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Problem Triggers in Simultaneous Interpreting and their Impact on the Processing Capacity of an Interpreter

(Bakalářská práce)

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1 INTRODUCTION

Interpreting is known as an extremely demanding cognitive activity and as such, in order to be performed adequately and successfully, requires maximum involvement of all the mental energy an interpreter has at that moment. This energy needs to be delivered even in greater amount in case of simultaneous interpreting, which due to the requirement of listening and speaking at the same time calls for even more concentration. Even though interpreters are aware of and prepared for this and in spite of their effort to do their job properly, mistakes are found in the final products of not only novice interpreters but also experienced professionals. My curiosity as a student of interpreting initiated my decision to investigate this area not only theoretically but also practically. I therefore decided to conduct a study on errors in interpreting since when practising interpreting, despite being provided with the recordings which were to be interpreted in advance in most of the cases and even though I had always listened to the speeches, had created glossaries and thus never felt to have underestimated the preparation, I was hardly ever able to render everything the way I wished for. I personally felt to have performed worse when interpreting technical speeches or speeches belonging to a specific subject field, and when encountering numbers, nominal chains or enumerations, or idiomatic and other fixed phrases some of which are deeply rooted in a given language and are hence difficult to translate (the reasons supporting the claim of difficulty of interpreting these items are provided in chapter 3.2.3).

The issue of mental energy and its requirements has been deeply examined by Daniel Gile. This French conference interpreter, teacher and a researcher calls it processing capacity and uses it in context with his Theory of Efforts to explain the reasons for errors occurrence and to provide a way of their possible solutions. He suggests that with regard to simultaneous interpreting the Efforts include "namely the Listening and Analysis Effort L, the Short term memory Effort M, and the Speech production Effort P, plus a Coordination Effort C, which is required to coordinate the other three efforts" (Gile 1995, 169). He further adds that when interpreters encounter an item whose transfer consumes their processing capacity, they might consequently not have enough capacity left for other Efforts and might make mistakes.

At this point it might be appropriate to mention some of the authors who have already tried to verify the Effort Model in their works. At the Institute of Translatology at Charles University they were mainly theses by Jana Tauchmanová, who was investigating simultaneous interpreting of speeches where numbers were present in profusion, Zdeňka Puková, who was applying Gile's theory to simultaneous interpreting of texts containing numbers and enumerations from French into Czech, and Zuzana Zachová, who was dealing

with interpreting proper nouns from French into Czech and from Czech sign language into Czech in her experiment.

Another work worth mentioning is a study by a freelance conference interpreter Cristina Mazza, which focuses on errors in numbers found in simultaneous interpreting with respect to Gile's Effort Model. It should be pointed out that several authors whose pieces of work concern problem triggers in interpreting can be found. Besides Mazza (2001), there are others such as Cattaneo (2014), who was looking at consequences of idiomatic expressions, Wang (2015), who conducted studies on errors resulting from occurrences of numbers, names, and logical relationships, or Gerver, who in 1974 investigated noise as a problem trigger in interpreting, who deserve to be mentioned.

These theses together served as inspiration, some of them also as points of reference in my thesis but have been felt to cover only too narrow areas as they predominantly deal with separate problem triggers only, whereas my goal was to research problem triggers altogether and uncover their consequences to interpreters' processing capacity and their potentiality to provoke interpreters into making errors. Similar study has been already conducted by Dalia Mankauskienė from the Institute of Lithuanian Literature and Folklore at Vilnius University, who applied a different approach to identifying factors influencing the quality of simultaneous interpreting between English and Lithuanian by analysing not individual well-known triggers (names, numbers and terms) but grouping them together and adding new ones and presenting the consequences their occurrence can have.

I am going to explore the hypothesis that the occurrence of a segment containing items which are more demanding for interpreters to render is likely to put pressure on their processing capacity and cause inappropriate division of the processing capacity between particular Efforts and might therefore increase the risk of a potential mistake occurrence. The hypothesis further states that such a mistake can take place also in the following segment which might contain seemingly no difficulties. With respect to this hypothesis Gile mentions that there are various sequences, such as a long name, bad pronunciation by a non-native speaker, high speed of the speech, and others, which result "in the possible loss of segments that may not be difficult per se, but happen to be processed at the wrong time, that is, at a time when there is not enough capacity available for the relevant Effort" (Gile 1995, 176).

This hypothesis is going to be examined also empirically by analysing state exams recordings of simultaneous interpreting of a group of 7 students of interpreting at the end of their 2nd year of master's studies, which is also the end of their studies. The original speech is about nine-minutes long and is performed by Andras Forgacs, a tissue engineering

advocate. The topic of the recording is the issue of producing leather artificially, thus without killing animals. I will focus on the segments containing items which are generally difficult for interpreters to render or are likely to cause interpreters' errors, i.e. problem triggers. In my research these are numbers and technical terms, which are the pieces of information which cannot undergo the process of deverbalization and have to be and should be transcoded and are therefore considered triggers of errors in interpreting (deverbalization and transcoding will be dealt with in greater detail in chapter 2.7). These have been accompanied by enumerations, prepositional and idiomatic phrases, and certain words which do not have any direct equivalent in the target language and whose transfer can thus be said to be problematic. I will concentrate also on the following segments, since as Gile suggests "these triggers could generate failures at a distance, when attentional resources were diverted from one Effort to another where 'reinforcement' was necessary" (Gile 1999, 158). In my thesis, one segment will equate one sense unit forming together a coherent whole, which in my case will be represented by one clause (see chapter 2.8, where a unit of sense is defined further).

I will examine the fidelity of the rendering of the problematic segments with regard to the original message, hence how accurately the information was transferred, as well as if these difficult items triggered more mistakes with the interpreters and of what types these mistakes were. The analysis of errors has been the subject of interest to many authors, for instance Altman (1994), Corder (1981), and Barik (1971), and as a result, there are various approaches to errors classifications (these will be described in chapter 3.3.2). Although Barik may serve as a convenient stepping stone as he provides a thorough analysis of errors which can be encountered in simultaneous interpreting, he only divides them in three basic categories, namely "Omissions", "Additions", and "Substitutions" (Barik 1971), which I consider inappropriate for the needs of my experiment. Neither of the abovementioned theses provided an errors classification which would be suitable to and could be applied to my research; the first thesis mentioned providing a quantitative analysis of correctly transferred numbers and sense units, Zachová besides providing a quantitative analysis of transferred proper nouns was also looking at the how accurately the following segments were interpreted but did not analyse the mistakes concerning the form of the delivery, Mazza's classification of errors concerns almost exclusively the way numbers were rendered and does not provide further classification of the mistakes which were made in rendering of other information. It was only the thesis of Puková, who, in spite of focusing solely on segments following the segments containing numbers or enumerations and the difference between how these were

handled by students of interpreting and professional interpreters, analysed errors in a way which was used as a starting point in my thesis.

Analysis of errors was also an issue which several theses written by students at the Department of English and American Studies at Palacký University were concerned with. Among these we can mention a thesis by Gabriela Tománková, who was investigating the influence a source language can have on the target language, showing this on examples of different types of linguistic interference in interpreting, whose classification is generally to a certain extent parallel to the classification of errors chosen for the needs of the research of this thesis. Other works were presented by Radim Sazima or Anh Ngoc Bui, who were dealing with strategies in simultaneous interpreting, in which they both work with Barik's classification.

Having found a certain incomprehensiveness in the abovementioned approaches, I decided to divide the occurring errors into three basic categories, representing the levels of a hierarchy, which were determined to be the level of form, the level of language, which itself is further divided, and the level of content.

The aim of my thesis is to prove the hypothesis that the occurrence of a problem trigger in one segment in simultaneous interpreting makes considerable demands on the processing capacity of interpreters, increases the risk of their processing capacity saturation and consequently leads to interpreters making mistakes in the segment concerned or in the following one.

With respect to this my research questions have been determined as following:

1) Which problem triggers provoked most errors?

Which set of problem triggers can be said to cause the most errors and can be therefore considered the most difficult to deal with?

2) What types of errors occurred with the highest frequency?

What types of errors can be detected in the greatest number? Is there any tendency for interpreters to make more mistakes on one level than on the other?

3) Is there any relation between a certain type of a problem trigger and an occurrence of a certain type of error?

Can it be stated that a given problem trigger is more likely to cause one type of mistake rather than the other?

2 THEORETICAL PART

As has been stated before, the issue of processing capacity has already been quite thoroughly researched by Daniel Gile. It is commonly assumed that the more experienced an interpreter is, the better he or she knows how to divide their processing capacity appropriately between the particular Efforts. Nevertheless, it has been shown, by Gile's experiment that the possible skill of dividing the processing capacity perfectly, so as to prevent a problem from arising, has nothing to do with experience, because even professional interpreters with years of expertise were proved to make mistakes. Therefore, Gile introduced his Theory of Efforts, which he presented in one of the chapters of his book *Basic Concepts and Models for Interpreter and Translator Training*, and individual Efforts whose needs have to be satisfied in order to perform a satisfactory act of interpreting. Gile suggests that each interpreter during the act of interpreting only has a limited amount of what he calls "processing capacity" and that "total capacity consumption is close to the interpreter's total available capacity, so that any increase in processing capacity requirements and any instance of mismanagement of cognitive resources by the interpreter can bring about overload or local attentional deficit (in one of the Efforts) and consequent deterioration of the interpreter's output" (Gile 1999, 159).

2.1 Existence of errors

Much has been already said about mistakes in interpreting; different categories into which interpreters' mistakes might be classified have been presented as well as strategies helping interpreters to handle difficult situations and prevent the mistakes from occurring. What I am focusing on in my thesis, however, is rather what comes before a mistake is made. I am looking at what the cause of a mistake is and what consequences it can have on interpreters' output.

It is obvious that every client wants the interpreting to be as professional as possible. This means that the interpreter is expected to comply with the Code of Ethics and make every effort to render the original message accurately, entirely and faithfully with respect to the original and to the rules of the target language syntax, semantics, terminology, and grammar. Despite of the fact that all interpreters supposedly also want to provide their listeners with the best interpreting they can, mistakes sometimes occur.

It goes without saying that interpreters can only interpret what they hear and are able to make sense of. With respect to this their performance is to a large extent dependent on the

conditions in which interpreting is taking place and the speakers who they are to interpret. As is mentioned by Čeňková, we have to realize that the scientists and specialists giving speeches at conferences and workshops might be experts in their subject field but might not be good speakers at the same time (Čeňková 1988, 92-93). These speakers are likely to be those who cause most of interpreters' headaches as they are often not used to speaking into microphone and when pointing to information in their powerpoint presentation or referring their listeners to particular documents or materials they tend to turn away from the microphone, in which case interpreters have problems hearing them. Regardless of to what extent the speakers have mastered the principles of public speaking, interpreters are always expected to perform to the best of their abilities. In their effort they might, however, encounter other difficulties, such as a microphone which is not working causing that the client does not hear the interpreter, or non-functioning interpreters' headphones, who, in this case, are left with very little material to interpret, if any. In spite of this, though, the ones blamed for errors in interpreting are interpreters, who are often expected to bite the bullet and accept their mistake, even though they know it actually was not their fault.

Mistakes made can be of different types and importance. Some of them, for example morphosyntactic errors concerning subject-verb agreement or agreement between adjectives and nouns in languages applying declension and/or conjugation such as Czech or Slovak, can be considered minor mistakes as they do not cause comprehension difficulties in most cases. Errors in the content of the message, for example when the interpreter misses and/or unintentionally changes an important number or a name, incorrectly translates an office a person holds, or misses a significant segment carrying essential information or changes its meaning, on the other hand, are more compelling due to the fact that these might present an offence or cause misunderstanding and other problems.

After the arrival of simultaneous interpreting and establishment of various international organizations after the Second World War simultaneous interpreting earned the reputation of the most suitable mode of conference interpreting. And as was growing the amount of interpreting performances, so were the demands for competent interpreters and the desire to understand the processes happening in the minds of interpreters while performing their parts. Because of the fact that mistakes occur and are made even by experienced professional interpreters this area has been in the interest of not only the interpreters themselves but also researchers, who started researching this phenomenon.

2.2 Research on Interpreting

As Puková mentions in her thesis the genuine empirical research cannot be, however, talked about until the late 1960s or early 1970s (Puková 2006, 8), which was when not only the professional interpreters wanted to find out more about the processes taking place during interpreting, but also when researches from other fields started to be concerned with the mental operations taking place in the heads of interpreters while interpreting. These researchers were primarily from the area of linguistics, psychology, and psycholinguistics. Among others it may be worth mentioning for instance Henri Barik, who is famous for his contribution to error analysis presented in 1971, Pierre Oléron and Hubert Nanpon, who together investigated Ear-Voice Span in 1965, or David Gerver who was in his work from 1969 focusing on the effects the rate of presentation of the source language has on the performance of simultaneous conference interpreters.

Puková mentions that other laboratory experiments were conducted, in which other phenomena, such as the role of pauses, differences in perception of the incoming speech by a left and a right ear, concurrence of speech acts, disturbance in the transmission channel, and segmentation of the source-language information were investigated (Puková 2006, 8). She further states that interesting conclusions were arrived at, the validity of some of them was, nevertheless, to a certain extent problematic as not much emphasis was put to simulating the real conditions of interpreting during experiments at that time (Puková 2006, 8).

2.3 Existing models in simultaneous interpreting

Čeňková suggests that in the same period the main research and methodological centres concerning the theory and didactics of interpreting in Central and Eastern Europe were Moscow and Leipzig. In the Soviet Union the research was systematically conducted by reputable educators and active conference interpreters at the same time, who could cooperate with experts from other fields, consequently enabling them to present new psycholinguistic models of simultaneous interpreting proving the existence of concurrence of speech operations during simultaneous interpreting. Among the most significant ones a model by G. V. Chernov based on the strategy of probabilistic prognosis (1978) or a model by A. F. Shiryaev, in which the main role is played by the mechanisms of synchronization and compression (1979) should be mentioned (Čeňková 2008, 40).

One of the most influential people in the area of theory of interpreting remains to be Danica Seleskovitch from a prestigious ESIT French school for interpreters, who presented Interpretative Theory of Translation for consecutive interpreting saying that it is not the words which the interpreter is rendering, but the sense, rather. According to this theory the interpreter intentionally forgets the exact words her or she has heard the speaker using and remembers only their meaning, therefore he or she deverbalizes the information in the source language and translates the sense of the message irrespective of the words. This Theory of Sense was applied to simultaneous interpreting by Marianne Lederer, who therefore proved its validity for both main modes of interpreting.

This approach of Seleskovitch's was criticized by other professionals at that time, who were mainly pointing to the fact that Seleskovitch based her theory merely on watching the interpreters interpreting and therefore that her methodology was not scientific enough. Other objects of criticism were her not having taken into account the findings of other scientific disciplines and/or not having proved her theory empirically. Among one of the critics was Daniel Gile, author of the Theory of Efforts, a translator and a conference interpreter from France, nowadays also a professor at ESIT, who was intending to achieve closer collaboration between the researchers specializing in the research into interpreting.

Tauchmanová in her thesis mentions that in the course of the last decades, there have been more theoreticians who came up with various models by which they embarked on a journey to shed light on the process of simultaneous interpreting. Besides the abovementioned models, we can mention psychological models of David Gerver and Barbara Moser-Mercer, a neurolinguistic model created by Laura Gran, and most recently also a cognitive-pragmatic model presented by Robin Setton (Tauchmanová 2011, 14).

The focus of this thesis will be placed on the Theory of Efforts and on the Effort Model developed by Daniel Gile and its application to texts characterized by high density of problem triggers.

2.4 Effort Model

"One of the most striking and challenging phenomena in interpreting is its fundamental difficulty for the interpreter" (Gile 1995, 159). Even though the overall majority of interpreters have undergone professional training, be it at universities, schools of interpreting, during programmes organized by different interpreters' organizations, for example AIIC, or short-term courses, they still do make mistakes. It is interesting to note that "performance problems occur not only in fast, informationally dense or highly technical

speeches but also in clear, slow speech segments in which no particular obstacles can be detected" (Gile 1995, 159). In his effort to find the answers for the questions providing explanations of these phenomena in both cases Gile discovered that neither hearing and interpreting a speech for the second time nor interpreting a slow and seemingly easy speech has positive impact on the quality of interpreting. "Moreover, errors and omissions are found not only in students' acts of interpreting, but also in the work of seasoned professionals" (Gile 1995, 159). This is an illustration of the fact that, although having gained their competency and expertise in interpreting after years of practice, even highly experienced interpreters are not out of danger of providing their clients with a rather faulty transfer of the source language speaker's thoughts. Gile in relation to this stresses that "observations of errors made by professionals in speech segments containing no apparent difficulty are most intriguing, and trying to understand the reasons behind them seems very important" (Gile 1995, 160). It follows that it was the understanding of the complexity of interpreting by students and perhaps also a provision of compilation of possible strategies helping interpreters to overcome arising difficulties that Gile had in mind (Gile 1995, 160). These goals were the stimuli impelling Gile to the development of an Effort Model for simultaneous interpreting, which he first referred to in writing in 1983 "in a paper on the relative difficulty of interpretation as a function of the specific pairs of languages involved" (Gile 1995, 160). It was later followed by an Effort Model for consecutive interpreting and certain findings concerning Efforts in the area of sight interpreting and simultaneous interpreting with text. Gile's Models were based on two ideas, namely that "interpretation requires some sort of mental "energy" that is only available in limited supply" and that "interpretation takes up almost all of this mental energy, and sometimes requires more than is available, at which times performance deteriorates" (Gile 1995, 161). This mental energy is referred to as processing capacity by Gile and is closely related to what is defined in cognitive psychology as automatic and nonautomatic operations of a human mind with respect to attention during a communication act. It is believed that automatic operations do not require processing capacity to be successfully performed and that the nonautomatic ones, on the other hand, do. It follows that the operations which are classified as nonautomatic are likely to pose problems in communication, as unless the participants have enough processing capacity to satisfy the needs of the operations, the interaction can easily be unsuccessful.

