to different translation problems and procedures, always followed by examples that practically illustrate these solutions. Looking at the source and target text from different angles, we compared the source text with our translation. We did so by taking a word, phrase or a sentence from the ST and confronted it with our translation, focusing on lexical, morph syntactic, typographical, cultural or other problems and solutions to them. Focusing on stylistic classification of our ST, we had to be aware that we were dealing with a popular science article. It was important to convey the same message, in the same style with precise and exact data and terminology to the Slovak recipient. We worked with a number of parallel texts, dictionaries and specialized literature. All of these sources helped us produce an adequate text.

On the whole, we can say that the aim of our bachelor thesis was met. We tried to produce a translation, which complies with the same functions as the source text. We proved that the stages of translation process are very important and should not be ignored in any translation. In the last chapter, our target text is analysed in detail and compared with the English original. Solutions to various translation problems and applied procedures are described, which can be helpful for other people translating from English into Slovak language. The text has not been translated into Slovak before, so by our translation we have made new information accessible for Slovak recipients. The text could serve as a parallel text or a source of information for people interested in the topic of plastic pollution in oceans. Thanks to the interesting topic we have also learned new information and improved our translating skills.

Resumé

V našej bakalárskej práci sa venujeme prekladu populárno náučného textu a jeho následnou analýzou. Preklad je zložitý proces, pri ktorom nejde len o transfer na lingvistickej ale aj na kulturologickej rovine. Cieľový text by mal spĺňať rovnakú funkciu, akú má východiskový text. Je dôležité sprostredkovať príjemcovi rovnaké informácie, aké prijal recipient východiskového textu v jazyku originálu. Pri tom treba zvážiť, že východiskový a cieľový jazyk majú iné lingvistické vlastnosti, a preto nie je možné prekladať doslovne. Prekladateľ musí ovládať obidva jazyky na vysokej úrovni a disponovať prekladateľskými kompetenciami, a taktiež poznať realie obidvoch kultúr.

K dosiahnutiu hlavného cieľa sme využili čiastkové ciele, a to analýzu východiskového textu a anticipáciu prekladateľských problémov, takisto využívame metódu komparácie. Východiskový a cieľový text porovnávame v poslednej kapitole, kde na konkrétnych príkladoch ilustrujeme riešenia prekladateľských problémov. V práci chceme zdôrazniť dôležitosť každej fázy prekladateľského procesu, začínajúc prípravnou fázou, v ktorej analyzujeme východiskový text a následnou anticipáciou prekladateľských problémov. Zvládnutie prípravnej fázy umožní prekladateľovi oboznámiť sa s cudzou a odbornou terminológiou, lepšie porozumieť textu a predpokladať, aké problémy by mohli v samotnom preklade nastať. V našej práci taktiež opisujeme jednotlivé prekladateľské postupy a riešenia, ktoré sme pri preklade využili.

Naším cieľom bol preklad populárno náučného textu z časopisu National Geographic, ktorý sa zaoberá problematikou znečistenia našej planéty plastami. Článok bol publikovaný v júni 2018. Autorom textu je Laura Parkerová, ktorá sa už aj v minulosti zaoberala podobnými témami. Text dopĺňa množstvo fotografií od známeho fotografa Randy Olsona. Rozhodli sme sa venovať prekladu populárno náučného textu, ktorý nemá čisto informatívnu funkciu ale takisto popularizačnú, a recipientovi prináša aj čitateľský zážitok. Snažili sme sa vybrať text, na ktorom by sme mohli ilustrovať čo najväčšie množstvo prekladateľských postupov a riešení problémov, ktoré môžu nastať v procese prekladu. Keďže ide o odborný článok vo vedeckom časopise, museli sme pracovať so špecifickou, odbornou terminológiou a naštudovať si paralelné texty s podobnou tematikou. Autorka sa snaží problém priblížiť aj čitateľovi laikovi, preto používa množstvo dodatočných vysvetlení a názorných príkladov, v texte vyjadruje aj svoj subjektívny názor a používa zaujímavé opisy. Ďalším dôvodom, prečo sme si vybrali

článok Plastic je to, že sa zaoberá témou ochrany životného prostredia, ktorá je v dnešnej dobe veľmi aktuálna.

Našu prácu sme rozdelili na štyri kapitoly. V prvej kapitole sa venujeme analýze východiskového textu, ďalej v druhej kapitole sa zameriavame na anticipáciu prekladateľských problémov, ktoré patria do prípravnej fázy. Samotný preklad do cieľového jazyka je súčasťou tretej kapitoly, po ktorej nasleduje analýza cieľového textu. Východiskový text analyzujeme na základe modelu zhotoveného Ch. Nordovou. Preto sa v texte zameriavame na faktory, ktoré sú relevantné pre tvorbu prekladu a priamo ovplyvňujú jeho vznik. Začíname analýzou mimotextových faktorov, ktoré zahŕňujú typ a funkciu textu, úlohu autora, miesto publikácie a recipientov, ktorým je daný text určený. Pokračujeme analýzou vnútrotextových faktorov, ktoré sa týkajú samotného textu, jeho makroštruktúry a mikroštruktúry. Z pohľadu makroštruktúry opisujeme formálnu úpravu a členenie textu do odsekov a priradenie fotografií. Veľmi dôležitým bodom je analýza mikroštruktúry, v ktorej sa zaoberáme vlastnosťami textu z lingvistického hľadiska. Analyzujeme lexikálnu, morfológickú a syntaktickú rovinu. Už pri analýze lexiky si môžeme všimnúť, akú významnú úlohu zohráva štylistické zaradenie textu, populárno-náučný štýl má znaky náučného a taktiež hovorového štýlu. V texte sa nachádza množstvo odborných výrazov, hlavne z oblasti environmentalistiky, biológie a chémie, a taktiež veľa vlastných mien, predovšetkým geografických názvov a názvov inštitúcií. Z morfológického hľadiska sme sa zamerali najmä na rozdiely medzi východiskovým a cieľovým jazykom, ktoré sú spôsobené rozdielnymi vlastnosťami anglického a slovenského jazyka. V syntaktickej analýze sme si všímali stavbu a typy viet. Zaujímavým znakom je to, že vo východiskovom texte prevládajú dlhé zložité súvetia. Pri ich preklade sme si museli dávať pozor a prispôbiť ich slovenskému jazyku, aby zneli čo najprirodzenejšie.