This classification, although having implications particularly for the theory of communication, can be applied to interpreting too, since, as Jones puts it, "interpreting is about communication" (Jones 1998, 3). Interpreting can be said to be a specific means of

communication and it is therefore not surprising that interpreting in fact has the same goal as communicating, which is to make the exchange of ideas between two or more people possible. When stating that interpreting is a way of enabling people who do not speak the same language to communicate, it might be appropriate to introduce a definition of communication. Nevertheless, it should be noted that, strange as it may seem, defining communication is not an easy task as is stressed by Littlejon and Foss, who claim that finding the proper definition has not been successful yet and that the evidence supports the view that arriving at one is practically unfeasible (Littlejon, Foss 2011, 4). As a result, lots of definitions have been formulated, some being very general, others taking into account the purposefulness of the message or the effectivity of communication.

With respect to interpreting, though, it can be stated that any act of ideas exchange—in my case it is the verbal exchange of ideas and a spoken medium of communication which comes into play—in order to be successful, besides particular physical requirements of the participants and the necessary language competence to formulate their ideas, needs some sort of attention of all of its participants, i.e. not only the senders but also the receivers, who in that case are the interpreters. This supply of attention may happen to be insufficient for a particular task resulting in unsuccessful communication of the ideas expressed by the source language speaker. It was in the late 1940s when Claude Shanon (1948) worded the idea that "any channel serving to transmit information had a finite transmission capacity, beyond which information losses occurred" (as cited in Gile 1995, 161). This is even more true for the channel which is in operation during interpreting because unlike *regular* interaction, i.e. when one or the other can take the liberty of not listening to the utterance of the other(s), interpreters cannot dare not to pay attention (unless being the passive colleagues in a booth, in which case they should, nevertheless, always "be ready to take over at all times in an emergency" (Setton and Dawrant 2016, 416)), since if they do, they might be eventually driven into a very unenviable situation when they miss a piece of information and are unable to render it in a target language, which, if noticed by their clients, may result in a loss of interpreters' credibility and a decrease in their chances for further cooperation.

The question of the amount of attention we dedicate to communication of any type has been the subject of study of Heath and Bryant, who in their book *Human Communication Theory and Research: Concepts, Contexts, and Challenges* state that there is a number of research workers claiming that large proportion of the ways of behaviour we apply when exchanging ideas is what they call "mindless" and that the participants are not really obliged to analyse the ideas and make them subject to deep examination. They also argue that it is

the importance of the ideas and the overall subject of the communication which plays the role in each person's supply of the energy and attention, hence whether we are "mindful" or "mindless" in the interaction (Heath, Bryant 2012, 38) or, as the case may be, whether we listen to an utterance actively or passively.

As far as interpreters are concerned, though, irrespective of how interested they are in the topic discussed or to what extent they agree with the opinions expressed by the speakers, their listening always has to be attentive, in other words, they always have to be "mindful" and perform what is called active listening. This is true for all modes of interpreting. It might be considered even more important when it comes to simultaneous interpreting, in which interpreters' smallest lack of attention can have fatal consequences since, unlike in the consecutive mode, no possibility to ask the speaker for clarification or repetition exists. This supports the claims regarding the extreme difficulty of simultaneous interpreting.

2.5 Efforts in simultaneous interpreting

Simultaneous interpreting is an extremely demanding cognitive process, which imposes enormous strain on the interpreter, primarily as a consequence of a number of simultaneous speech operations. It is a cyclical, recurrent process consisting of three phases out of which each phase is immediately followed by a next one. At this point it should be realized that when speaking about the individual phases occurring during simultaneous interpreting, these do not actually come one after another, but they take place basically at the same time, in other words, they coincide. It is mainly the interpreter's ability to analyse a segment in a source language, which has been stored in their memory, while actively listening to a new segment and rendering the previous one in a target language which makes the whole performance so challenging, not to mention the difficulty of each of the phases when performed in isolation and not under the time constraints.

2.5.1 The Listening and Analysis Effort

Gile claims that the Listening and Analysis or Comprehension Effort includes "all comprehension-oriented operations, from the analysis of sound waves carrying the source-language speech which reach the interpreter's ears, through the identification of words, to the final decision about the meaning of the utterance" (Gile 1995, 162). He also points out that it has not been reached to a conclusion concerning the thoroughness of the analysis of

the meaning of the utterance in the source language before interpreting can take place. He states, though, that in his opinion the interpreter cannot start producing a speech in the target language unless they have understood at least "the underlying logic of each sentence" (Gile 1995, 162). Even if we admit that for interpreting comprehension one only needs to be able to recognize individual words, in spite of the existence of several studies showing that it requires much more than to simply distinguish words, it provides a sufficient basis on which we can put this Effort in the category of the nonautomatic operations.

2.5.2 The Production Effort

The Production Effort is by Gile attributed to the "output part of interpretation" (Gile 1995, 165). As he explains, in simultaneous interpreting it includes all the operations regarding the message mental representation in an interpreter's brain and the speech performance in the target language (Gile 1995, 165). Tauchmanová mentions that self-check of the interpreter's speech and its possible corrections can be also said to belong to this Effort (Tauchmanová 2011, 17). Gile also argues that it is the absence of freedom in the choice of interpreter's ideas and the obligation to "follow the path chosen by the source-language speaker" which is responsible for the difficulties in speech production on the side of interpreters (Gile 1995, 166). These difficulties can be also accompanied by the fact that lexicon and syntax of languages generally differ, posing another threat for interpreters, who, due to the short-memory limitations, often start target-language sentences earlier than when they know the direction of a source-language sentence. In that case they can easily get stuck in the middle of a sentence, which they have started in a way which it cannot be finished in and are forced to reformulate it. That requires processing capacity, which if used for corrections might be missing in other operations. On the other hand, if dealt with wisely, the fact that the choices are made by speakers can be of help to interpreters, who can, provided that they are able to follow the structures and make similar ones in the target language, save some of their processing capacity. The aforementioned statements provide justification for claiming the Production Effort a nonautomatic operation.

2.5.3 The Memory Effort

Unlike in consecutive interpreting, where, if performed without note-taking, the interpreter has to rely on information stored in their short term memory, out of which he or she might have to be able to retrieve it after several minutes, in simultaneous interpreting

this time equates to several seconds and is determined in the first place by the EVS (Ear-Voice Span). In other words, the time for which simultaneous interpreters have to store the information equates to how much each interpreter decides to lag behind the speaker. In both cases, however, short term memory is used continuously in interpreting and is of crucial importance for interpreters. Be it the identification of phonetic segments pronounced by the speaker, speech production difficulties requiring certain time before a suitable structure is formulated, or an interpreter's decision to lag further behind due to their speaker's accent, poor performance, lack of the message clarity, or illogical arguments, it is the short term memory which provides the support for interpreters. In all of these cases it is the memory which enables interpreters to wait before more context is available so that they are able to reformulate speakers' ideas. Short-term memory is therefore responsible for the storage of information which will be retrieved and used later on. Its operations are thus classified as nonautomatic by Gile, who suggests that it is also due to the fact that the content and amount of information is speech specific and varies even during every speech, making the automation of the process impossible (Gile 1995, 169).

2.6 An Effort Model for simultaneous interpreting

Eysenck and Keane (1990) suggest that an Effort Model for simultaneous interpreting can therefore be said to consist of the three abovementioned Efforts plus a Coordination Effort, which is responsible for the coordination of the other three Efforts (as paraphrased in Gile 1995, 169):

1) SI = L + P + M + C

2.6.1 Processing capacity

"At each point in time, each Effort has specific processing capacity requirements that depend on the task(s) it is engaged in, namely the particular comprehension, short-term memory, or production operations being performed on speech segments" (Gile 1995, 169). Based on incoming speech segments requirements, processing capacity requirements fluctuate, putting increasing strain on the processing capacity available for the Coordination Effort, which has to divide the overall processing capacity accordingly so that the highest quality of the interpreter's output is guaranteed.

Gile states that thanks to the research on the question whether interpreters really do listen and speak simultaneously (see for example Čeňková 1988 for more details) it has been showed that in simultaneous interpreting there are always one, two, or three of the abovementioned Efforts active at the same time. The total requirements (TR) can therefore be equated to the sum of requirements imposed on individual Efforts (Gile 1995, 170):

2) $TR = LR + MR + PR + CR$

Where LR are capacity requirements for the Listening and Analysis Effort, MR represents capacity requirements for the Memory Effort, PR corresponds to capacity requirements for the Production Effort, and CR stands for capacity requirements for the Coordination Effort, out of which all are continuously competing for the limited supply of processing capacity.

"In order for the interpretation to proceed smoothly, the following five conditions have to be met" (Gile 1995, 171):

3) $TR \leq TA$

TA total available processing capacity

4) $LR \leq LA$

LA processing capacity available for L

5) $MR \leq MA$

MA processing capacity available for M

6) $PR \leq PA$

PA processing capacity available for P

7) $CR \leq CA$

CA processing capacity available for C

According to Gile the last four inequalities bring forward the idea that the availability of processing capacity for each Effort has to be sufficient to complete the task it is engaged in (Gile 1995, 171). If the first condition concerning total processing capacity is not fulfilled,

saturation occurs, which may happen for example when the information density and the speed of the original speech reaches the point when the interpreter's total available processing capacity has to struggle between being used for listening to, analysing, memorizing, and delivering a difficult segment, in which case the total capacity requirements may exceed the total capacity available.

With regard to the other four conditions and the inability to meet them, we do not talk about saturation but about improper processing capacity management, rather. The problems are not related to the lack of total processing capacity available to an interpreter; they arise "even when the total requirements are below the critical threshold" (Gile 1995, 171). This situation may be encountered by an interpreter for instance when he or she has to reformulate ideas of a speaker with a difficult accent forcing them to dedicate more processing capacity to the Listening Effort on an incoming segment and not having then enough capacity for the Effort of Production on the previous segment. Or the other way around, when interpreters seek to produce an overly impressive target language segment making them spend more processing capacity on the Production Effort, resulting in the lack of processing capacity left to perform adequately in the Listening and Analysis Effort. In this case the total processing capacity available to the interpreter is sufficient to cover the total requirements and it is the interpreter's improper management of their processing capacity which causes the deficits in the individual Efforts.

Similar conclusion is arrived at by Čeňková, who states that in case of disruption of the smooth process of simultaneous interpreting it is also an interpreter's ability to split their attention between both activities, namely listening and speaking, which is disrupted, resulting in occurrence of various types of mistakes in the interpreter's rendering. These can be observed as lapsus linguae, self-corrections, omissions, incomprehension, incorrect syntax of individual segments, interferences, inadequate formulations, or failure to maintain the invariant of the information (Čeňková 1988, 72). She believes that it is the improper management of attention and/or processing capacity which lays the foundations for these consequences.

The enormous difficulty of simultaneous interpreting forces interpreters to work virtually at the limits of their processing capacity supply, in other words, "most of the time interpreters work near saturation level" (Gile 1999, 157), where "even limited additional attentional requirements could lead to failure" (Gile 1999, 157). Gile metaphorically

compares this condition to that of the tightrope walkers, whose merest mistake can result in them failing in their performance.

2.6.2 The Tightrope hypothesis

The "tightrope hypothesis" is an essential part of Gile's Theory of Efforts and plays a crucial role in helping to explain and understand why mistakes occur with such a high frequency even in segments where no apparent intrinsic difficulties are identified. This hypothesis presents an idea that most of the time, interpreters work very close to the saturation level with respect to both, the total processing capacity requirements as well as the requirements applying to individual Efforts. It can be therefore said that interpreting can be described as a continuous tension between the supply and demand of processing capacity, whose appropriate division has to be secured by an interpreter, which itself requires some processing capacity.

In other words, interpreting is a demanding process, whose successful completion needs lots of effort. The hypothesis highlights a fact that a deterioration in the quality of an interpreter's output may not be caused merely by a lack of the interpreter's linguistic or extralinguistic knowledge but simply by an increased difficulty of a certain segment, when the interpreter is not endowed with enough processing capacity to handle it. Interpreters can be thus said to be extremely vulnerable to any increase in processing capacity requirements resulting in the fact that even the smallest difficulty can lead to saturation and therefore pose a problem for interpreters.

2.6.3 Problem triggers

According to Gile (1995) consequences emerging from problems related to processing capacity can be caused by two phenomena, in other words, he says there are two major sources of potential problems in interpreting:

2.6.3.1 Increase in processing capacity requirements

- *High speech density* puts increasing demands on processing capacity because the interpreter has to proceed more information per unit of time. Because the interpreter's speech rate is determined by the one of the speaker, it applies to both the Comprehension Effort and the Production Effort. Be it a *high delivery rate* of the speech, when the speaker may not necessarily provide much information, in spite of speaking very fast,

or *high density of the information content* of the speech, which can occur even in relatively slow speeches, represented particularly by enumerations, which are dense, high speech density is highly likely to be the most frequent source of problems in interpreting.

- *External factors* such as the *sound quality deterioration*, *noisy channel*, *strong accents*, and *incorrect grammar* or *unusual linguistic or reasoning style* can also be the reasons increasing the requirements on processing capacity, particularly in the Listening and Analysis Effort. Analogously, *technical terms* can be the sources of trouble, since, if an interpreter does not have their target-language versions at his or her disposal, they are likely to have to use more processing capacity to be able to analyse and reformulate them.
- *Unknown names* comprising of more names or words increase the demands placed on the interpreter's Memory Effort, which has to ensure proper storage of the information in the interpreter's memory while being scanned and analysed before it can be rendered in the target language.
- Storage of information due to syntactic differences between the two languages concerned forcing the interpreter to wait for a while before they are able to reformulate the segment increases processing capacity requirements in the Memory Effort and can possibly lead to *saturation* (Gile 1995, 172-173).

2.6.3.2 Signal vulnerability

"Another type of problem triggers are speech segments which do not necessarily require much processing capacity, but are more vulnerable than others to a momentary processing capacity shortage because of their short duration and low redundancy" (Gile 1995, 174). This can be the case of proper names, abbreviations, and numbers. Gile states that "such signal vulnerability makes proper and precise processing capacity management critical, as a very brief shortage of processing capacity in the Listening and Analysis Effort may be enough to cause significant loss" (Gile 1997, 171).

The abovementioned problem triggers have served as starting points in this thesis. It would be nearly impossible to research all of the triggers determined by Gile within this thesis. I therefore decided to focus on some of the well-known triggers mentioned by Gile, namely terms, numbers, and enumerations. These have been accompanied by other items which have been felt to be possible causes of errors, in spite of them being often missed in

research works in this area. This group of problem triggers consists of idiomatic expressions and metaphors, prepositional phrases, and certain words and phrases, such as false friends or gerunds and participles. All of these pose problems in interpreting as they in most cases lack direct equivalents in the target language, which is Czech in this case, and thus require certain explanations to be adequately rendered. The decision to include these words and phrases into problem triggers was supported by the results of a study by Mankauskienė. She concludes that in spite of her agreement with researchers emphasizing the fact that it is the ideas and not the words which is interpreted, "language pair specific problem triggers, i.e. lexical gaps or phrases in the source language that require explication and (or) have very long counterparts in the target language" (Mankauskienė 2018, 50) and which, in accordance with the Interpretative Theory of Translation, should not actually be expected to pose problems as they can be deverbalized, also have to be considered problem triggers.

2.7 Deverbalization and transcoding

The general principle which is to be applied in interpreting is thought to be to interpret ideas rather than particular words. It was the object of study of Danica Seleskovitch who calls this principle "deverbalization" and uses it in relation to her Theory of Sense in which she determines it to be one phase of the interpreting process. She proposes that when an interpreter hears a segment in the source language, he or she does not try to translate individual words into the target language but first of all analyses the ideas hidden behind the words used by the speaker and tries to understand the sense. They therefore deverbalize the information, get rid of the surface structure of the original, i.e. the words they have just heard, and can eventually formulate and render the ideas in the target language. Gile describes this process by stating that "interpreter listens to the source speech 'naturally', as in everyday life, understands its 'message', which is then 'deverbalized', i.e. stripped of the memory of its actual wording in the source speech" (Gile 2018).

Transcoding, on the other hand, represents a different approach which can be applied in interpreting. In Gile's terms it refers to a process when translating is performed by "seeking linguistic equivalents in the target language (for instance lexical and syntactic equivalents) to lexical units and constituents of the source speech as it unfolds" (Gile 2018). It can be basically described as literal or word-for-word translation in which deverbalization does not take place. It is generally to be applied to interpreting numbers and terms, which simply cannot be deverbalized and have to be transcoded.

2.8 Sense unit

The same variation which is found in the approaches to analysis and classification of errors can be found in definitions of units of translation. Vinay and Darbelnet define translation unit as "the smallest segment of utterance whose signs are linked in such a way that they should not be translated individually" (Vinay and Darbelnet 1995, 21). "Seleskovitch and Lederer (1984), in accordance with their theory, describe the translation unit as a unit of sense gathered from a segment of discourse (a small number of words) that will contribute to the construction of the deverbalized sense of the whole message to be re-expressed in the target language" (Ballard 2011, 437). Even though these definitions have been originally established for translation, they can be used for interpreting as well and have served as starting points when determining a unit of sense in this thesis.

With respect to this study one sense unit has been therefore equated to one clause. In other words, an instance of text comprising of a subject and a predicate has been felt to be sufficient to be considered a segment. It follows that each clause can be of variable length and complexity in terms of complements, which can be (obligatorily) added, and different modifiers, which can take place within clauses. This, however, has not been regarded to play any crucial role in terms of increasing the difficulty of individual segments considerably and hence the decision concerning the unit of sense being represented by one clause.