Po ukončení prvej fázy prekladateľského procesu, sa v druhej kapitole venujeme anticipácii prekladateľských problémov. Zistili sme, že môžeme byť vystavení množstvu špecifických problémov, ktoré súvisia s extra lingvistickými faktormi, napríklad s kultúrnym a sociálnym kontextom, ale taktiež so samotným používaním jazyka pri preklade mien organizácií, geografických názvov, špecifických slovných spojení, skratiek, odborných výrazov a zložitých vetných konštrukcií. Aby sme lepšie pochopili dôležitosť predchádzať prekladateľským problémom, uvádzame aj teoretické východiská. Anticipované prekladateľské problémy sme zaradili do štyroch väčších

skupín, rozdelili sme ich na lingvistické, kontextové, kulturologické a typografické problémy.

Po zvládnutí prípravnej fázy sa dostávame k jadru translačného procesu, predmetom tretej kapitoly je preklad do cieľového jazyka. Snažili sme sa vytvoriť preklad, ktorý by čo najvernejšie zodpovedal východiskovému textu. Keďže ide o populárno náučný text, stretli sme sa s odbornou terminológiou, museli sme preto pracovať so slovníkmi a paralelnými textami. Najzložitejšie sa nám však zdalo vhodné preložiť množstvo dlhých, zložitých syntaktických konštrukcií, aby v slovenskom jazyku zneli prirodzene.

V poslednej kapitole sa venujeme analýze cieľového textu, využívame metódu komparácie, porovnávame východiskový text s cieľovým a na konkrétnych príkladoch ilustrujeme prekladateľské postupy, ktoré sme použili. Pri preklade nám pomohla prípravná fáza, hlavne anticipácia prekladateľských problémov. Narazili sme však aj na ďalšie problémy, ktorých riešenie podrobnejšie uvádzame v tejto kapitole. Pri samotnom preklade sme sa zameriavali na konečného príjemcu, cieľovú kultúru a text sme prispôbovali slovenskému jazyku na lexikálnej aj gramatickej úrovni. Okrem prekladu odbornej terminológie opisujeme v lexikálno-sémantickej analýze využitie exotizácie a naturalizácie, vo viacerých prípadoch sme použili aj expanziu a slovenskú vetu doplnili o ďalšie informácie. V morfológicko-syntaktickej analýze došlo v mnohých prípadoch ku konštitutívnym posunom, museli sme využiť prekladateľské postupy, ktoré boli nevyhnutné k dosiahnutiu adekvátneho prekladu. Anglický jazyk často využíva neurčité slovesné tvary, ktoré sme väčšinou nahradili určitým slovesným tvarom. Infinitívne a gerundiálne konštrukcie neznejú v slovenskom jazyku prirodzene, a preto ich vo väčšine prípadov nahrádzame vedľajšou vetou. Zmeny nastali aj pri pasívnych konštrukciách, ktoré sme často nahrádzali aktívnou väzbou a pri preklade zložitých súvetí, pri ktorých sme uprednostnili rozdeliť vetu na menšie celky. Veľký počet zmien nastal aj pri riešení typografických problémov, hlavne kvôli rozdielnym pravidlám pri písaní veľkých písmen. Rozdielne je aj písanie čiarok, napríklad v slovenskom jazyku sa čiarka musí písať pred podrad'ovaciú spojku „že“, zatiaľ čo v anglickom jazyku sa čiarka môže vynechať. Na záver kapitoly analyzujeme aj riešenia kulturologických a obsahových problémov.

Počas písania našej bakalárskej práce sme zistili, že preklad je náročná a komplexná činnosť, ktorá pozostáva z viacerých fáz, ktoré sú veľmi dôležité na vytvorenie kvalitného translátu. Dovoľujeme si tvrdiť, že ciele našej práce sa nám

podarilo splniť. Vytvorili sme preklad populárno náučného textu s odbornou terminológiou, ktorý ešte nebol preložený do slovenského jazyka. V analýze cieľového textu upozorňujeme na rôzne prekladateľské problémy a uvádzame ku nim konkrétne riešenia s príkladmi z textu, čo môže slúžiť ako pomôcka pri prekladaní textov z anglického do slovenského jazyka. Náš text môže taktiež slúžiť ako zdroj informácií alebo ako paralelný text pre ľudí zaoberajúcich sa touto tematikou.