3 PRACTICAL PART

3.1 Introduction

The aim of this experiment is to confirm or disprove the hypothesis presented in the introductory part of this thesis. Supported by and based on the abovementioned theoretical background my hypothesis is that in segments immediately following the segments containing numbers, technical terms, enumerations, or specific words and phrases the quality of the performance of simultaneous interpreting will deteriorate. These segments will place increasing demands on the interpreters' processing capacity in the Listening and Analysis Effort and in the Memory Effort, consequently leading to a lack of processing capacity left for the Production Effort. This will cause inadequate rendition of the message of a segment, which if not preceded by a segment with a trigger would be unlikely to pose a problem and/or force the interpreters to reallocate their processing capacity supply. A failure sequence will emerge, i.e. the difficulties encountered as a result of an occurrence of a problem trigger in a particular segment will become evident later in the text as mistakes in the interpreters' delivery.

3.2 Methods of conducting the research

The following chapter is dedicated to describing the conditions under which the research was conducted. It provides information about the participants who took part in this study as well as the environment in which interpreting took place. At this point it needs to be mentioned that due to the fact that they were recordings which students interpreted as parts of their state exams the environment cannot be regarded fully authentic as interpreting did not take place in booths but in one room where all the interpreters were sitting together and interpreting at the same time. It follows that the participants could be disturbed by their colleagues, which is a phenomenon which would be highly unlikely to occur should the interpreting took place in booths. On the other hand, this fact guaranteed that all the participants had exactly the same conditions in terms of time for preparation, the sound of the recording, the environment, the time of the day when interpreting took place and so on. A certain part focuses on the description of the original recording which was interpreted into Czech. Information is provided about the speaker of the source language recording and the way they present their ideas, the characteristics of the speech itself as well as what problem triggers were found in it and why they pose problems in interpreting.

3.2.1 Participants

Our hypothesis was tested on a group of 7 students of translating and interpreting at the Department of English and American Studies at Palacký University in Olomouc. All of the participants were at the end of their studies, i.e. in the final year of their master's studies, and acquired English proficiency level C2 as standardised by the Common European Framework of Reference for Languages (CEFRL) over the course of their studies. All of them had certain experience of interpreting, which could have been equated to intermediate/advanced level as can be stated on the basis of the videos of speeches in the free online speech repository provided by the European Council for the purpose of education and practice of interpreting. Five of the participants were Czech by birth, the other two were of Vietnamese origin, both born in Vietnam, who, in spite of having been raised in the Czech Republic and at the time of interpreting the recording had been living in the Czech Republic for almost 20 years, were in doubt whether to consider Czech their mother tongue or not. With respect to mother tongue Sloboda proposes that mother tongue can be understood in different ways, one of the most frequently used definitions being that mother tongue is a person's first language, i.e. the language they acquired as the first one in their life (Sloboda 2017). This cannot be said to be true about neither of the two Vietnamese interpreters. These two students were therefore not interpreting from their B language into their A language, i.e. from their active language into their mother tongue, which was the case of the other five interpreters, but between their two B languages, rather.

For the sake of authenticity I decided to choose a recording interpreted by the students during their master's state exams, when a certain degree of nervousness, uneasiness, and pressure is highly likely to be present. The choice of students of interpreting was driven by the assumption that, unlike professionals, these have not successfully embraced strategies serving to overcome difficulties in interpreting yet and are thus more likely to make mistakes. The interpreters were not informed about the fact that their recordings will also serve as objects of study in my thesis, which eliminated the possibility of a change of their behaviour as a result of knowing that they were being observed and that a certain phenomenon was being examined. Before the interpreting started the participants had been briefly informed about the topic of the speech which they were going to interpret, had been provided with a list of vocabulary and had been given 15 minutes to search for the equivalents of the expressions.

3.2.2 Recording

The speech chosen is titled “Leather and Meat without Killing Animals” (Forgacs 2013), it is 8 minutes and 50 seconds long and was presented by a bioprinting entrepreneur Andras Forgacs at an official TEDGlobal 2013 conference in June 2013. Its transcript together with the original recording is available at the webpages of TED Talks.

The speaker is American, born in the United States and is therefore speaking with an American accent, following the principles of rhetoric in the video. He is speaking in a moderate tempo, pronouncing accurately, using vocabulary proportionate to his listeners, observing the rules of intonation, stress, and pauses, and forming his ideas clearly.

Forgacs is “the co-founder and CEO of Modern Meadow, a company developing novel biomaterials. These include cultured meat and leather which, as they put it, ‘will require no animal slaughter and much lower inputs of land, water, energy and chemicals’. This approach involves sourcing cells from living animals, multiplying these cells into billions, and then assembling them into the tissue precursors of meat or leather.” (Ted 2013).

With respect to the speaker’s field of specialization and therefore also to the topic of his speech it follows that the speech can be characterized as containing technical terms, vocabulary, and phrases common in the area of biofabrication and bioengineering, some of which can be said to be less common to the general public. In spite of this, the understanding of the message is not at risk as the speaker chooses the vocabulary wisely, provides enough references, and generally presents his ideas in a meaningful way, making the conditions for comprehension more favourable, nevertheless not lowering the demands on the interpreters’ processing capacity caused by having to deal with terms.

The speech also contains a certain amount of numerical data, which is generally difficult for interpreters to render, and enumerations, which place increasing demands on interpreters’ processing capacity primarily in the Memory Effort. Both of these phenomena are generally perceived as presenting difficulties for interpreters as their high density makes them vulnerable to interpreters’ lack of attention.

This speech was chosen primarily because of the great number of problem triggers which place demands on interpreters’ cognitive operations and are likely to force them to work close to their saturation level when they have to resort to applying automated strategies.

3.2.3 Causes of errors

The aim of my research is to prove the hypothesis that problem triggers generally provoke difficulties, lead to forced redistribution of interpreters' processing capacity, and eventually cause mistakes. I decided to complement the basic group of problem triggers, which are numbers, terms, and enumerations, with prepositional and idiomatic phrases and certain expressions which are generally considered difficult to translate, which I found to have presented problems for the interpreters.

3.2.3.1 The specifics of interpreting numbers

With regard to numbers Jones mentions that "numbers can be very difficult for simultaneous interpreters and can be absolutely crucial pieces of information where no error is permissible. In particular, numbers have an objective meaning and are in no way open to linguistic interpretation" (Jones 1998, 117). He also points out that "one must realize that numbers, as used in meetings, are much more complex than they at first seem" (Jones 1998, 117) and that "when an interpreter is confronted with a number, they have to deal not just with the bare arithmetic value but with as many as five elements" (Jones 1998, 117). Jones defines these elements as the arithmetic value, the order of magnitude, the unit, the reference of a number, and the relative value of a number (Jones 1998, 117). In other words, Jones is trying to propose that it is not merely the number itself which can create difficulties but the information it is connected to as well.

Nevertheless, the processing of numerical data is not difficult only for interpreters as a result of possibly different numerical systems of their working languages or the fact that interpreters primarily work with what they hear and therefore have to actually translate the number, unless they are able to visualize it or write it down. Unlike if encountered in writing, where numbers would be unlikely to cause much difficulties, they can pose problems for listeners and speakers even within one language, in spite of how trivial their processing may seem. Manuel Carreiras et al. from Basque Centre on Cognition, Brain and Language in their article stress the importance of "the ability to use and manipulate both words and numbers" (Carreiras et al. 2015, 79) and continue by stating that "it remains unclear, however, how these objects are visually processed in the brain" (Carreiras et al. 2015, 79). Therefore, an experiment was carried out with sixteen native Spanish speakers focusing on the processing streams for literacy and numeracy and their location within brain. Carreiras et al. came to a conclusion suggesting that "direct comparison between words and numbers demonstrated

the predominant left-hemispheric increase of activation for alphabetic stimuli and the right-hemispheric increase of activation for numeric stimuli" (Carreiras et al. 2015, 84). In other words, their empirical researched proved that words and numbers are processed in different hemispheres.

Another experiment was conducted by Grotheer and Herrmann from Friedrich Schiller University Jena and Kovacs from Jena University Hospital. Their study, in which they investigated "the processing of visually presented numbers in healthy human subjects" (Grotheer et al. 2016, 95), provided crucial evidence of the fact that, when it comes to visualization, numbers are processed in both hemispheres; suggesting that large numbers are processed in the left hemisphere, smaller numbers in the right hemisphere.

With regard to the abovementioned studies it can be on the whole stated that due to the location where its processing takes place within a human brain numerical data can cause difficulties in interpreting, all the more so in the simultaneous mode. Not only that interpreters apparently have to switch between the left and the right hemisphere, the former using for processing words, the latter for processing numbers, but they supposedly also have to switch between the two hemispheres on the basis of the height of the number. When encountered in a speech these data are likely to force interpreters to reallocate their processing capacity supply, which can subsequently result in them making a mistake. Such a mistake may not necessarily appear in the number itself, as this can be and often is transferred correctly, but can become evident perhaps in the unfaithful rendering of the following information.

3.2.3.2 The specifics of interpreting terms

Unlike numbers, concerning terms and specific vocabulary no problems are supposed to be detected in connection with processing streams. The causes of the difficulties arising around technical terms are rooted simply in higher demands which terminology specific to a certain field places on interpreters' processing capacity. This can be supported by the Gravitational Model proposed by Daniel Gile, who with respect to how significant he considers the component of lexicon to be in interpreting developed "an essentially lexicon-oriented model of language proficiency" (Gile 1995, 216). This model in his words "represents the status of an individual's oral or written command of a language at a particular point in time and in particular circumstances, by describing the relative *availability* of lexical units and linguistic rules". (Gile 1995, 216).

According to Gile, the interpreter's mental lexicon when retrieving words is divided into the Active and the Passive zone. "The Active zone is composed of Words which are available to the speaker. . . for Text production" (Gile 1995, 218) and can be retrieved relatively easily. Other words fall in the area of the Passive zone, on the other hand. Gile proposes that when Words are in the Passive zone, it does not automatically mean that the speaker does not understand them or is not able to make sense of them, but that the availability of these expressions for production of Text by the speaker is rather limited (Gile 1995, 218). This can be applied to the case of technical terminology. If the interpreter is familiar with the field, he or she might be able to find the proper equivalent without loading their processing capacity more than in any other case. If the interpreter is not familiar with the field the speech he or she is interpreting concerns and encounters a term which they possibly heard before but which is located within their Passive zone, it will be more demanding for them to render it. The whole process of transferring the information is likely to take more time and might also lead to attentional deficit since more processing capacity will have to be devoted to finding the right equivalent, the rest of which might then be insufficient to deal with following tasks.

3.2.3.3 Enumerations

Gile defines enumerations as "high-density speech segments that impose a high load on short-term memory" (Gile 1995, 196). They tend to do so because of their structure in which they are formed by individual items which typically refer to the same common point. These are placed just behind one another without being interposed with other lexical items, which would not carry that much propositional meaning or could somehow lower the demands on the processing capacity. This overall makes enumerations considerably difficult for interpreters as all of the items on the list are significant and should be transferred. Moreover, just like numbers, enumerations can hardly ever be anticipated, which otherwise, if handled well, can be a beneficiary strategy. This turns enumerations into another group of problem triggers in interpreting, placing increasing demands firstly on the Listening and Analysis Effort and then on the Memory Effort, especially in simultaneous mode, in which interpreters are not given the chance to ask the speaker to repeat one of the items they have missed and have to dedicate their full attention to a given enumeration. This usually makes interpreters immediately shorten the lag so as not to load their short-term memory and to preserve as much information as possible, which puts them into risk of losing other pieces of information.

3.2.3.4 Specific words and phrases

Other items which have been found to have presented problems for interpreters were idiomatic expressions, prepositional phrases, accompanied by certain words and expressions which can be said to not have any direct equivalents in the target language – Czech. All of these pieces of information have been grouped together and called "specific words and phrases" for the needs of this thesis. A decision to include these items into the group of problem triggers was made on the basis of a definition of problem triggers provided by Gile (1983) who according to Mankauskienė describes them as "anything that increases the processing capacity requirements of an interpreter (more effort needs to be put into listening/understanding, short-term memory or production) or increases signal vulnerability" (as cited in Mankauskienė 2016, 144). All of the abovementioned items in this sense meet the criteria to be considered problem triggers in interpreting.

Rendering idiomatic expressions is generally problematic, not only in interpreting (sometimes referred to as oral translation) but also in written translation, where these are, though, unlike in interpreting, much less likely to have influence on other segments. The difficulties very often root from the impossibility to opt for transcoding as idioms are often based on semantic transfer, although Jones says that if interpreters are not able to interpret these items as idiomatic expressions in the target language, they should at least try to translate them literally and hope that the audience will work out the meaning themselves (Jones 1998, 113). Another fact which increases the difficulty of transferring idiomatic phrases is that they are bounded units, which speakers often learn almost by heart, and as such tend to utter them rapidly and without making pauses, which could give interpreters time to deal with these phrases.

The best solution to deal with idioms in interpreting hence seems to be to have a set of readily made equivalents in the target language. This is, nevertheless, rather impossible due to the number of such expressions and the creativity of speakers resulting in the fact that idiomatic expressions remain problematic.

Concerning prepositional phrases the problems do not usually arise from the difficulty to understand the meaning, as may be the case of idioms, but are more likely to result from interpreters' inability not to adhere to the wording of the original phrase. The phrase can be understood correctly but the interpreter is not able to get rid of the individual words used in that phrase and copies the source language phrase structure or the preposition which was used in the original and which is not commonly used in the given collocation in the target language. The concept is common to both source language and target language,

but the way it is referred to varies in the two cases. This error can be called negative interference and is of sufficient importance to be taken into consideration.

Another set of items which are likely pose problems includes certain words and expressions which do not have direct equivalents in the target language and have to be interpreted by means of periphrases or circumlocution as a result of lexical gaps between the languages concerned. Rendering these is again related to processing capacity increase, in this case particularly in the Production Effort.

It is obvious that the ability to handle these specific words and phrases, as they are overall referred to in this thesis, as well as the processing capacity redistribution, which they often require, is likely to improve with expertise. That is also why students of interpreting were chosen as participants in this study since their processing capacity is more likely to be negatively influenced by encountering such items. The abovementioned arguments have been found to constitute justified reasons to consider these words and phrases problem triggers.

3.3 Assessment

The overall crucial factor in analysis was determined to be the quality of the performance of interpreters, which was looked at from the point of view of the mistakes made by the interpreters. The aim of the analysis is to examine quality deterioration and state if this could have appeared due to previous occurrence of one of the problem triggers, which in my case were numerical data, specific terms, enumerations, prepositional phrases, idiomatic collocations, and certain words.

In order to guarantee sufficient degree of objectivity the recordings of interpreting were anonymized and assessed by the author of the thesis, who did not know the interpreters personally and was thus not likely to favour any of the students. It needs to be admitted that assessment provided by only one person can yield to subjectivity, on the other hand, the author of the thesis established strictly defined categories of errors, whose classification could then hardly be influenced by their subjective point of view.

3.3.1 Quality

In order to be able to assess the performance of interpreters the determining element of quality ought to be probably defined. There were several authors interested in the notion of quality in interpreting, some of them ascertaining that assessing and defining quality might not be so easy (Moser-Mercer 1996), some of them having a rather finite idea of what

interpreting of a good quality means (Gile 1983). It should be noted that perception of quality can be viewed from different perspectives and may therefore differ from case to case based on the occasion, receivers, purpose of interpreting and so on. With relation to this Pöchhacker mentions that even though the assessment of quality of interpreting can be to a considerable extent subjective, a certain agreement concerning the criteria for assessing quality can be found in the literature. Those are represented namely by accuracy, clarity, and fidelity (Pöchhacker 2001, 413). He also notes that there is a widespread belief concerning interpreting, which he states is "first and foremost, a service designed to fulfil a need" (Pöchhacker 2001, 421), and the actual task of interpreters, which he says is considered to be to supply "a textual product which provides access to the original speaker's message in such a way as to make it meaningful and effective within the socio-cultural space of the addressee" (Pöchhacker 2001, 421).

Based on the abovementioned ideas it might be assumed that interpreting is of a sufficient quality when its recipients are provided with a meaningful rendering of the original speech author's ideas. Nevertheless, I purport to provide a more internal insight into this problematics. I am not looking exactly at of what quality the interpreting in the end was altogether, as it should be perhaps mentioned that a certain performance given by an interpreter can be considered adequate in spite of containing several errors of different types. Moreover, determining of what quality a given delivery is would supposedly call for error detection and analysis anyway. It is rather the question of individual mistakes, which in the end have an impact on how good we consider the interpreting to be, that attracts my attention, namely what types of mistakes were made and what provoked them. Even though I am aware of how closely related errors found in interpreting and quality of interpreting are, it is the question of errors themselves that will be of my interest.

3.3.2 Error analysis

There are several authors whose names are closely connected with analysis of errors. One of the best known ones is the abovementioned Henri Barik, who in his paper from 1971 provides an analysis which divides errors in interpreting into three categories, namely Omissions, Additions, and Substitutions and Errors. He, however, acknowledges that the "system is only meant to be an attempt at some systematization in the consideration of departures of translation occurring in simultaneous interpretation" and that is not "intended to reflect except in a very gross way on the adequacy or < quality > of an interpretation since other critical factors such as delivery characteristics: voice, intonation, appropriateness of

pausing, etc., are not taken into consideration" (Barik 1971, 207). In view of this fact the categories of this analysis have been considered insufficient for the needs of this study.

An analysis which has been found to provide a more structured insight into the errors in interpreting was provided by Janet Altman in 1994. In her pilot study on student errors in simultaneous interpreting she divides the errors into Omissions, Additions, Inaccurate Rendition of Individual Lexical Items, Inaccurate Rendition of Longer Phrases, Lack of TL Fluency, and Loss of Rhetorical Effect (Altman 1994). This approach is undoubtedly more complex, it, however, does not reflect so much on grammatical issues, which constitute a significant portion of the total number of errors in my study. This may be connected to the typology of the target language concerned; Altman's classification was developed for a study focusing on simultaneous interpreting into English, whereas in this study the participants were interpreting from English into Czech, which due to being a fusional language afford more opportunities for mistakes resulting from declension and conjugation, which do not take place in English in such an extent.

Another author who contributed a lot to error analysis was Stephen Pit Corder. Although his analysis was meant to be applied to language teaching and not to interpreting, he proposes interesting ideas which can be taken advantage of in interpreting as well. Perhaps one of the most fundamental ones was his suggestion to distinguish between errors of competence and errors of performance. In his opinion the former ones "refer to the systematic errors of the learner" (Corder 1981, 10) and are those which the term error should be reserved for, the later ones are unsystematic and should be referred to as mistakes (Corder 1981, 10). The errors which are dealt with in this study are the errors of performance and should be in compliance with Corder's terminology called mistakes. This terminological distinction has not been followed, though, and the terms errors and mistakes are used interchangeably in this thesis and both refer to unsystematic errors of performance.

3.3.3 Errors classification

As has been stated above there are different approaches to classification of errors in interpreting. As a result of different nature of languages related to linguistic typology it can be said that certain errors are language specific or, as the case may be, they can occur in some languages but their occurrence is, because of a lack of some grammatical features, in other languages practically impossible. I therefore decided to take the liberty of working with my own classification of errors which I have found suitable to the topic and the language pair concerned. This classification was partly inspired by the abovementioned authors and

partly driven by me feeling the need to bridge some of the gaps I found in the other approaches when attempts were made to apply them to my language pair, i.e. English and Czech. The classification which has been felt to be the most appropriate for the needs of this thesis is the one presented by Puková, who in her thesis assesses quality in terms of four criteria, out of which two concern the content, in which she includes omissions and meaning imperfections, and two concern the form, in which she includes the criterion of language correctness, i.e. imperfections found on the level of morphology, lexicon, syntax, stylistics, and text, and the criterion of presentation (Puková 2006). This classification has laid the foundations for the classification of errors in this study. Consequently, I propose three levels on which the following types of mistakes might occur:

a) Content:

- Omission, i.e. omitting a piece of information which was present in the original and which is either not redundant and/or whose lack cannot be compensated for in any other way, or it is information which is generally known, its meaning can be inferred, or its absence does not impair comprehensibility
- Shift of meaning, i.e. the information is not missing but its meaning is not precise

b) Language:

- Level of text, i.e. cohesion and coherence
- Level of stylistics, i.e. register, appropriate choice of language means with respect to usual usage, interference
- Level of syntax, i.e. word order, unintelligible sentences, unfinished sentences – false starts
- Level of morphology, i.e. concord between individual constituents, incorrect forms of words, declension
- Level of lexicon, i.e. correctness of terms, adequacy of vocabulary used, usage of non-existing lexical means and/or expressions, hedging

c) Form, i.e. the overall oral presentation

- Slip of the tongue
- Improper pronunciation including syllables swallowing
- Unfinished words
- Hesitation sounds
- Pauses in inappropriate places, i.e. pauses longer than 3 seconds in places where there were none in the original speech

3.4 Data processing

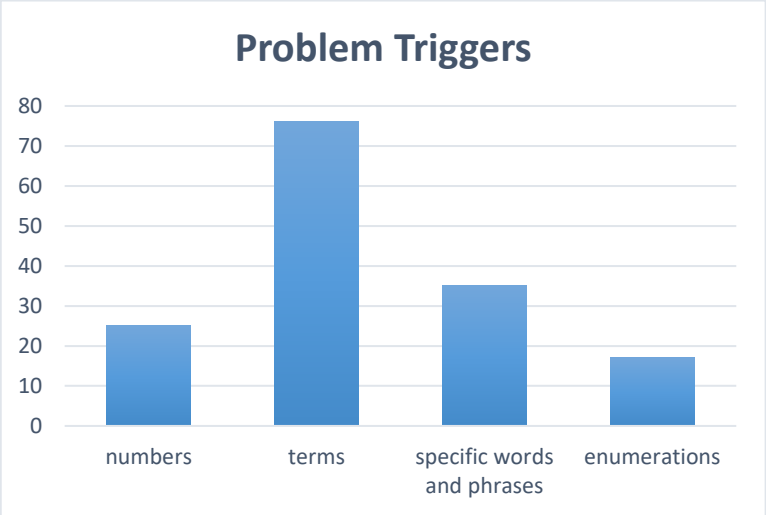
The errors as well as all the problem triggers have been separately counted and put into the tables corresponding to given interpreters. The recording in total contained 12 numbers, 57 terms, 26 specific words and phrases, and 13 enumerations.

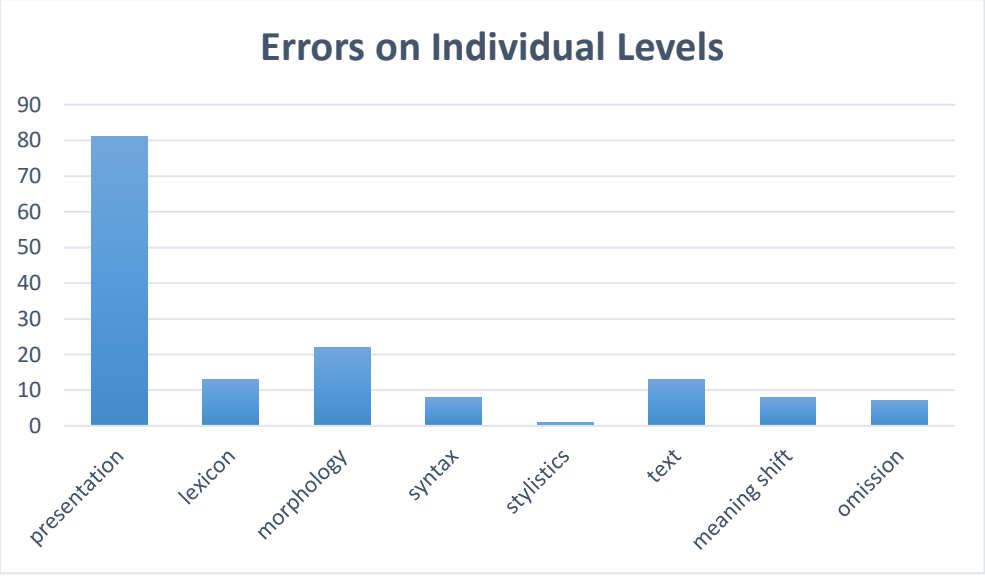
With respect to the unproportioned number of individual problem triggers it follows that making a conclusion about which problem trigger caused the most errors based on the absolute numbers of errors caused by the individual problem triggers would not be suitable in this case as it is highly likely that most errors would be made as a consequence of encountering terms, which occurred in the highest number. Thus, I decided to express the number of errors as a proportion. The total number of mistakes which were stated to have been made because of an occurrence of numbers, terms, specific words and phrases, and enumerations has been divided by the total number of the numbers, terms, specific words and phrases, and enumerations present in the recording. The resulting quotient was rounded to three decimal places. This way of results interpretation has been regarded more appropriate since in this way it has been felt to be possible to express how many errors were made on average in one instance of a number, a term, a specific word or a phrase, and an enumeration, and the possible misleading conclusion about which problem trigger is responsible for the most mistakes has been eliminated.

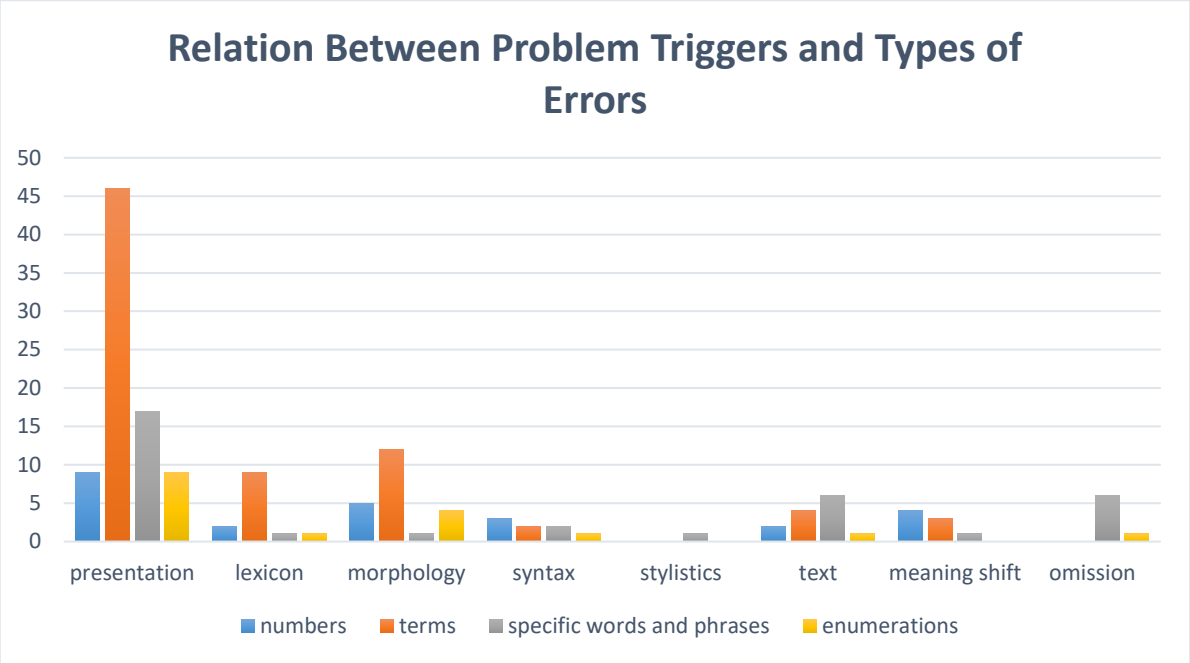
The results of all the interpreters were plotted on charts and graphs and provided with individual commentaries concerning which problem trigger caused the most mistakes and on which level the most mistakes were made by each interpreter. After analysing the results of all the interpreters individually a final conclusion answering the research questions was made.

Interpreter 1

	presentation	lexicon	morphology	syntax	stylistics	text	meaning shift	omission	total
numbers	9	2	5	3	0	2	4	0	25
terms	46	9	12	2	0	4	3	0	76
specific words and phrases	17	1	1	2	1	6	1	6	35
enumerations	9	1	4	1	0	1	0	1	17
total	81	13	22	8	1	13	8	7	153







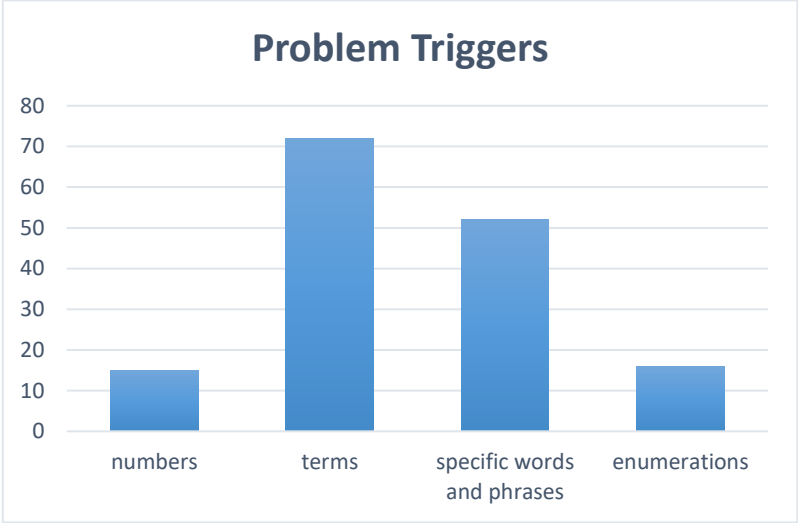
Commentary 1

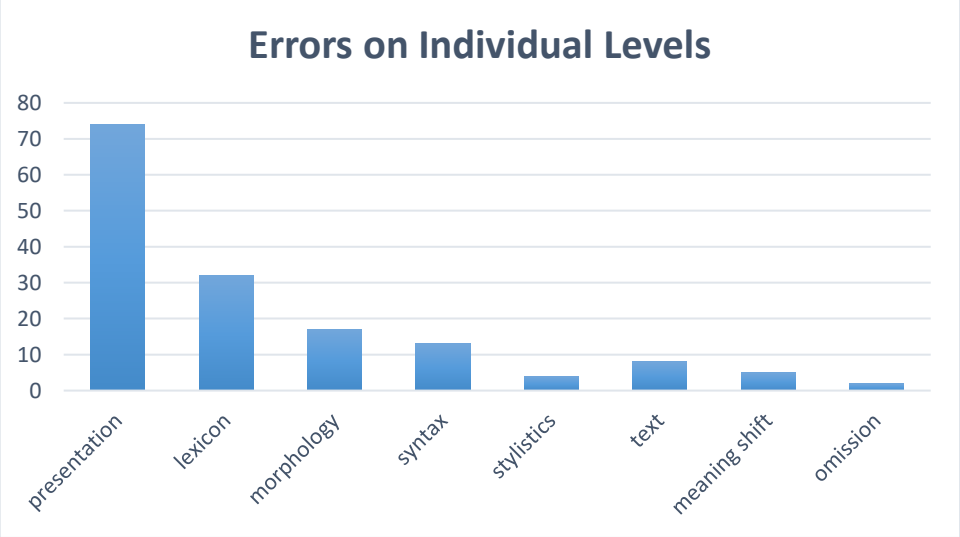
The Interpreter 1 made most mistakes in presentation, followed by errors in morphology, and on the level of lexicon and text where the equal number of errors were made. The relatively high number of mistakes in morphology can probably be acquainted to the fact that Interpreter 1 was not interpreting into their mother tongue. The same fact can be said to be the cause of errors on the level of text.

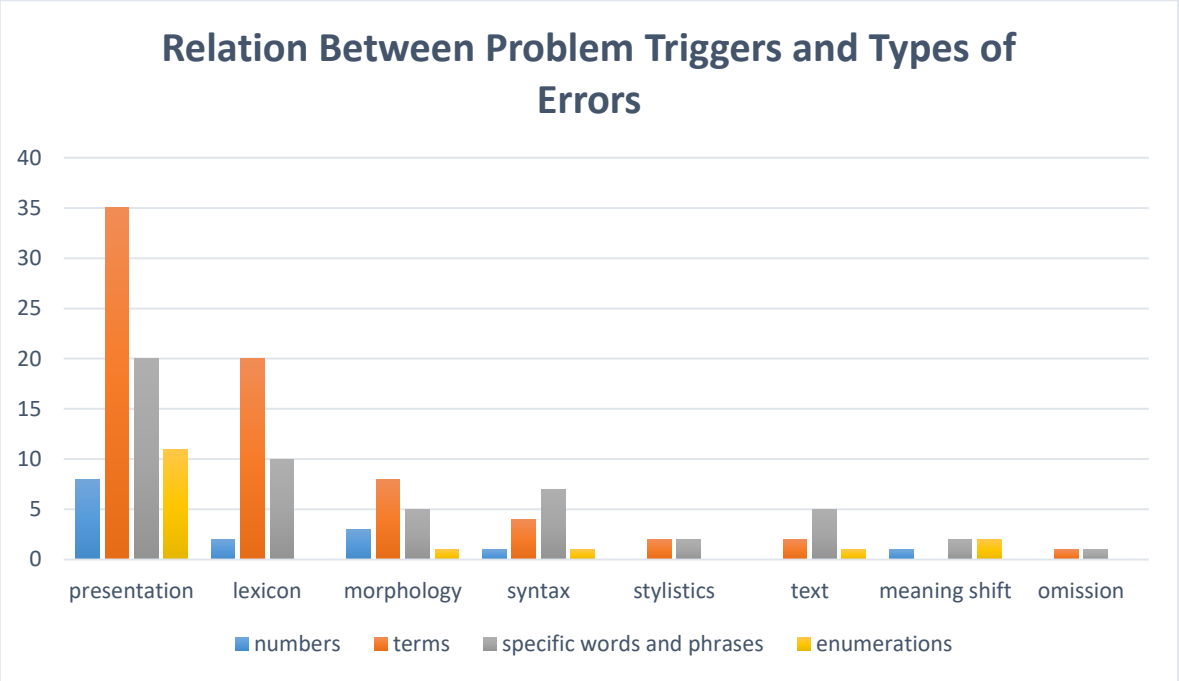
The problem triggers which have shown to have caused the most errors were numbers, where in one number 2.083 errors were made, followed by specific words and phrases with 1.346 errors, terms with 1.333 errors, and enumerations with 1.308 errors in one instance.