References

Book sources

BAKER. Mona- SALDANHA. Gabriela. Routledge Encyclopedia of Translation Studies. 2. vyd. Abingdon: Routledge, 2009. 680 s. ISBN 13: 978-0-415-36930-5

GROMOVÁ. Edita. Kapitoly z úvodu do prekladateľstva 1. 1. vyd. Nitra: Filozofická fakulta Univerzity Konštantína v Nitre, 1998. 100 s. ISBN 80-88738-56-3

GROMOVÁ. Edita. Teória a didaktika prekladu. 1. vyd. Nitra: Univerzita Konštantína Filozofa v Nitre, 2003. 190 s. ISBN 80-8050-587-X

GROMOVÁ. Edita. Úvod do translatológie. Nitra: Univerzita Konštantína Filozofa v Nitre, 2009. 96 s. ISBN 978-80-8094-627-2

KVETKO, Pavol. Translation Studies: An introductory coursebook. 2. vyd. Trnava: Univerzita sv. Cyrila a Metoda v Trnave, 2012. 201 s. ISBN 978-80-8105-356-6

MALMKJAER. Kirsten- WINDLE. Kevin. The Oxford Handbook of Translation Studies. 1. vyd. Oxford: Oxford University Press, 2011. 607 s. ISBN 978-0-19-923930-6

MISTRÍK. Jozef. Štylistika. 2. vyd. Bratislava: Slovenské pedagogické nakladateľstvo, 1989. 584 s.

MUNDAY. Jeremy. The Routledge Companion to Translation Studies. 1. vyd. Oxon: Routledge, 2009. 287 s. ISBN 0-415-39640-9

MÜGLOVÁ. Daniela. Komunikácia, tlmočenie, preklad: alebo prečo spadla Babylonská veža? 1. vyd. Bratislava: Enigma, 2009. 324 s. ISBN 978 808 9132 829

NEUBERT. Albert. Text and Translation. 1. vyd. Leipzig: VEB Verlag Enzyklopädie Leipzig, 1985. 168 s.

NEWMARK. P. A Textbook of Translation. New York: Prentice Hall, 1998

NORD. Christiane. Fertigkeit Übersetzen: Ein Kurs zum Übersetzenlehren und –lernen. Berlin: BDÜ Weiterbildungs- und Fachverlagsgesellschaft mbH, 2010. 245 s. ISBN 978-3-938430-32-3

PECIAR. Štefan a kol. Krátky slovník slovenského jazyka. 1. vyd. Bratislava: Vydavateľstvo SAV, 1989. ISBN 80-224-0003-3

POPOVIČ. Anton. Originál-Preklad: Interpretačná terminológia. 1. vyd. Bratislava: Tatran, 1983. 368 s.

RIPKA. Ivor- IMRICHOVÁ. Mária- SKLADANÁ. Jana. Praktická pravopisná príručka. 1. vyd. Bratislava: Ottovo nakladateľstvo, 2008. 752 s. ISBN 978-80-7360-699-2

VILIKOVSKÝ. Ján. Preklad ako tvorba. 1. vyd. Bratislava: Slovenský spisovateľ, 1984. 240 s.

RIPKA. Ivor- IMRICHOVÁ. Mária- SKLADANÁ. Jana. Praktická pravopisná príručka. 1. vyd. Bratislava: Ottovo nakladateľstvo, 2008. 752 s. ISBN 978-80-7360-699-2

Internet Sources

Cambridge Dictionary. Finite and Non-finite Verbs. Retrieved on February 9, 2020 from:

<https://dictionary.cambridge.org/grammar/british-grammar/finite-and-non-finite-verbs>

CRYSTAL, D. –ROBINS, R. H. 2020. Translation. In: Language. (online). Retrieved on January 28, 2020 from:

<https://www.britannica.com/topic/language/Translation#ref665939>

HAMP. E. P et al. 2020. Syntax. In: Linguistics. (online). Retrieved on March, 18, 2020 from:

<https://www.britannica.com/science/linguistics/Semantics>

KARCHUTŇÁKOVÁ, M. 2011. Prekladateľské postupy a posuny v preklade románu A.T. Averčenska mecenášov žart. In: Jazyk a kultúra. (pdf). Retrieved on February 10, 2020 from:

<file:///C:/Users/user/Downloads/karchutnakova.pdf>

MOXLEY, K. 2015. Popular Science Articles. 2015. (pdf). Retrieved on February 10, 2020 from:

http://www.writingcentre.uct.ac.za/sites/default/files/image_tool/images/167/Popular%20Science%20Articles.pdf

National Geographic contributors. (Online). Retrieved on February, 15, 2020 from:

<https://www.nationalgeographic.com/contributors/p/laura-parker/>

PARKER. L. (2018). Planet or Plastic? In: National Geographic. (online). Retrieved on 28, October, 2019 from:

<https://www.nationalgeographic.com/magazine/2018/06/plastic-planet-waste-pollution-trash-crisis/>

ROBINS, R.H.- CRYSTAL, D. 2020. Language Typology. In: Language. (online) Retrieved on February, 5, 2020 from:

<https://www.britannica.com/topic/language/Language-typology>

STECOVÁ, A. 2010. Prekladateľské postupy a ich modely. In: Jazyk a kultúra. (pdf).

Retrieved on February 5, 2020 from:

<file:///C:/Users/user/Downloads/stecova.pdf>

WALIŃSKI. J. 2015. Translation Procedures. (online). Retrieved on March, 18, 2020

from:

https://www.researchgate.net/publication/282504599_Translation_Procedures/citation/download

Online dictionaries:

Cambridge Online Dictionary. (Online). Retrieved from:

<https://dictionary.cambridge.org/>

Hypertext Slovak-English, English-Slovak dictionary. (Online). Retrieved from:

<https://sk.glosbe.com/en/sk/>

Linguee Slovak-English, English-Slovak Dictionary. (Online). Retrieved from:

<https://sk.linguee.com/>

Lingea Slovak-English, English-Slovak Dictionary. (Online). Retrieved from:

<https://slovniky.lingea.sk/anglicko-slovensky>

Online dictionaries. (Online). Retrieved from:

<https://slovník.juls.savba.sk/>

List of appendices

150 years ago
we created
a lightweight,
strong, and
inexpensive
material.

We made it.

Today this
miracle material
helps keep heads
beating and
planes in the air.

We depend on it.

We're drowning in it.

More than
40 percent of it
is used just once,
then tossed.

Some
9 million tons
of it end up in
the ocean each year.

Plastic

BY LAURA PARKER PHOTOGRAPHS BY RANDY OLSON



The
"working life"
of a plastic bag
is 15 minutes.

If plastic had been invented when the Pilgrims sailed from Plymouth, England, to North America—and the *Mayflower* had been stocked with bottled water and plastic-wrapped snacks—their plastic trash would likely still be around, four centuries later.

If the Pilgrims had been like many people today and simply tossed their empty bottles and wrappers over the side, Atlantic waves and sunlight would have worn all that plastic into tiny bits. And those bits might still be floating around the world's oceans today, sponging up toxins to add to the ones already in them, waiting to be eaten by some hapless fish or oyster, and ultimately perhaps by one of us.

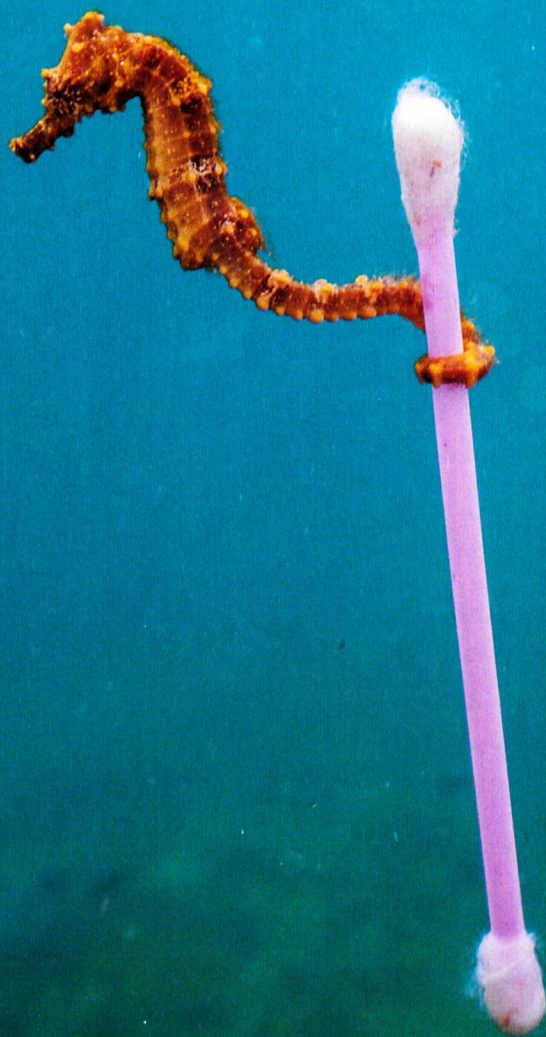
We should give thanks that the Pilgrims didn't have plastic, I thought recently as I rode a train to Plymouth along England's south coast. I was on my way to see a man who would help me make sense of the whole mess we've made with plastic, especially in the ocean.

Because plastic wasn't invented until the late 19th century, and production really only took off around 1950, we have a mere 9.2 billion tons of the stuff to deal with. Of that, more than 6.9 billion tons have become waste. And of that waste, a staggering 6.3 billion tons never made it to a recycling bin—a figure that stunned the scientists who crunched the numbers in 2017.

No one knows how much unrecycled plastic waste ends up in the ocean, Earth's last sink. In 2015, Jenna Jambeck, a University of Georgia

engineering professor, caught everyone's attention with a rough estimate: between 5.3 million and 14 million tons each year just from coastal regions. Most of it isn't thrown off ships, she and her colleagues say, but is dumped carelessly on land or in rivers, mostly in Asia. It's then blown or washed into the sea. Imagine five plastic grocery bags stuffed with plastic trash, Jambeck says, sitting on every foot of coastline around the world—that would correspond to about 8.8 million tons, her middle-of-the-road estimate of what the ocean gets from us annually. It's unclear how long it will take for that plastic to completely biodegrade into its constituent molecules. Estimates range from 450 years to never.

Meanwhile, ocean plastic is estimated to kill millions of marine animals every year. Nearly 700 species, including endangered ones, are known to have been affected by it. Some are harmed visibly—strangled by abandoned fishing nets or discarded six-pack rings. Many more are probably harmed invisibly. Marine species of all sizes, from zooplankton to whales, now eat microplastics, the bits smaller than one-fifth of an inch across. On Hawaii's Big Island, on a beach that seemingly should have been pristine—no



To ride currents, seahorses clutch drifting seagrass or other natural debris. In the polluted waters off the Indonesian island of Sumbawa, this seahorse latched onto a plastic cotton swab—"a photo I wish didn't exist," says photographer Justin Hofman.

JUSTIN HOFMAN



In *Life* magazine in 1955, an American family celebrates the dawn of "Throwaway Living," thanks in part to disposable plastics. Single-use plastics have brought great convenience to people around the world, but they also make up a big part of the plastic waste that's now choking our oceans.