Interpreter 2

	presentation	lexicon	morphology	syntax	stylistics	text	meaning shift	omission	total
numbers	8	2	3	1	0	0	1	0	15
terms	35	20	8	4	2	2	0	1	72
specific words and phrases	20	10	5	7	2	5	2	1	52
enumerations	11	0	1	1	0	1	2	0	16
total	74	32	17	13	4	8	5	2	155







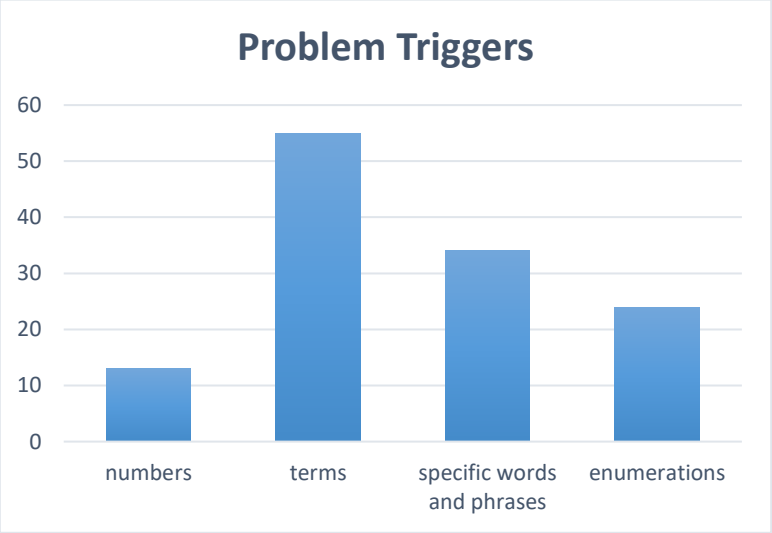
Commentary 2

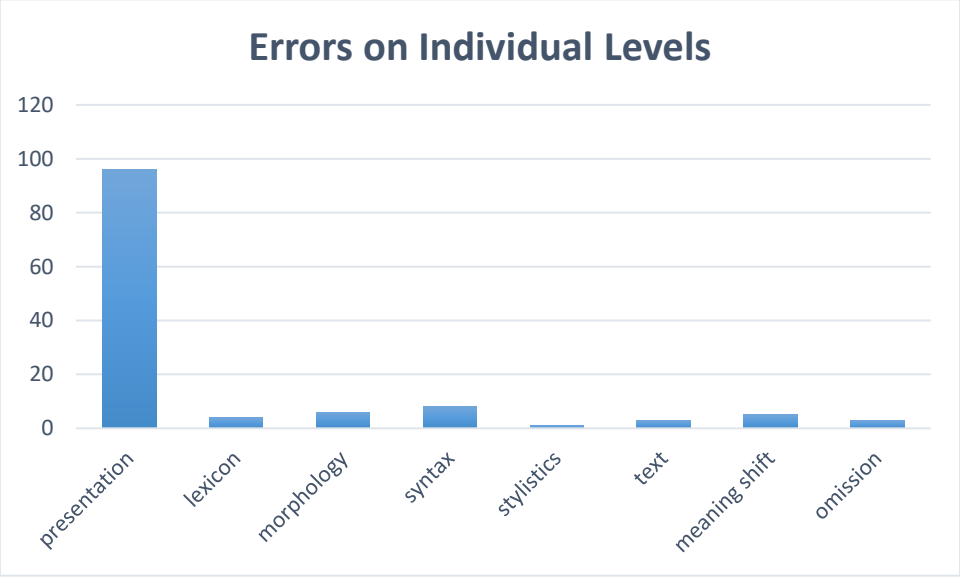
The Interpreter 2 made most mistakes in presentation, followed by errors on the level of terminology and/or lexicon, morphology, syntax, text, shift of meaning, stylistics, and omission.

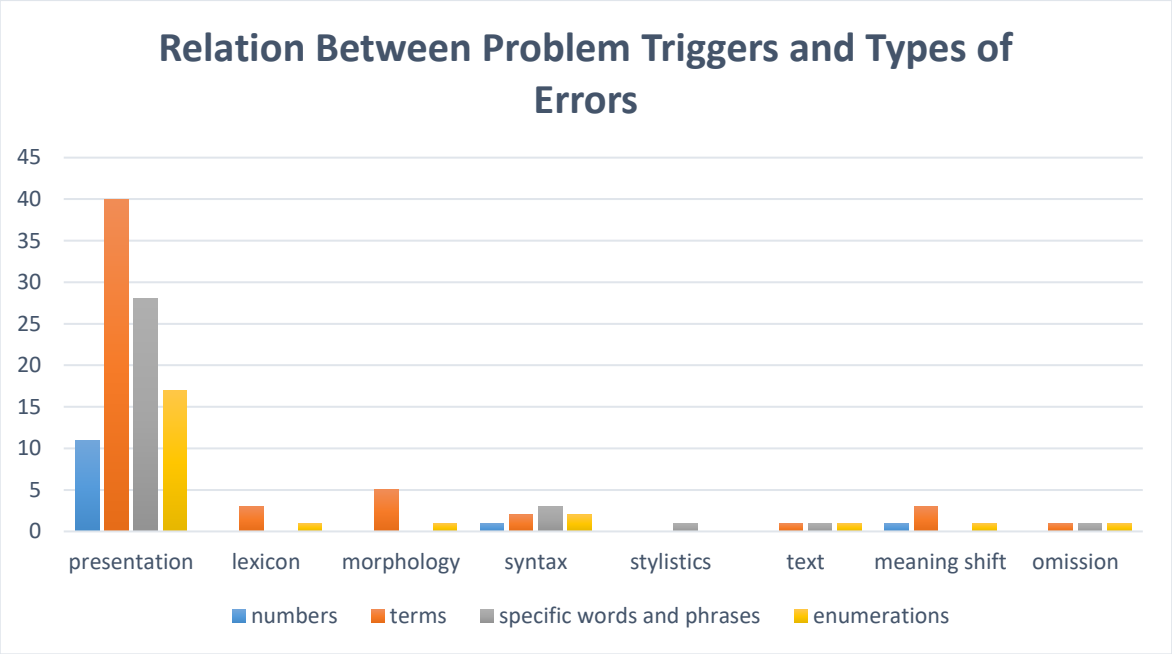
Concerning the problem triggers which generated the most mistakes, the results suggest that this interpreter struggled the most with specific words and phrases, in which 2.000 errors were made in one instance, in one term 1.263 errors were made, regarding numbers it was 1.250 errors, and in one enumeration 1.231 mistakes occurred.

Interpreter 3

	presentation	lexicon	morphology	syntax	stylistics	text	meaning shift	omission	total
numbers	11	0	0	1	0	0	1	0	13
terms	40	3	5	2	0	1	3	1	55
specific words and phrases	28	0	0	3	1	1	0	1	34
enumerations	17	1	1	2	0	1	1	1	24
total	96	4	6	8	1	3	5	3	126







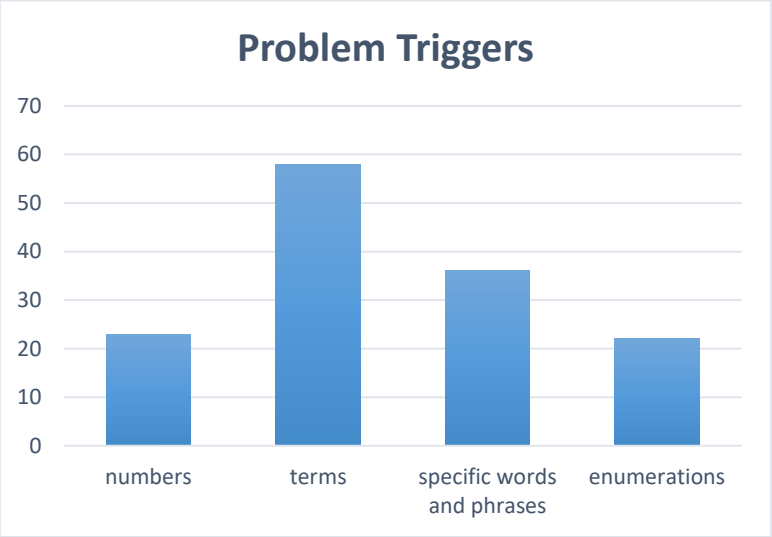
Commentary 3

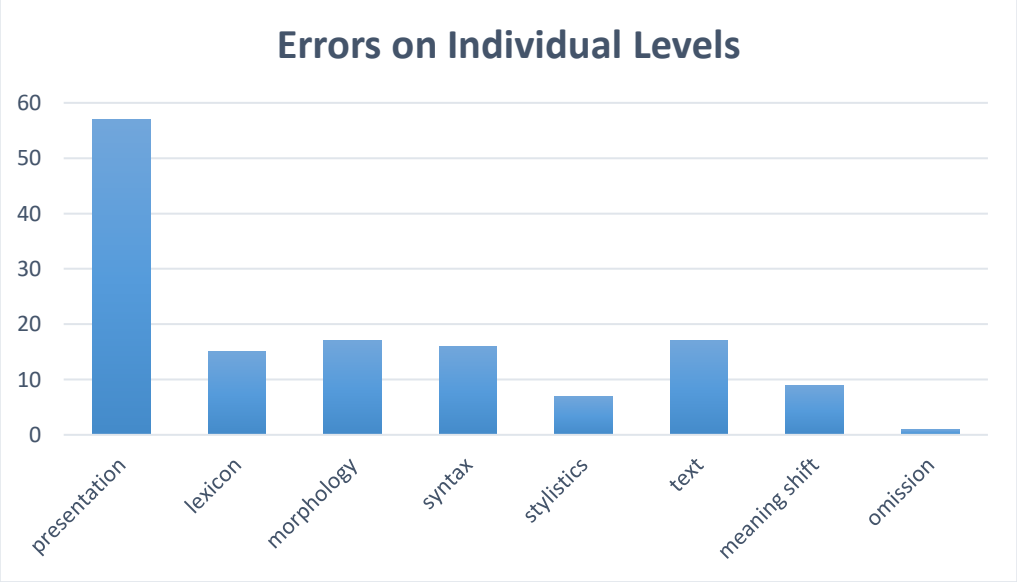
The Interpreter 3 made most mistakes in presentation, in which 96 errors were found. The errors on other levels, however, occurred only in small numbers suggesting that the errors made in presentation by this interpreter might not have been made as consequences of problem triggers encountering but because of this interpreter's tendency to make pauses filled with hesitation and/or other unpleasant sounds, which have been counted as mistakes in presentation.

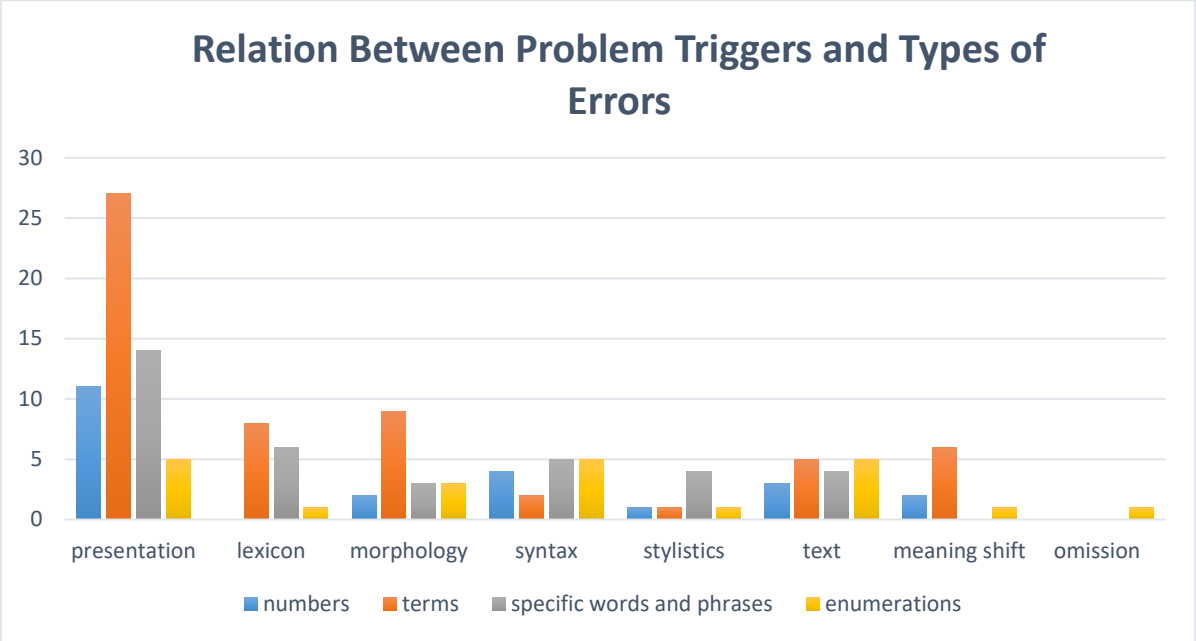
The findings further show that this interpreter encountered most difficulties when facing enumerations, in which 1.846 errors were made in one example, followed by specific words and phrases with 1.308 errors in one instance and numbers with 1.083 errors made in one numerical data. The least mistakes were made by this interpreter in terms, where only 0.965 errors were detected in one term.

Interpreter 4

	presentation	lexicon	morphology	syntax	stylistics	text	meaning shift	omission	total
numbers	11	0	2	4	1	3	2	0	23
terms	27	8	9	2	1	5	6	0	58
specific words and phrases	14	6	3	5	4	4	0	0	36
enumerations	5	1	3	5	1	5	1	1	22
total	57	15	17	16	7	17	9	1	139







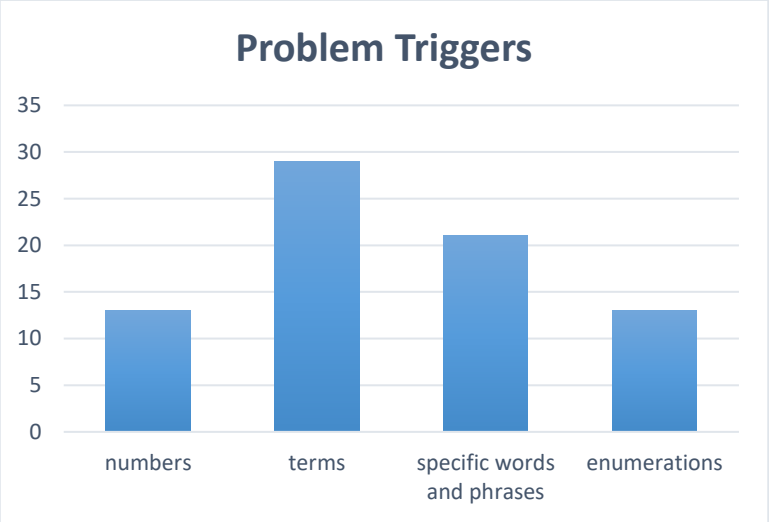
Commentary 4

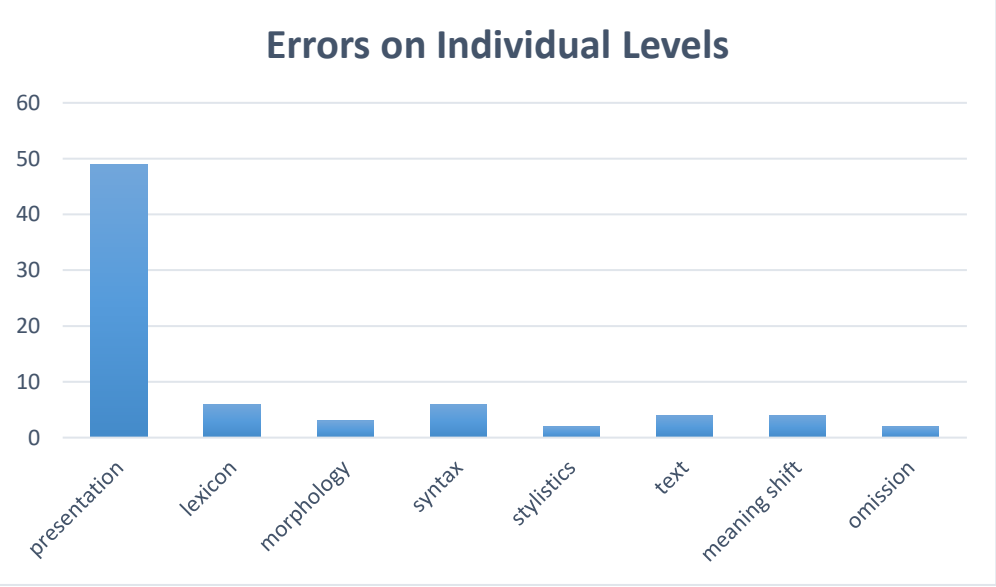
This interpreter made quite a considerable number of mistakes in morphology and on the level of text, which is a phenomenon that can be compared to that of the Interpreter 1 as this interpreter was not interpreting into their mother tongue neither.

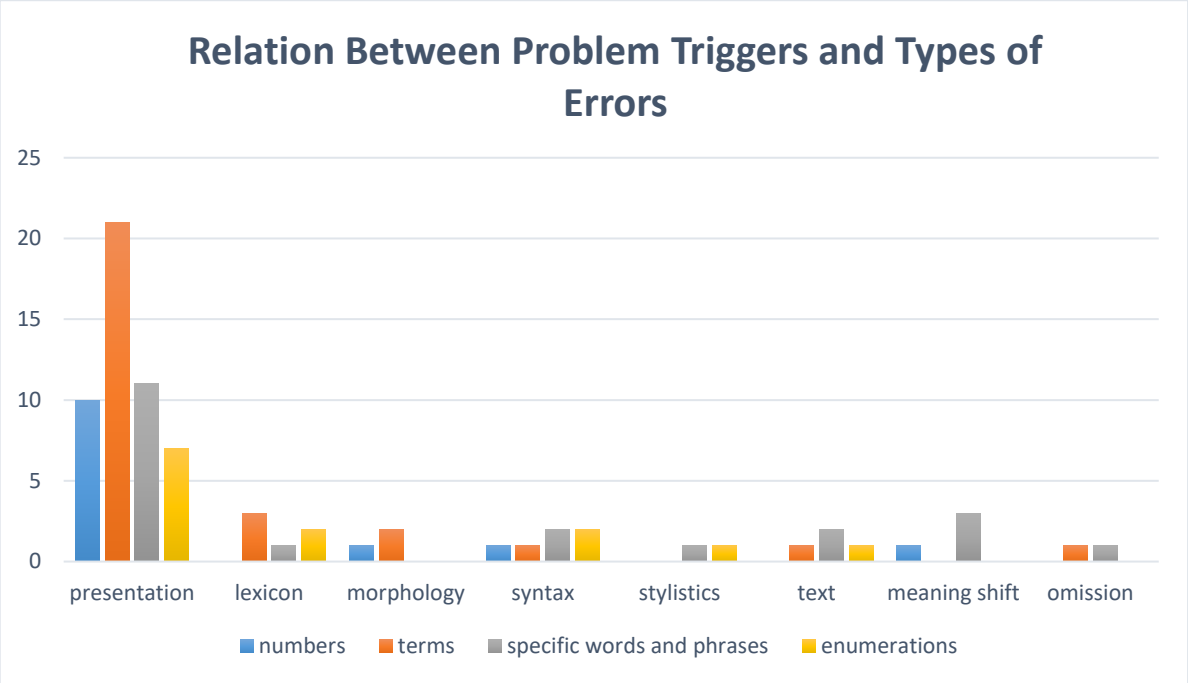
The Interpreter 4 seems to have struggled the most with numbers, in which 1.917 errors were made on average in one instance. The problem triggers which caused the most mistakes in the second place were enumerations with 1.692 errors in one instance, followed by specific words and phrases with 1.385 errors and terms with 1.018 errors.