PETER NEWKOME FOR LIFE; TOP: GARY HOFFER FOR LIFE

paved road leads to it—I walked ankle-deep through microplastics. They crunched like Rice Krispies under my feet. After that, I could understand why some people see ocean plastic as a looming catastrophe, worth mentioning in the same breath as climate change. At a global summit in Nairobi last December, the head of the United Nations Environment Programme spoke of an “ocean Armageddon.”

And yet there’s a key difference: Ocean plastic is not as complicated as climate change. There are no ocean trash deniers, at least so far. To do something about it, we don’t have to remake our planet’s entire energy system.

“This isn’t a problem where we don’t know what the solution is,” says Ted Siegler, a Vermont resource economist who has spent more than 25 years working with developing nations on garbage. “We know how to pick up garbage. Anyone can do it. We know how to dispose of it. We know how to recycle.” It’s a matter of building the necessary institutions and systems, he says—ideally before the ocean turns, irretrievably and for centuries to come, into a thin soup of plastic.

IN PLYMOUTH, UNDER THE GRAY gloom of an English autumn, Richard Thompson waited in a yellow slicker outside Plymouth University’s Coxside Marine Station, at the edge of the harbor. A lean man of 54, with a smooth pate rimmed with gray hair, Thompson was headed for an ordinary career as a marine ecologist in 1993—he was working on a Ph.D. on limpets and microalgae that grow on coastal rocks—when he participated in his first beach cleanup, on the Isle of Man. While other volunteers zoomed in on the plastic bottles and bags and nets, Thompson focused on the small stuff, the tiny particles that lay underfoot, ignored, at the high tide line. At first he wasn’t even sure they were plastic. He had to consult forensic chemists to confirm it.

There was a real mystery to be solved back then, at least in academic circles: Scientists wondered why they weren’t finding even more plastic in the sea. World production has increased exponentially—from 2.3 million tons in 1950, it grew to 162 million in 1993 and to 448 million by 2015—but the amount of plastic drifting on the ocean and washing up on beaches, alarming as it was, didn’t seem to be rising as fast. “That begs the question: Where is it?” Thompson said. “We can’t establish harm to the environment unless we know where it is.”



This 19th-century billiard ball was made from celluloid, an early plastic that replaced elephant ivory—which was already growing scarce.

MARK THIESSEN, PHOTOGRAPHED AT SMITHSONIAN INSTITUTION, NATIONAL MUSEUM OF AMERICAN HISTORY

In the years since his first beach cleanup, Thompson has helped provide the beginnings of an answer: The missing plastic is getting broken into pieces so small they’re hard to see. In a 2004 paper, Thompson coined the term “microplastics” for these small bits, predicting—accurately, as it turned out—that they had “potential for large-scale accumulation” in the ocean.

When we met in Plymouth last fall, Thompson and two of his students had just completed a study that indicated it’s not just waves and sunlight that break down plastic. In lab tests, they’d watched amphipods of the species *Orchestia gammarellus*—tiny shrimplike crustaceans that are common in European coastal waters—devour pieces of plastic bags and determined they could shred a single bag into 1.75 million microscopic fragments. The little creatures chewed through plastic especially fast, Thompson’s team found, when it was coated with the microbial slime that is their normal food. They spat out or eventually excreted the plastic bits.

Microplastics have been found everywhere in the ocean that people have looked, from sediments on the deepest seafloor to ice floating in the Arctic—which, as it melts over the next decade, could release more than a trillion bits of plastic into the water, according to one estimate. On some beaches on the Big Island of Hawaii, as much as 15 percent of the sand is actually grains of microplastic. Kamilo Point Beach, the one I walked on, catches plastic from the North Pacific gyre, the trashiest of five swirling current systems



Found on Kamilo Point Beach, Hawaii: "plastiglomerate," a type of rock formed when plastic debris—perhaps in a campfire—fuses with sand, rock, shells, and coral. Geologists think it may become an enduring marker of our impact on the Earth.

JEFF ELSTONE

IDENTIFIED BY CHARLES MOORE, PATRICIA CORCORAN, AND KELLY JAZVAC

that transport garbage around the ocean basins and concentrate it in great patches. At Kamilo Point the beach is piled with laundry baskets, bottles, and containers with labels in Chinese, Japanese, Korean, English, and occasionally, Russian. On Henderson Island, an uninhabited coral island in the South Pacific, researchers have found an astonishing volume of plastic from South America, Asia, New Zealand, Russia, and as far away as Scotland.

As Thompson and I talked about all this, a day boat called the *Dolphin* was carrying us through a light chop in the Sound, off Plymouth. Thompson reeled out a fine-mesh net called a manta trawl, usually used for studying plankton. We were close to the spot where, a few years earlier, other researchers had collected 504 fish of 10 species and given them to Thompson. Dissecting the fish, he was surprised to find microplastics in the guts of more than one-third of them. The finding made international headlines.

After we'd steamed along for a while, Thompson reeled the manta trawl back in. There was a smattering of colored plastic confetti at the bottom. Thompson himself doesn't worry much about microplastics in his fish and chips—there's little evidence yet that they pass from the gut of a fish into the flesh we actually eat. (See article on page 84.) He worries more about the things that none of us can see—the chemicals added to plastics to give them desirable properties, such as malleability, and the even tinier nanoplastics that

microplastics presumably degrade into. Those might pass into the tissues of fish and humans.

"We do know the concentrations of chemicals at the time of manufacture in some cases are very high," Thompson said. "We don't know how much additive is left in the plastic by the time it becomes bite-size to a fish."

"Nobody has found nanoparticles in the environment—they're below the level of detection for analytical equipment. People think they are out there. They have the potential to be sequestered in tissue, and that could be a game changer."

Thompson is careful not to get ahead of the science on his subject. He's far from an alarmist—but he's also convinced that plastic trash in the ocean is far more than an aesthetic problem. "I don't think we should be waiting for a key finding of whether or not fish are hazardous to eat," he said. "We have enough evidence to act."

HOW DID WE GET HERE? When did the dark side of the miracle of plastic first show itself? It's a question that can be asked about many of the marvels of our technological world. Since helping the Allies win World War II—think of nylon parachutes or lightweight airplane parts—plastics have transformed all our lives as few other inventions have, mostly for the better. They've eased travel into space and revolutionized medicine. They lighten every car and jumbo jet today, saving fuel—and pollution. In the form of clingy, light-as-air wraps, they extend the life of fresh

A LIFETIME OF PLASTIC

The first plastics made from fossil fuels are just over a century old. They came into widespread use after World War II and are found today in everything from cars to medical devices to food packaging. Their useful lifetime varies. Once disposed of, they break down into smaller fragments that linger for centuries.

Global plastic production by industry in millions of tons

Legacy of World War II
Shortages of natural materials during the war led to a search for synthetic alternatives—and to an exponential surge in plastic production that continues today.

1973
oil crisis

Growth in Asia

As the economies in Asia grow, so does demand for consumer products—and plastics. Half the world's plastics are made there, 29 percent in China.

2008
recession

Total
448 million tons
produced in 2015

Other
52 million
includes health care
and agriculture

5 years ◀ The average time plastics are used before they're discarded.

Building and construction
72 million

35 years

Industrial machinery
3 million

20 years

Transportation
30 million

13 years

Electrical
19 million

8 years

Textiles
65 million

5 years

Consumer products
46 million

3 years

Packaging
161 million

Less than six months

The largest market for plastics today is for packaging materials. That trash now accounts for nearly half of all plastic waste generated globally; most of it never gets recycled or incinerated.

1950 1960 1970 1980 1990 2000 2010 2015

JASON TREAT AND RYAN T. WILLIAMS, NGM STAFF
SOURCE: ROLAND GEYER, UNIVERSITY
OF CALIFORNIA, SANTA BARBARA

Simple links

The monomers that are synthesized into plastics are usually derived from fossil fuels such as crude oil and natural gas.

Ethylene glycol

Dimethyl terephthalate

Oxygen

Carbon

Hydrogen

Chemical reactions

Heat, pressure, and catalysts drive reactions that link the monomers.

Polymer chain
Polyethylene terephthalate (PET)

End products

PET is one of the most widely used polymers. Methanol, a by-product of PET synthesis, is typically incinerated.

Methanol

DURABLE CHAINS

Plastics are polymers: Long-chain molecules made of repeating links, or monomers. The chains are strong, light, and durable, which makes them so useful—and so problematic when they're disposed of carelessly. The polymer here is PET, a type of polyester, the stuff of bottles and clothes.

food. In airbags, incubators, helmets, or simply by delivering clean drinking water to poor people in those now demonized disposable bottles, plastics save lives daily.

In one of their early applications, they saved wildlife. In the mid-1800s, piano keys, billiard balls, combs, and all manner of trinkets were made of a scarce natural material: elephant ivory. With the elephant population at risk and ivory expensive and scarce, a billiards company in New York City offered a \$10,000 reward to anyone who could come up with an alternative.

As Susan Freinkel tells the tale in her book, *Plastic: A Toxic Love Story*, an amateur inventor named John Wesley Hyatt took up the challenge. His new material, celluloid, was made of cellulose, the polymer found in all plants. Hyatt's company boasted that it would eliminate the need "to ransack the Earth in pursuit of substances which are constantly growing scarcer." Besides sparing at least some elephants, celluloid also helped change

JASON TREAT AND RYAN WILLIAMS, NGM STAFF
SOURCE: ERIC J. BECKMAN, UNIVERSITY OF PITTSBURGH

billiards from solely an aristocratic pastime to one that working people play in bars.

That's a trivial example of a profound revolution ushered in by plastic—an era of material abundance. The revolution accelerated in the early 20th century, once plastics began to be made from the same stuff that was giving us abundant, cheap energy: petroleum. Oil companies had waste gases like ethylene coming out the stacks of their refineries. Chemists discovered they could use those gases as building blocks, or monomers, to create all sorts of novel polymers—polyethylene terephthalate, for example, or PET—instead of working only with polymers that already existed in nature. A world of possibilities opened up. Anything and everything could be made of plastic, and so it was, because plastics were cheap.

They were so cheap, we began to make things we never intended to keep. In 1955 *Life* magazine celebrated the liberation of the American housewife from drudgery. Under the headline "Throwaway Living," a photograph showed a family flinging plates, cups, and cutlery into

Jambeck says. "That kind of increase would break any system not prepared for it." In 2013 a group of scientists issued a new assessment of throwaway living. Writing in *Nature* magazine, they declared that disposable plastic should be classified, not as a housewife's friend, but as a hazardous material.

In recent years the surge in production has been driven largely by the expanded use of disposable plastic packaging in the growing economies of Asia—where garbage collection systems may be underdeveloped or nonexistent. In 2010, according to an estimate by Jambeck, half the world's mismanaged plastic waste was generated by just five Asian countries: China, Indonesia, the Philippines, Vietnam, and Sri Lanka.