Interpreter 5

	presentation	lexicon	morphology	syntax	stylistics	text	meaning shift	omission	total
numbers	10	0	1	1	0	0	1	0	13
terms	21	3	2	1	0	1	0	1	29
specific words and phrases	11	1	0	2	1	2	3	1	21
enumerations	7	2	0	2	1	1	0	0	13
total	49	6	3	6	2	4	4	2	76







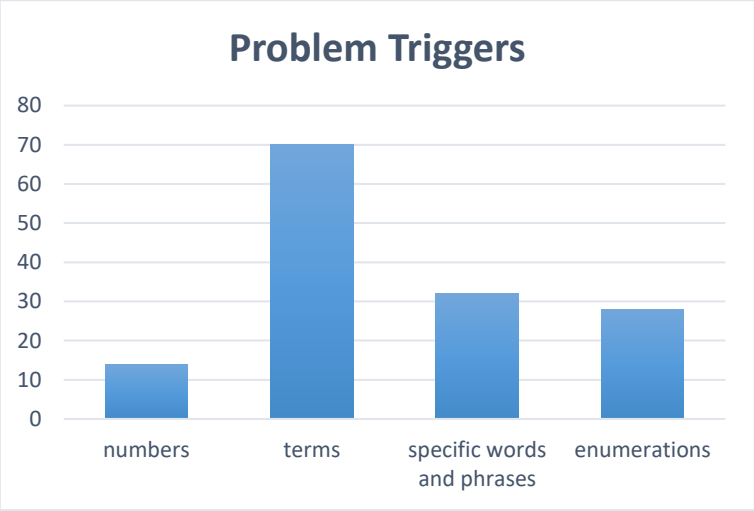
Commentary 5

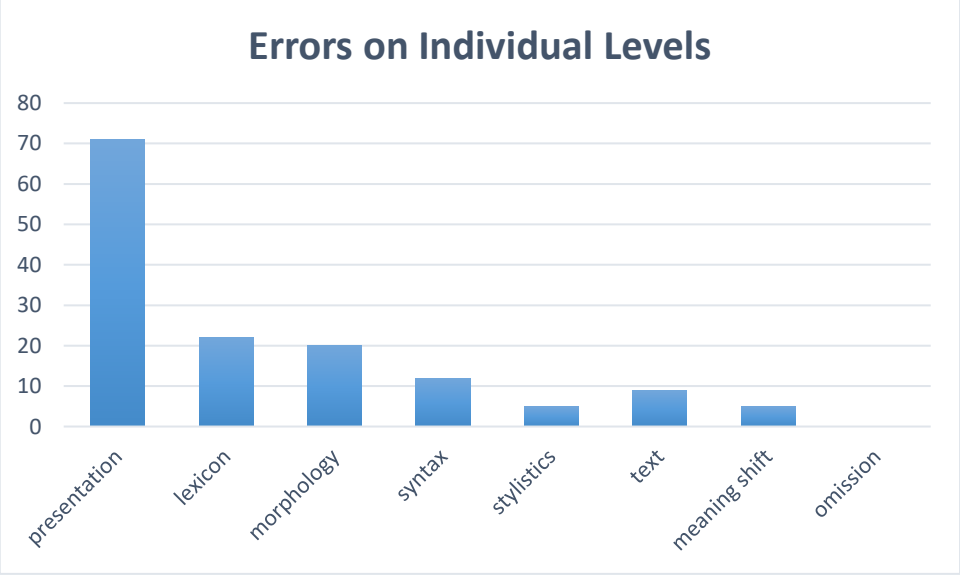
The Interpreter 5 made in total the least mistakes. The most errors were detected in presentation, followed by those in lexicon and syntax, and errors on the level of text and those which included shift of meaning.

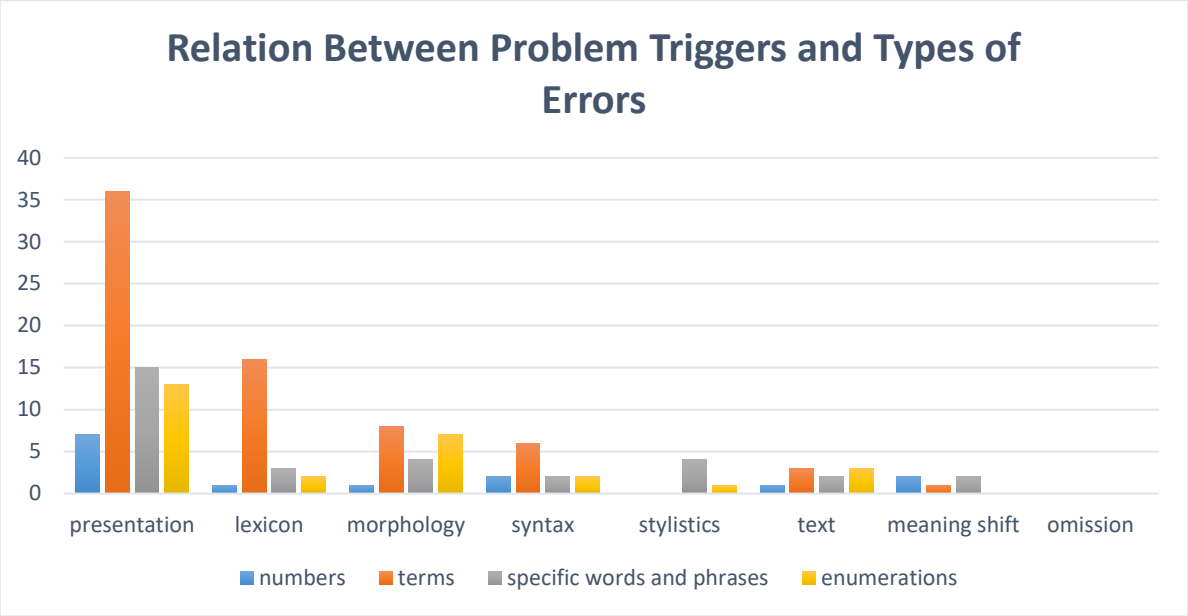
The problem triggers which generated the most mistakes were numbers, in which case in one instance 1.083 errors were made, followed by enumerations, where 1.000 error was made in one occurrence, and specific words and phrases with 0.808 errors in one instance. The least errors were made by this interpreter after encountering terms, where the proportion between the errors found in the rendering of terms and the total number of terms was 0.509.

Interpreter 6

	presentation	lexicon	morphology	syntax	stylistics	text	meaning shift	omission	total
numbers	7	1	1	2	0	1	2	0	14
terms	36	16	8	6	0	3	1	0	70
specific words and phrases	15	3	4	2	4	2	2	0	32
enumerations	13	2	7	2	1	3	0	0	28
total	71	22	20	12	5	9	5	0	144







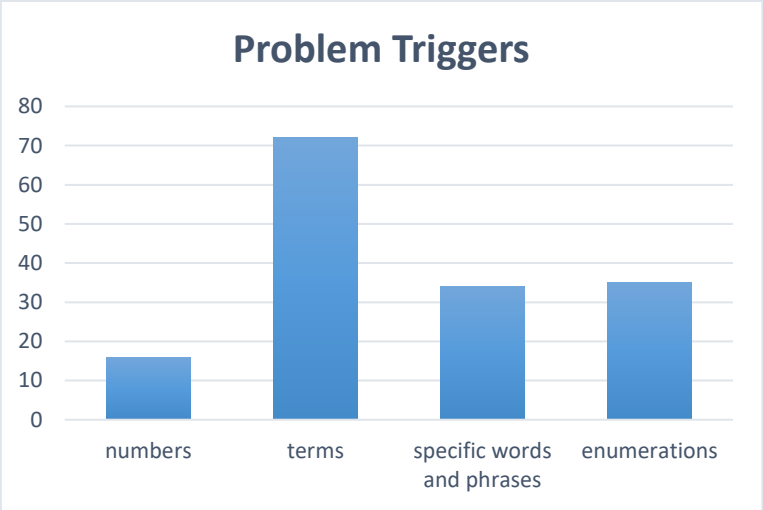
Commentary 6

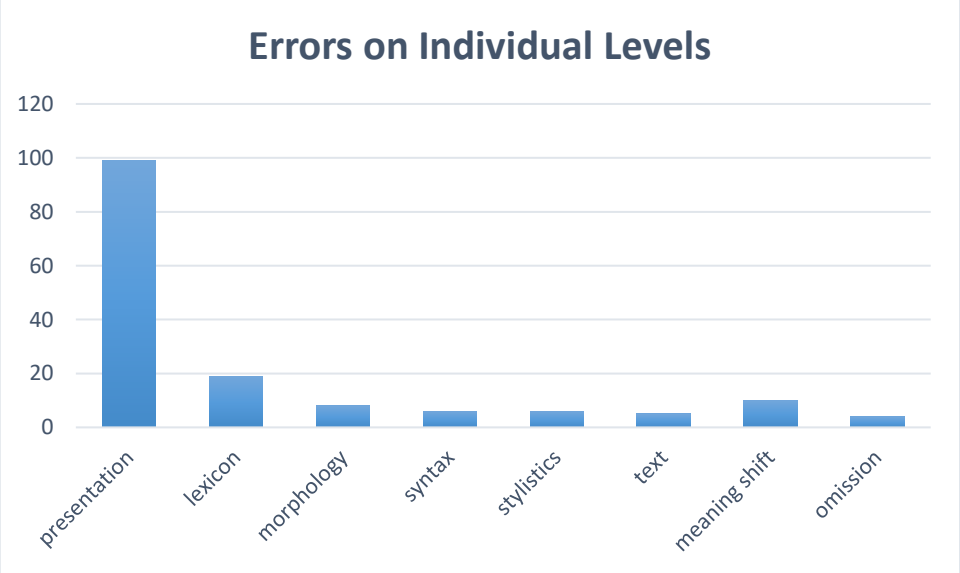
The Interpreter 6 made most errors in presentation. Relatively high number of mistakes can be noticed in morphology, which can be probably acquainted to the stress simultaneous interpreting puts on interpreters. He or she, however, did not omit anything and did not change the meaning in many cases, which overall results in a very faithful rendering of the original, in spite of the language problems which occurred.

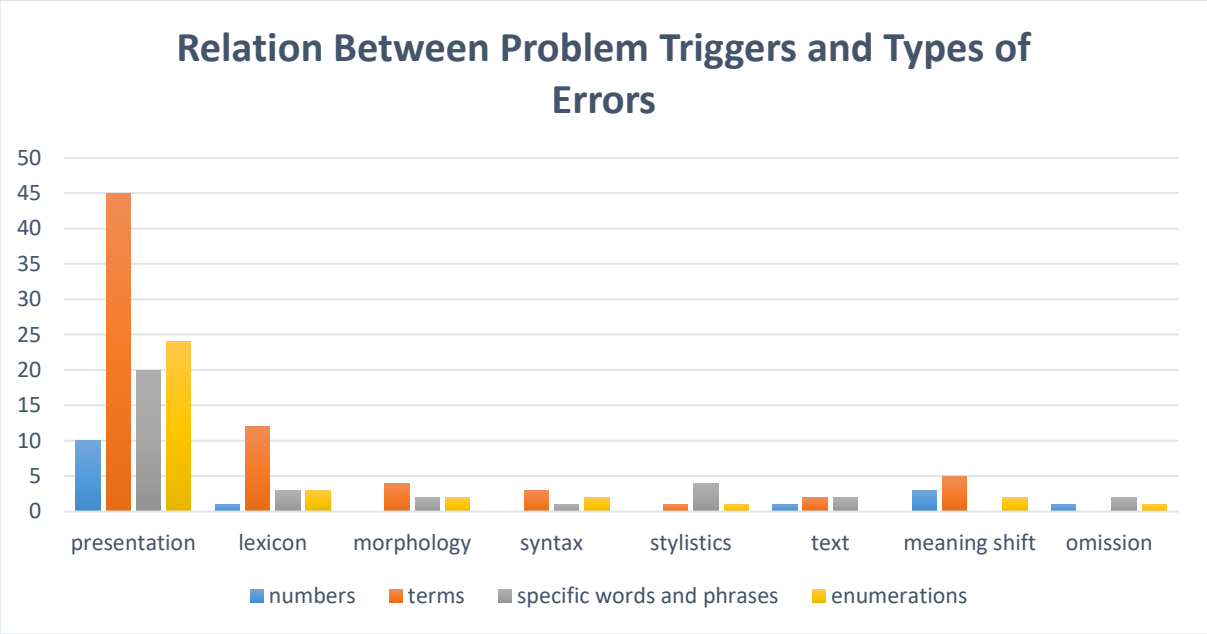
This interpreter made most mistakes after encountering enumerations, which caused 2.154 errors in one occurrence. The number of errors made as a consequence of other problem triggers was 1.231 for specific words and phrases, 1.228 for terms, and 1.167 for numbers.

Interpreter 7

	presentation	lexicon	morphology	syntax	stylistics	text	meaning shift	omission	total
numbers	10	1	0	0	0	1	3	1	16
terms	45	12	4	3	1	2	5	0	72
specific words and phrases	20	3	2	1	4	2	0	2	34
enumerations	24	3	2	2	1	0	2	1	35
total	99	19	8	6	6	5	10	4	157







Commentary 7

The Interpreter 7 turns out to be quite specific as the most mistakes were made in presentation, followed by errors in lexicon and those connected to meaning shift.

The results show that this interpreter encountered the most difficulties when dealing with enumerations, where they made 2.692 errors in one instance, in one instance of a numerical data they made 1.333 errors, in one occurrence of a specific word or a phrase they on average made 1.308 errors, and in one term 1.263 errors were made by this interpreter.

3.5 Commentary on specific problem triggers

At this point it might be worth mentioning and commenting on some of the problem triggers which, in spite of not looking difficult at first sight, do pose problems for interpreters and did cause interpreters' mistakes. They were mainly words and phrases which do not have direct equivalents or are in the recording used in a specific or unusual context, in which their existing equivalents would be felt unsuitable.

One of such specific problem triggers was a sentence "When someone first suggested this to me, quite frankly I thought they were a little crazy, but what I soon came to realize was that this is not so crazy after all", particularly the two pronouns "someone" and "they". The problem with these is that the plural personal pronoun "they" refers to a singular indefinite pronoun "someone". This is in English done with the aim to follow the principle of political correctness, which is not, however, obeyed to the same extent in Czech. When referring to the pronoun "někdo", which is a Czech equivalent of "someone", a singular number of a personal pronoun has to be used, i.e. "on". This has proved to be problematic for interpreters, who in most cases copied the path chosen in the original and therefore made a mistake when using "někdo" and then referring to it as "oni", which is ungrammatical in Czech.

Another group of specific words and phrases were ing forms, which are in English used quite frequently as sentence condensers since they lack tense markers and usually also subjects and subordinating conjunctions and therefore serve well for the purpose of syntactic compression. These posed problems for interpreters in the delivery. Czech has one way of dealing with these ing forms directly, which is to transfer them by means of transgressives. These are, however, generally used in Czech less and less and their occurrence has almost limited only to certain types of genres or texts and is felt awkward in common communication. Another way of transferring these is to use an infinitive in Czech or a corresponding noun; if there is none, the interpreters have to add a subject, a subordinating conjunction and a tense marker in most cases to be able to render them adequately.

Other interesting expressions whose transfer might be in general problematic are false friends. In the recording which was interpreted in pursuance of this study these were represented by expressions such as "characteristics", "control", and "qualities". These have Czech counterparts which sound very similar but do not have exactly the same meaning. They should therefore be translated as "rysy", "ovlivňovat" and "vlastnosti", respectively, rather than "charakteristiky", "kontrolovat", and "kvality", which were the expressions found in the delivery of some of the interpreters.

Among other phrases which posed difficulties for interpreters were “gateway material” and “closer to the horizon”, which must not be translated literally but have to be transferred by means of corresponding equivalents which are idiomatic in Czech. Other problematic words worth mentioning are “reimagining”, which does not have any direct equivalent in Czech, and “beyond”, whose transfer, in spite of having several Czech counterparts, generally presents difficulties not only in interpreting but also in translating.

3.6 Discussion

I was trying to verify the hypothesis that occurrence of a problem trigger in simultaneous interpreting places increasing demands on the processing capacity of interpreters and was investigating the relation between problem triggers and their impact on the number and the character of mistakes made by interpreters in simultaneous interpreting.

I was working with the final products represented by recordings of simultaneous interpreting and their transcripts, in which all the errors had been carefully spotted, and the original speech, in whose transcript possible problem triggers had been detected as well. On the basis of the recordings of interpreting and their transcripts, which had been compared to the original speech, assumptions were made about whether the errors found in the performances of interpreters could have been caused by given triggers. Unlike the errors, which could be determined quite clearly, the mental processes and the likelihood of a given error being a result of a given problem trigger could only be assumed. Consequently, it is to be mentioned that 100% certainty in the causes of errors cannot be guaranteed.

Another hypothesis which was tested was that problem triggers might not provoke problems immediately but at distance. The hypothesis was that a segment containing a problem trigger will be rendered correctly but a mistake will occur in the following segment. Nevertheless, as a result of the fact that the original recording was used for examination purposes nearly all the segments were difficult as almost all of them contained at least one of the defined problem triggers, except for fifteen segments. This hypothesis could thus have been proved only in the fifteen cases in which a difficult segment was followed by a supposedly easy segment in which errors were found. It should be mentioned that in the majority of these cases it has been proved. Even though no conclusion can be made on the basis of the few instances in which errors were spotted in the interpreters' deliveries even in segments not containing any problem triggers, this hypothesis cannot be said to have been disproved, it seems that chances are that this hypothesis is true.

The findings presented in graphs in total show that most errors were triggered by terms. It needs to be pointed out, however, that terms were also the set of problem triggers which occurred in the original recording in the greatest number. In other words, the fact that most errors were caused by encountering a term can be ascribed to the disproportionate presence of terms in the source language speech. That is why the data was not processed in absolute terms but proportionally.

I acknowledge that due to the complexity of the topic of this thesis certain shallowness could not be avoided as a more thorough investigation of problem triggers in

interpreting would supposedly be beyond the scope of this work. This study should be thus perhaps viewed as laying foundations for further research to be conducted in this area. The goal of this thesis, however, was to prove that some pieces of information are more difficult to handle in interpreting and to demonstrate their impact on the processing capacity of interpreters, who when facing them especially in simultaneous interpreting are more likely to make mistakes.

With respect to this I believe my effort was successful as the results have satisfactorily managed to prove my hypothesis and answer my research questions.

4 CONCLUSION

My thesis focuses on errors in interpreting, precisely on why they occur and whether there is a relation between a certain problem trigger and a certain type of mistake, in other words, whether it can be stated that a certain type of mistake is likely to be a consequence of a certain problem trigger. The hypothesis was that problem triggers, which in my case were namely numbers, terms, enumerations, idiomatic and prepositional phrases, and certain words, influence interpreters' allocation of processing capacity and have a considerable impact on their performance, which will become erroneous. This hypothesis was tested on seven recordings of simultaneous interpreting of students of interpreting at the end of their 2nd year of master's studies of translating and interpreting between Czech and English at Palacký University.

All the recordings of interpreting were transcribed and analysed individually, each of them was then supplemented with a chart and three graphs showing which of the problem triggers provoked the most mistakes, how many mistakes of each type were made, and which problem triggers caused which types of errors.

After analysing the recordings individually an overall conclusion was made. This can be described by stating that interpreters have some kind of a hierarchy in their heads which they either consciously or unconsciously apply when facing a problem which has consequences in the phase of production. This hierarchy has three levels, namely the content, the language, and the form. My findings suggest that based on what is perceived as crucial on one hand and what is considered less important on the other, interpreters allocate their mental energy to individual levels, with the foremost aim to preserve primarily the content of the message. In other words, my findings suggest that if the interpreter does not have enough capacity and encounters saturation, when they are forced to decide about the amount of their processing capacity each level will be supplied with, in the first place they forfeit the form, secondly they sacrifice the language and in the last place the content. This corresponds to a study conducted by Kopczynski in which he investigated what participants to an interpreting act, namely speakers and receptors, consider the crucial information. He found out that the most important criterion was content, followed by terminological precision and the form, which ranked third (Kopczynski 1994).

The findings can thus be summarized as proving the hypothesis that a problem trigger occurrence leads to increase in the demands of processing capacity and a situation when an interpreter makes an error. The results further suggest that items which triggered the most difficulties were numbers and enumerations and that the highest number of errors was made

on the level of form, i.e. in presentation, followed by errors in terminology, morphology, syntax, stylistics, cohesion and coherence, and content. The relationship between particular problem triggers and certain errors has shown to be quite difficult to prove as all the problem triggers caused the overwhelming majority of errors in presentation. It can be, however, stated that relatively high numbers of mistakes were found on the level of lexicon as a result of a term occurrence.

The overall statement can hence be made, which is that in the production phase interpreters follow a certain hierarchy when dividing their processing capacity into the individual levels with the intention to preserve above all the content of the message, perhaps to the detriment of the form, and that all the strategies which they apply, be it automatically or not, subdue to this overall strategy and are applied with respect to this goal.

5 RESUMÉ

Ve své bakalářské práci jsem se snažila ověřit hypotézu, že určité typy údajů mohou v tlumočení fungovat jako jakési „spouštěče chyb“ a mají tendenci způsobovat tlumočníkům problémy. Navazovala jsem na Daniela Gila a jeho Model úsilí, pomocí kterého Gile popisuje proces tlumočení a jeho jednotlivé fáze s přihlédnutím k množství mentální energie, kterou tlumočení vyžaduje. Gile tvrdí, že v průběhu tlumočení má každý tlumočník pouze omezené množství mentální energie, při jejímž vyčerpání dochází k saturaci. Je to podle něj stav, kdy jsou celkové požadavky kladené na mentální energii, o které Gile hovoří jako o pracovní kapacitě, vyšší než celkové množství pracovní kapacity, kterou tlumočník v daném okamžiku má k dispozici, v důsledku čehož je v tlumočníkovu převodu možno pozorovat chyby. Druhý stav, který ohrožuje správné přetlumočení daného úseku, je způsoben neadekvátním rozdělením pracovní kapacity mezi jednotlivá úsilí, která Gile v simultánním tlumočení, které bylo v této práci zkoumáno, dělí na úsilí poslechu a analýzy, úsilí krátkodobé paměti, úsilí produkce a úsilí koordinace. K nesprávnému rozdělení pracovní kapacity dochází v momentě, kdy se tlumočník rozhodne nebo je okolnostmi nucen věnovat jednomu z úsilí více své pracovní kapacity, jejíž množství je později nedostačující pro pokrytí potřeb jiného úsilí, což vede ke vzniku individuálního deficitu, který se projeví jako tlumočníkova chyba.

Mým cílem bylo pomocí sedmi nahrávek simultánního tlumočení studentů na konci druhého ročníku navazujícího magisterského programu Angličtiny se zaměřením na tlumočení a překlad na Univerzitě Palackého v Olomouci ukázat, že z důvodu výskytu některého spouštěče se tlumočníci dopustili chyb. Mezi zmíněné spouštěče byly zařazeny číselné údaje, termíny a výčty, přičemž tyto známé spouštěče byly doplněny o předložkové vazby, idiomatická vyjádření a specifická slova, která nemají v češtině přímý ekvivalent a jejichž převod musí být proveden formou opisu, kdy tlumočník musí informaci nějakým způsobem dovysvětlit. Tento úkon byl vyhodnocen jako činnost vykazující na pracovní kapacitě tlumočníků dostatečnou zátěž, aby byly tyto údaje považovány za spouštěče, které zvyšují riziko tlumočníkovy chyby. Tyto údaje byly pro potřeby této práce souhrnně nazvány jako specifická slova a slovní spojení a je na ně v této práci takto odkazováno.

Mou druhou hypotézou bylo, že se tyto chyby nemusí projevit nutně v úseku, ve kterém se vyskytl některý ze spouštěčů, ale že je možno chyby pozorovat později, v následujících úsecích, jakožto následky nedostatku pracovní kapacity, která musela být věnována úsilí poslechu a analýzy či úsilí krátkodobé paměti, které vyžadovalo více mentální energie na zpracování náročných údajů.

V závislosti na výzkumných otázkách, které jsem si stanovila, jsem se snažila určit, které spouštěče způsobovaly tlumočníkům nejvíce problémů, tj. generovaly nejvíce chyb, dále na kterých rovinách se tlumočníci dopouštěli největšího množství chyb a jestli lze pozorovat vztah či spojitost mezi výskytem určitého spouštěče a určité chyby, jinými slovy zdali je možno tvrdit, že daný typ spouštěče má tendenci způsobovat konkrétní typ chybného převodu.

V teoretické části je stručně popsána historie výzkumu v oblasti tlumočení a existující modely. Větší část je věnována Gileovu Modelu úsilí, včetně otázky pracovní kapacity, hypotézy provazochodce a teoretickému popisu spouštěčů problémů v tlumočení. V následujících dvou kapitolách se práce zabývá otázkou deverbalizace a transkódování, což jsou jedny z klíčových procesů v tlumočení. Kapitola 2.8 je věnována jednotce smyslu a jejímu definování pro potřeby této práce. V praktické části je blíže popsána hypotéza, poměrně značná část je věnována popisu samotné nahrávky, tlumočníků a jednotlivých skupin spouštěčů, stejně jako odůvodnění, proč jsou tyto považovány za spouštěče. Dále je v práci popsána metoda hodnocení, která byla při zpracování aplikována, a představena klasifikace chyb, která byla částečně vytvořena specificky pro tento případ, nicméně je podpořena přechozími pracemi týkajícími se analýzy chyb a hodnocení kvality v tlumočení.

V originální nahrávce, jejíž přepis je k dispozici na webových stránkách TED Talks, byly zaznamenány veškeré spouštěče, tedy údaje, u jejichž převodu bylo možno očekávat zvýšené nároky na pracovní kapacitu tlumočníků, a tím i větší riziko chyb. Nahrávky simultánního tlumočení jednotlivých tlumočníků byly detailně přepsány i se všemi chybami v prezentaci, přičemž chyby na jednotlivých rovinách byly pro větší přehlednost označeny barevně. Přepisy tlumočení byly následně porovnávány s originálem a v závislosti na výskytu spouštěče v originálu byly připočítávány chyby.

Výsledky byly zaneseny do tabulky, ze které vzešly celkem tři grafy týkající se otázky, který ze spouštěčů způsobil nejvíce chyb, množství chyb na jednotlivých rovinách a možného vztahu mezi jednotlivými spouštěči a chybami. Na základě celkového množství spouštěčů a chyb bylo vypočteno, který spouštěč způsoboval nejvíce chyb, a sice tak, že u každého tlumočníka byl počet chyb způsobený každou skupinou spouštěčů vydělen počtem spouštěčů v originální nahrávce, čímž bylo zjištěno průměrné množství chyb na jeden výskyt jednoho spouštěče daného typu.

Celkově lze říci, že jako nejproblematičtější spouštěče se shodně ukázaly být číselné údaje, které působily nejvíce problémů třem tlumočníkům, a výčty, které způsobily největší množství chyb u dalších třech tlumočníků, pouze u jednoho tlumočníka jako největší

spouštěče z výsledků vychází specifická slova a slovní spojení. Nejvíce chyb se tlumočníci ve všech případech shodně dopouštěli v prezentaci, největší chybovost tedy byla zaznamenána ve formální stránce projevu.

Obecně lze z výsledků vyčíst, že tlumočníci vědomě či nevědomě následují jakousi hierarchii důležitosti, v závislosti na které se vždy snaží zachovat hlavně smysl sdělení, což se obecně traduje jako jeden z nejpodstatnějších úkolů při tlumočení. Vzhledem k povaze simultánního tlumočení, jehož náročnost vyžaduje, aby tlumočníci poslouchali a mluvili téměř souběžně, se tlumočníci často dostávají na hranici možností své pracovní kapacity, kdy jim množství jejich mentální energie nestačí na pokrytí všech úkonů. V těchto případech musí tlumočníci pod nátlakem, ať už vědomě či automaticky, mnohdy obětovat kvalitu jednoho úkolu na úkor jiného. Výsledky mého výzkumu, ze kterých vyplývá, že nejvíce chyb se tlumočníci dopouštěli v první řadě v prezentaci a následně na jednotlivých jazykových rovinách, a sice na úrovni slovní zásoby, morfologie, syntaxe, stylistiky a textu, naznačují, že je to právě forma, kterou tlumočníci obětují na úkor obsahu, o jehož zachování se primárně snaží.

ANNOTATION

Keywords: Daniel Gile, Effort Model, problem triggers, processing capacity, saturation, simultaneous interpreting, short term memory, delivery

The subject of this thesis is a confirmation or a disproval of a hypothesis that an occurrence of a problem trigger in one segment increases the risk of saturation and therefore the risk of an interpreter's mistake in the segment concerned or in the following one.

The first part regards the theoretical background, which primarily describes Daniel Gile's Effort Model and his hypothesis that during the interpreting performance an interpreter only has a limited amount of processing capacity and that if this is depleted, saturation occurs and the interpreter makes a mistake.

The practical part consists of the empirical research which has been conducted to support this hypothesis. The research comprises of an analysis of state exams recordings of simultaneous interpreting of a group of 7 students of interpreting at the end of their 2nd year of master's studies of translating and interpreting at Palacký University. The attention is paid to the abovementioned problem triggers, hence numbers and figures, terms, and enumerations, which have been accompanied by prepositional phrases, idiomatic expressions and certain words whose transfer has been considered problematic enough for them to be regarded problem triggers. These are altogether referred to in this thesis as "specific words and phrases".

It was especially the relation between problem triggers in the original recording and the interpreters' mistakes that was the main focus of this thesis, which in particular tries to answer the research questions, namely which of the problem triggers caused the greatest number of mistakes, which levels the interpreters made the most mistakes on, and whether there is any relation between a certain type of a problem trigger occurrence and a certain type of a mistake made by interpreters.

ANOTACE

Klíčová slova: Daniel Gile, Model úsilí, spouštěče, pracovní kapacita, saturace, simultánní tlumočení, krátkodobá paměť, produkce

Předmětem této práce je potvrzení nebo vyvrácení hypotézy, že výskyt spouštěče v jednom segmentu zvyšuje riziko saturace, a tedy i riziko, že ve zmiňovaném či následujícím segmentu dojde k tlumočníkově chybě.

První část je věnována teoretickému pozadí, které popisuje Model úsilí Daniela Gila a jeho hypotézu, že v průběhu tlumočení má tlumočník pouze omezené množství pracovní kapacity, při jejímž vyčerpání dochází k saturaci a tlumočníkově chybě.

Praktická část sestává z empirického výzkumu, který byl proveden, aby tuto hypotézu podpořil. Výzkum byl proveden analýzou sedmi státnicových nahrávek simultánního tlumočení studentů na konci 2. ročníku magisterského studia tlumočení a překladu na Univerzitě Palackého. Pozornost je věnována výše zmíněným spouštěčům, tedy číselným údajům, termínům a výčtům, který byly v této práci doplněny o předložkové vazby, idiomatická vyjádření a specifická slova či slovní spojení, jejichž převod byl považován za natolik náročný, aby byly tyto počítány mezi spouštěče, přičemž je na tyto v celé práci odkazováno jako na „specifická slova a slovní spojení“.

Sledován byl zejména vztah mezi spouštěči v originální nahrávce a chybami tlumočníků, konkrétně se pak práce snaží zodpovědět výzkumné otázky, a sice, který ze spouštěčů způsobil nejvíce chyb, na kterých rovinách tlumočníci chybovali nejvíce a jestli lze pozorovat vztah mezi výskytem určitého typu spouštěče a určitého typu tlumočníkovi chyby.

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7 ATTACHMENTS

Attachment 1: The original recording

LEATHER AND MEAT WITHOUT KILLING ANIMALS
Andras Forgacs

When my father and I started a company to 3D print human tissues and organs, some people initially thought we were a little crazy. But since then, much progress has been made, both in our lab and other labs around the world. And given this, we started getting questions like, "If you can grow human body parts, can you also grow animal products like meat and leather?"

When someone first suggested this to me, quite frankly I thought they were a little crazy, but what I soon came to realize was that this is not so crazy after all. What's crazy is what we do today. I'm convinced that in 30 years, when we look back on today and on how we raise and slaughter billions of animals to make our hamburgers and our handbags, we'll see this as being wasteful and indeed crazy. Did you know that today we maintain a global herd of 60 billion animals to provide our meat, dairy, eggs and leather goods? And over the next few decades, as the world's population expands to 10 billion, this will need to nearly double to 100 billion animals.

But maintaining this herd takes a major toll on our planet. Animals are not just raw materials. They're living beings, and already our livestock is one of the largest users of land, fresh water, and one of the biggest producers of greenhouse gases which drive climate change. On top of this, when you get so many animals so close together, it creates a breeding ground for disease and opportunities for harm and abuse. Clearly, we cannot continue on this path which puts the environment, public health, and food security at risk.

There is another way, because essentially, animal products are just collections of tissues, and right now we breed and raise highly complex animals only to create products that are made of relatively simple tissues. What if, instead of starting with a complex and sentient animal, we started with what the tissues are made of, the basic unit of life, the cell?

This is biofabrication, where cells themselves can be used to grow biological products like tissues and organs. Already in medicine, biofabrication techniques have been used to grow sophisticated body parts, like ears, windpipes, skin, blood vessels and bone that have been successfully implanted into patients. And beyond medicine, biofabrication can be a humane, sustainable and scalable new industry.

And we should begin by reimagining leather. I emphasize leather because it is so widely used. It is beautiful, and it has long been a part of our history. Growing leather is also technically simpler than growing other animal products like meat. It mainly uses one cell type, and it is largely two-dimensional. It is also less polarizing for consumers and regulators. Until biofabrication is better understood, it is clear that, initially at least, more people would be willing to wear novel materials than would be willing to eat novel foods, no matter how delicious. In this sense, leather is a gateway material, a beginning for the mainstream biofabrication industry. If we can succeed here, it brings our other consumer bioproducts like meat closer on the horizon.