"Let's say you recycle 100 percent in all of North America and Europe," says Ramani Narayan, a chemical engineering professor at Michigan State University who also works in his native India. "You still would not make a dent on the plastics released into the oceans. If you want to do something about this, you have to go there, to these countries, and deal with the mismanaged waste."

Production of plastic has come at a breakneck pace: Virtually half of the plastic ever manufactured has been made in the past 15 years.

the air. The items would take 40 hours to clean, the text noted—"except that no housewife need bother." When did plastics start to show their dark side? You might say it was when the junk in that photo hit the ground.

Six decades later, roughly 40 percent of the now more than 448 million tons of plastic produced every year is disposable, much of it used as packaging intended to be discarded within minutes after purchase. Production has grown at such a breakneck pace that virtually half the plastic ever manufactured has been made in the past 15 years. Last year the Coca-Cola Company, perhaps the world's largest producer of plastic bottles, acknowledged for the first time just how many it makes: 128 billion a year. Nestlé, PepsiCo, and others also churn out torrents of bottles.

The growth of plastic production has far outstripped the ability of waste management to keep up: That's why the oceans are under assault. "It's not surprising that we broke the system,"

THE PASIG RIVER ONCE FLOWED majestically through downtown Manila, capital of the Philippines, and emptied into pristine Manila Bay. It was a treasured waterway and civic point of pride. It's now listed among the top 10 rivers in the world that convey plastic waste to the sea. As many as 72,000 tons flow downstream each year, mostly during the monsoon. In 1990 the Pasig was declared biologically dead.

The Pasig River Rehabilitation Commission, established in 1999, is working to clean up the river, with some signs of success. Jose Antonio Goitia, the commission's executive director, says he is optimistic that the Pasig could be restored someday, although he acknowledges he has no easy way of doing that. "Maybe the best thing to do is ban plastic bags," he says.

The remaining challenges are clearly visible every day. The river is fed by 51 tributaries, some of them overflowing with plastic waste from squatter settlements that cantilever precariously over creek

its half-liter bottles by 62 percent since 1994. The Poland Spring plant in Hollis, Maine, is the company's largest in North America.





banks. A tributary near Chinatown, where rickety shanties are wedged between modern buildings, is so choked with plastic debris you can walk across it, forgoing the footbridge. Manila Bay's beaches, once recreational respites for greater Manila's 13 million residents, are littered with garbage, much of it plastic. Last fall Break Free From Plastic, a coalition including Greenpeace and other groups, cleaned a beach on Freedom Island, which is advertised as an ecotourism district; volunteers picked up 54,260 pieces of plastic, from shoes to food containers. By the time I visited a few weeks later, the beach was littered again with bottles, wrappers, and shopping bags.

The scene in Manila is typical of large, overcrowded urban centers across Asia. The Philippines is a densely populated nation of 105 million people that is still struggling with the most basic public health issues, including waterborne diseases such as typhoid and bacterial diarrhea. It's no surprise that it has trouble managing the explosion of plastic garbage. Manila has a metropolitan garbage collection system that stretches across 17 separate local governments—a source

of income for his side-
uncle, who trucks the waste to recycling plants on the outskirts of Manila.

Waste pickers like Siena are part of the solution, some activists argue; they just need a living wage. In the Baseco waterfront slum in Manila, a tiny recycling shop operated by the Plastic Bank of Vancouver, British Columbia, pays a premium for bottles and hard plastic collected by waste pickers. It then sells that plastic at a higher price to multinationals, which market their recycled products as socially responsible.

Siegler, the Vermont economist, has worked in enough countries and run enough numbers to be skeptical of such schemes. "There is not enough value in plastics to make that work," he says. "It's cheaper to fund a solid waste management system than to subsidize collecting plastic."

The waste that clogs Manila's beaches and waterways reinforces Siegler's point. Much of it consists of sachets—tear-off packets that once held a single serving of shampoo, toothpaste, coffee, condiments, or other products. They are sold by the millions to poor people like Siena and his family, who can't afford to buy more than one serving at a time. Sachets blow around Manila like leaves falling from trees. They're not recyclable, so no waste picker will retrieve them. Crispian Lao, a member of the National Solid Waste Management Commission, says, "This segment of packaging is growing, and it has become a

THE CHALLENGE OF RECYCLING

Globally, 18 percent of plastic is recycled, up from nearly zero in 1980. Plastic bottles are one of the most widely recycled products. But other items, such as drinking straws, are harder to recycle and often discarded.

Ease of recycling by type*

- ▲ Easy
- ▲ Manageable
- ▲ Difficult
- ▲ Very difficult

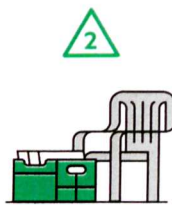
Percentage of global plastic waste, 2015



PET
Polyethylene terephthalate

Beverage bottles, food jars, clothing and carpet fiber, some shampoo and mouthwash bottles

11%



HDPE
High-density polyethylene

Detergent and bleach bottles, snack boxes, milk jugs, toys, buckets, crates, plant pots, garden furniture, trash bins

14%



PVC
Polyvinyl chloride

Credit cards, window and doorframes, gutters, pipes and fittings, wire and cable sheathing, synthetic leather

5%

*Ease of recycling varies by region; North America shown. Not all plastics are recyclable.

real challenge for solid waste management.”

When Greenpeace cleaned the Freedom Island beach, it posted a tally of the brand names of the sachets its volunteers had collected. Nestlé ranked first, Unilever second. Litterbugs aren't the only ones at fault, says Greenpeace's Abigail Aguilar: “We believe that the ones producing and promoting the use of single-use plastics have a major role in the whole problem.” A Unilever spokeswoman in Manila told me the company is developing a recyclable sachet.

AFTER MALAYSIA AIRLINES FLIGHT 370 disappeared from radar screens in March 2014 while on its way from Kuala Lumpur to Beijing, the search for it extended from Indonesia to the southern Indian Ocean. It captivated a global audience for weeks. No sign of the wreckage appeared. On several occasions, when satellite images revealed collections of objects floating on the sea surface, hopes soared that they would turn out to be aircraft parts. They weren't. It was all trash—pieces of broken shipping containers, abandoned fishing gear, and of course, plastic shopping bags.

Kathleen Dohan, a scientist and the president of Earth and Space Research in Seattle, saw opportunity in the horror: The images from space were pushing a problem into view that had long been neglected. “This is the first time the whole world is watching,” she told me at the time. “It's a good time for people to understand that our oceans are garbage dumps.” Dohan sensed

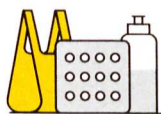
a tipping point in public awareness—and the events since suggest she may have been right.

The most heartening thing about the plastic waste problem is the recent explosion of attention to it, and even of serious, if scattered, efforts to address it. A partial list of the good news since 2014 would include, in no particular order: Kenya joined a growing list of nations that have banned plastic bags, imposing steep fines and jail time on violators. France said it would ban plastic plates and cups by 2020. Bans on plastic microbeads in cosmetics (they're exfoliants) take effect this year in the U.S., Canada, the U.K., and four other countries. The industry is phasing them out.

Corporations are responding to public opinion. Coca-Cola, which also produces Dasani water, announced a goal to “collect and recycle the equivalent of” 100 percent of its packaging by 2030. It and other multinationals, including PepsiCo, Amcor, and Unilever, have pledged to convert to 100 percent reusable, recyclable, or compostable packaging by 2025. And Johnson & Johnson is switching from plastic back to paper stems on its cotton swabs.

Individuals are making a difference too. Ellen MacArthur, a British yachtswoman, has created a foundation to promote the vision of a “circular economy,” in which all materials, including plastics, are designed to be reused or recycled, not dumped. Actor Adrian Grenier has lent his celebrity to the campaign against the plastic drinking straw. And Boyan Slat, 23, from the

4



LDPE
Low-density
polyethylene

Packaging film,
shopping bags,
bubble wrap, flexible bottles,
wire and cable insulation

20%

5



PP
Polypropylene

Bottle tops, drinking straws,
lunch boxes, insulated cool-
ers, fabric and carpet fiber,
tarps, diapers

19%

6



PS
Polystyrene

Plastic-foam cups, egg boxes,
meat trays, packing peanuts,
coat hangers, yogurt
containers, insulation, toys

6%

7



OTHER

Nylon fabrics, baby bottles,
compact disks, medical
storage containers, car parts,
watercooler bottles

24%

Netherlands, is charging ahead with his teenage vow to clean up the largest garbage patch in the North Pacific. His organization has raised more than \$30 million to construct an ocean-sweeping machine that is still under development.

All of these measures help at some level—even beach cleanups, futile as they sometimes seem. A beach cleanup hooked Richard Thompson on the plastic problem a quarter century ago. But the real solution, he now thinks, is to stop plastic from entering the ocean in the first place—and then to rethink our whole approach to the amazing stuff. “We’ve done a lot of work making sure plastic does its job, but very little amount of work on what happens to that product at the end of its lifetime,” he says. “I’m not saying plastics are the enemy, but there is a lot the industry can do to help solve the problem.”

There are two fundamental ways industry can help, if it wants or is forced to. First, along with academic scientists such as Jambeck, it can design new plastics and new plastic products that are either biodegradable or more recyclable (see article on page 88). New materials and more recycling, along with simply avoiding unnecessary uses of the stuff, are the long-term solutions to the plastic waste problem. But the fastest way to make a big difference, Siegler says, is low tech. It’s more garbage trucks and landfills.

“Everyone wants a sexy answer,” he says. “The reality is, we need to just collect the trash. Most countries that I work in, you can’t even get it

off the street. We need garbage trucks and help institutionalizing the fact that this waste needs to be collected on a regular basis and landfilled, recycled, or burned so that it doesn’t end up going all over the place.”

That’s the second way industry could help: It could pony up. Siegler has proposed a world-wide tax of a penny on every pound of plastic resin manufactured. The tax would raise roughly six billion dollars a year that could be used to finance garbage collection systems in developing nations. The idea never caught on. In the fall of 2017, though, a group of scientists revived the concept of a global fund. The group called for an international agreement patterned after the Paris climate accord.

At the Nairobi meeting in December, 193 nations, including the U.S., actually passed one. The United Nations Clean Seas agreement doesn’t impose a tax on plastic. It’s nonbinding and toothless. It’s really just a declaration of a good intention—the intention to end ocean plastic pollution. In that way it’s less like the Paris Agreement and more like the Rio de Janeiro treaty, in which the world pledged to combat dangerous climate change—back in 1992. Norway’s environment minister, Vidar Helgesen, called this new agreement a strong first step. □

Staff writer **Laura Parker** and photographer **Randy Olson** last worked together on a feature on the vanishing Ogallala aquifer, which was published in the August 2016 issue.