Now how do we do it? To grow leather, we begin by taking cells from an animal, through a simple biopsy. The animal could be a cow, lamb, or even something more exotic. This process does no harm, and Daisy the cow can live a happy life. We then isolate the skin cells and multiply them in a cell culture medium. This takes millions of cells and expands them into billions. And we then coax these cells to produce collagen, as they would naturally. This collagen is the stuff between cells. It's natural connective tissue. It's the extracellular matrix, but in leather, it's the main building block. And what we next do is we take the cells and their collagen and we spread them out to form sheets, and then we layer these thin sheets on top of one another, like phyllo pastry, to form thicker sheets, which we then let mature. And finally, we take this multilayered skin and through a shorter and much less chemical tanning process, we create leather. And so I'm very excited to show you, for the first time, the first batch of our cultured leather, fresh from the lab. This is real, genuine leather, without the animal sacrifice. It can have all the characteristics of leather because it is made of the same cells, and better yet, there is no hair to remove, no scars or insect's bites, and no waste. This leather can be grown in the shape of a wallet, a handbag or a car seat. It is not limited to the irregular shape of a cow or an alligator.

And because we make this material, we grow this leather from the ground up, we can control its properties in very interesting ways. This piece of leather is a mere seven tissue layers thick, and as you can see, it is nearly transparent. And this leather is 21 layers thick and quite opaque. You don't have that kind of fine control with conventional leather. And we can tune this leather for other desirable qualities, like softness, breathability, durability, elasticity and even things like pattern. We can mimic nature, but in some ways also improve upon it. This type of leather can do what today's leather does, but with imagination, probably much more.

What could the future of animal products look like? It need not look like this, which is actually the state of the art today. Rather, it could be much more like this. Already, we have been manufacturing with cell cultures for thousands of years, beginning with products like wine, beer and yogurt. And speaking of food, our cultured food has evolved, and today we prepare cultured food in beautiful, sterile facilities like this. A brewery is essentially a bioreactor. It is where cell culture takes place. Imagine that in this facility, instead of brewing beer, we were brewing leather or meat. Imagine touring this facility, learning about how the leather or meat is cultured, seeing the process from beginning to end, and even trying some. It's clean, open and educational, and this is in contrast to the hidden, guarded and remote factories where leather and meat is produced today. Perhaps biofabrication is a natural evolution of manufacturing for mankind. It's environmentally responsible, efficient and humane. It allows us to be creative. We can design new materials, new products, and new facilities. We need to move past just killing animals as a resource to something more civilized and evolved. Perhaps we are ready for something literally and figuratively more cultured.

Attachment 2: Transcript of the original recording explanatory notes

Problem triggers marked in the transcript:

Numbers

Terms

Enumerations

Specific words and phrases

Attachment 3: Transcript of Interpreter 1

Když můj otec a já jsme otevřeli naši ***H*** společnost s 3D tiskem tkání a orgány, hodně lidí si myslelo, že jsme šílení. A dělá to hodně, v naší labo, laboratoři jsme došli k pokroku jako v dalších laboratořích po světě. A kdy, ***H*** když jsme dokázali pěstovat orgány nebo části těla, ***H*** copak není možné, abychom vypěstovali živočišný produkt jako maso?

H Brzo jsem si uvědomil, že to není šílený, vůbec šílené, šílené je, co děláme dnes. Jsem přesvědčen, že za 30 let, pokud se podíváme zpět, jak ***H*** pěstumujem, ***H*** jak pěstujeme dobytek a jak je pak ***H*** zabíjíme, je, pro maso, je hrozné, je to šílené. Dnes máme kolem šedesáti miliard, ***H*** máme stádo šesti miliard dobytku. Za dalších deset let se, kdy se, kdy se naše populace ještě dále rozvine, tak se i počet dobytka zvýší.

X Jsou, jsou, zvířata jsou také živí, živou bytostí. ***H*** Zabírají mnoho místa a využívají 8 % světové vody a produkují také skleníkové plyny. Jsou také zdrojem ***H*** nemocí. Jsme tedy na cestě, kdy, **…** kdy riskujeme veřejné zdraví a také ***H*** pros životní prostředí.

Živočišné produkty jsou, ***H*** jsou souhrnem tkání. Jsou to tkáně, které jsou … ***H*** tvořeny velmi jednoduše. Místo abychom ubli ubližovali zvířatům, tak se musíme zaměřit na jednotku života, čímž jsou buňky.

H Tak v laboratortořích pěstujeme, … ***H*** pěstujeme části těla jako uši, kůži, kosti, tkáně, které byly ***H*** účinně aplikovány na lidi. ***H*** Tato, ***H*** toto pěstování je lidské a měřitelné.

A měli bychom to tedy použít i na **…** kůži. Zdůrazňuji kůži, protože ***H*** se ***H*** často využívá. Je krásné a často se využívalo v naší historii. X Měl, ***H*** užívá se přitom jen jedna, ***H*** jeden typ buňky. A je to opravdu jednoduché. Pokud biofabrikace se nebude … dále vyvíjet, tak nedojde k pokroku. A v určitém smys, slova smyslu je kůže vstupním materiálem do tohoto průmyslu. ***H*** Přibližuje nám to živočišné produkty ***H*** jako živočišné maso blíže.

X ***H*** Živočich může být buďto kráva nebo ***H*** nebo další podobné nebo ***H*** různorodá, různo různorodá zvířata a to se může rozvíjet do milionů. Od nich získáme zdrojové buňky, pak je budeme pěstovat a získáme z toho vrstvy. ***H*** Kůže je, ***H*** vezmeme si také kolagen a uděláme z toho vrstvu a ty vrstvy navrstvíme na sebe a uděláme z toho design. A nakonec, **…** nakonánec, ***H*** tím pak ***H*** nakonec pak to pak projde ***H*** ***H*** sluněním a pak z toho máme daleko lepší kůži. Toto to se děje v laboratořích a je to jedinečný a pravý, jedinečná a pravá kůže bez zabíjení zvířat. Je to kůže, protože je vyrobená z ***H*** ze stejných buněk. A dále neobsahuje vůbec žádné, ***H*** žádné, ***H*** žádná kousnutí nebo bodnutí od zvířat a nejsou poškozená. X

A jak tyto, jak kůži pěstujeme od od začátku X, **…** ***H*** je pouze 7 milimetrů ***H*** tlustá a jak vidíte, je to transparentní a tato kůže je … dvacet, je vytvořen z dvaceti jedna vrstev X. … ***H*** Tato, ***H*** tato kůže má také další výhody. Je velmi ***H*** dobrý k údržbě a dobře se roztahuje a je také pevný. Tento typ kůže může dělat to, co dnešní kůže **…** dokáže. Ale může, může, dokáže toho daleko víc.

Jaká je budoucnost **…** vý, živočišných produktů? Nemusí to být takovéto, jak je to teď, ale může to vypadat takto. Kdy budeme pěstovat ***H*** ž, pěstovat tkáně po tisíc let. A můžem mít takové, taková, takovéto laboratoře. A v takto, v takovýchto místech se odehrává ***H*** budoucnost. ***H*** Představ si, že místo piva bychom mohli pěstovat také maso. **…** Dívat se, jak ***H*** tento proces ***H*** vzniká, jak je to čisté, ***H*** je opravdu ***H*** hezké X. Možná biofabrikace

je přirozenou revolucí, evolucí pro ***H*** výrobu živočišných produktů. Tento způsob je lid lidský. Můžeme ***H*** vytvořit nové produkty a nové, nová zařízení. Musíme se přesunout z ze z ze zabíjení zvířat jako zdroj pro, **…** jako zdroj. A musíme se přesunout k něčemu ***H*** civilizovanějšímu, možná **…** také k něčemu, co je kultivovanější. Děkuji.

Attachment 4: Transcript of Interpreter 2

Když jsme s otcem začli společnost na 3D tisk ***H*** lidských orgánů a tkáně, tak si někteří lidé mysleli, že jsme trochu bláznivi. Ale od té doby už s, uděla, byl udělán velký pokrok jak v naší laboratoře, tak v laboratořích po světě. A začli jsme dostávat otázky. Pokud můžete, **…** můžeme udělat lidské části, můžeme udělat i zvířecí části jako kůže a maso? Kůži a maso?

A lidé si mysleli, že, **…** pak jsem si já myslel, že oni jsou šílení, ale pak jsem si uvědomil, že to není tak šílené. Co je šílené, je to, co děláme dnes. Jsem přesvědčený, že za 30 let, když se podíváme zpátky na dnešek o tom, jak ***H*** vychováváme a vraždíme miliardy zvířat proto, abychom měli jídlo a ***H*** tašky, tak nám to přijde šílené. Věděli jste, že dneska máme ***H*** globální stádo šedesáti miliard ***H*** zvířat, abychom měli na maso i na naše tašky? A kabelky? A až za několik let se to skoro zdvojnásobí a až nás bude deset miliard, tak budem potřebovat sto miliard zvířat.

Ale ***H*** zvířata nejsou jenom materiál, jsou to živoucí bytosti a používají, ***H*** zabírají **…** půdu, spotřebují vody a produkují skleníkové plyny a navíc, když to, je to v tak obrovském množství, tak se tam vyrábí potom **…** příležitost pro nemoci a pro zneužívání a jsme na cestě, které, která dává životní prostředí, veřejné zdraví a ***H*** bezpečnost jídla je dává v riziko.

V podstatě by se dalo říct, že **…** věci ze zvířat jsou jenom ***H*** tkáně a nyní děláme, vychováváme zvířata, abychom dělali věci, které jsou z relativně jednoduchých tkání, místo toho, abychom dělali, ***H*** místo abychom se uk, háně, ubírali k zvířatům, tak začneme ***H*** u toho, z čeho je tkáň vyrobena, a to je základní jednotka života, buňka.

X Můžeme vy, my můžeme využívat buňky k tomu, abychom dělali biovýrobky a v lékařství biofabrikace už se používá, aby udělali složitější ***H*** **…** části těla, jako jsou uši, dýchací trubice a podobné, které už implantují do pacientů. A biofabrikace je taky způsob ***H*** humánní, škálovatelný a podle a **…** udržitelný způsob, jak ***H*** můžeme vyrábět třeba kůži.

Zdůrazňuji kůži, protože je velmi často užívaná, je krásná a je to součástí naší historie. A taky ***H*** zvířata na kůži jsou snadnější pro chov než ostatní. A je to taky méně polarizující pro spotřebitele. Ale dokud lép, se nejlépe nepozv biofabrikaci, tak ze začátku více lidí bude ***H*** nosit ***H*** novinky, než ***H*** se začnou, budou ochotni konzumovat novin, nové jídlo. A **…** kůže je jedním z těch věcí, které jsou, můžou přijmout do veřejné populace biofabrikaci, a pokud to zvládneme, tak ***H*** budeme blíž našemu cíli.

Jak to uděláme? ***H*** Abychom, abychom mohli v podstatě vypěstovat kůži, tak vezmeme ***H*** buňky z původních zvířat, jako jsou ***H*** například krávy a tento proces jim nijak neubližuje a krávy můžou žít ***H*** dlouhou dobu. Potom je multiplikujeme na, skrz médium, a které je expanduje a vyrobí jich ***H*** miliard. A potom ta, ten kolagen, ta pojivová tkáň, ***H*** potom se sama vytváří a vytváří ***H*** tu tkáň a je to základní blok toho, z čeho je kůže. A vezmeme ty kolagenové buňky a dáme je na pláty a pak ty pláty ***H*** dáme na sebe, něco jako listové těsto a uděláme z nich tlustší ***H*** pláty, které potom dospěje a je to, ***H*** je to několikavrstvá ***H*** vrstva kůže a potom ***H*** skrz vyčinění z toho uděláme kůži. A teď vám ukážu ***H*** první, naše první výrobky ***H*** z naší laboratoře. Toto, toto je opravdová kůže, bez toho aniž bychom ***H*** obětovali zvíře. Má to charakteristiku kůže, protože je to ze stejných buněk a ještě lepší,

není, … není tam žádné, žádné, … *H* bodláky od *H* nebo probodnutí od hmyzu nebo nějaké *H* poškození. A je to něco, co se může používat na kabelky.

A protože jsme to vypěstovali v podstatě od začátku, tak tomu mu můžeme dávat různé vlastnosti. Tento kousek je *H* pouze sedm vrstev *H* hrubý a je téměř transparentní, na druhou stranu … *H* tato kůže je dvacet jedna vrstev a je v podstatě neprůhledná. Takovouto kontrolu nemáte nad obvyklou kůží. A můžeme ji upravit na, tuto kůži můžeme upravit na jiné, mít jiné vlastnosti a bude více elastická, výdržná, nebo může mít nějaký vzorek. Můžeme *H* napodobovat přírodu, ale můžeme ji také v něčem zlepšit. Tento typ kůže dělá to samé co normální kůže, ale s představivostí může dělat mnohem víc.

Co by, jak může vypadat budoucnost *H* výrobků ze zvířat? Nemusí vypadat takhle, což je v podstatě to nejlepší, co děláme dneska. Ale mohlo by to vypadat takto, *H* protože my už buňky produkujeme tisíce let u věcí jako je jogurt, víno nebo pivo. A *H* tyto upravené jídla *H* vyrábíme ve sterilních *H* sterilních pracovištích, jako jsou na obrázku, ale v podstatě je to, *H* je to jenom nějaké kontrolované prostředí. A místo piva bychom mohli takhle pěstovat třeba kůži nebo maso. Představte si, že se takovou, takovodlým, takovýmdle zařízením procházíte a že vidíte, *H* jak ten *H* proces postupuje od začátku do konce X. A je to, je to čisté a je to v podstatě dobré pro vzdělání a takhle by mohly vypadat *H* i *H* továrny, kde se produkuje maso. A tento přístup je velmi dobrý pro prostředí, je to *H* přístupný k živ, je to dobré pro životní prostředí a je to humánní a můžeme takto vyvinout nové *H* věci a je to taky nové firmy. Prostě už se musíme přesunout přes to, že budeme zabíjet zvířata jako *H* zdroj materiálu a měli bychom se přesunout k něčemu civilizov, civilizovanějšímu a měli bychom být více kultivovaní.

Attachment 5: Transcript of Interpreter 3

Když jsme s otcem založili ***H*** společnost na 3D tisk ***H*** lidských orgánů a tkání, tak si někteří lidé mysleli, že jsme blázni, ale od té doby už jsme ušli hodně, ***H*** už jsme udělali velký pokrok, a to jak v laboratořích, tak i na jiných, ***H*** v jiných místech. ***H*** Pokud můžeme vyvi, pokud můžeme vytvořit jiné, různé produkty, tak můžeme ***H*** vytvořit i tkáně a ***H*** orgány.

Myslel jsem si, že je to ***H*** blbost, ale potom jsem zjistil, že to zas tak šílené není. To, co je šílené, je to, co dnes zvládáme. Jsem přesvědčen, že za 30 let, když se podíváme zpátky na to, jak jsme ***H*** chovali a zabíjeli ***H*** miliony ***H*** zvířat jenom proto, abychom měli jídlo, tak si uvědomíe, jak to bylo šílené. ***H*** Víte, že ***H*** dnes si pěstujeme stádo dobytka o šedesáti miliardách ***H*** kusů zvířat, jenom abychom měli na jídlo a na všechny možné výrobky? ***H*** V roce 2050 by se toto ***H*** číslo už muselo výšit na sto miliard, ale to by ničilo naši ***H*** planetu.

Nejsou to jenom nějaké, ***H*** nějaké naše výrobky pro naši spotřebu, ale jsou to živé, jsou to živá zvířata, takže musí také ***H*** pít a jíst. A když máme tolik zvířat pohromadě, tak se samozřejmě mohou dál šířit různé nemoci. ***H*** To samozřejmě nemůžeme dál podporovat, protože to ohrožuje nejenom životní prostředí, ale také bezpečnost potravin a ***H*** další věci.

Samozřejmě můžeme vydat jinou cestou, protože když se podíváme ***H*** na živočišné výrobky, tak se jedná jenom o ***H*** seskupení tkání. A když se podíváme, tak zvířata jsou tvořena z celkem jednoduchých tkání. Proč tedy začínat u ***H*** komplexních zvířat, které jsou už komplexem nějakých tkáních, ale proč nezačít u buněk jako takových.

To je právě biofabrikace, kdy ***H*** můžeme využít zdrojové kmenové buňky k tomu, abychom vypěstovali nebo vyrobili ***H*** buňky, které pak můžeme dále využít. ***H*** Máme zde různé, ***H*** už za sebou různé zkušenosti, kdy se ***H*** zvládly vytvořit nové uši či nová další, nové další orgány či části těla a ty se potom mohly ***H*** trans, mohly využít při transplantaci. X

Měli bychom se ***H*** zaměřit na to, jak třeba například jinak ***H*** vytvořit ***H*** kožené výrobky. Samozřejmě kůže je úžasná a ***H*** už dlouho ji využíváme a musím říct, že právě výroba kůže je mnohem jednodušší než jiné živočišné výrobky, protože je pouze dvoudimensionanální a je jednodušší ji vyrobit. ***H*** Pokud ***H*** lépe porozumíme biofabrikaci, tak ***H*** si myslím, že ***H*** lidé budou ochotnější ***H*** nosit ***H*** nové pot, nové výrobky, než jíst nové nebo inovované potraviny, které budou takto vyprodukované. A proto si myslím, že bychom se měli ***H*** zaměřit právě na vytváření ***H*** kožených výrobků a to, si myslím, že nás dovede dále.

Jak ***H*** to tedy udělat? Abychom vytvořili ***H*** kůži, tak si musíme vzít ***H*** pomocí jednoduché biopsie zdrojové buňky ***H*** z nějakého zvířete, například ***H*** z krávy nebo ovce či z čehokoli jiného, více exis, exotického. ***H*** Té krávě nebo tomu zvířetyti to nijak neublíží a my potom s těmito ***H*** buňkami dále můžeme por pracovat. Oni, ***H*** když je dáme do ***H*** kultivačního média, tak samy vytvoří pojivovou tkáň – kolagen – a ***H*** potom ***H*** je vezmeme i s tím kolagenem a dáme je tak, aby vytvořili pláty, ty pak na sebe poskládáme, jako když pracujete ***H*** s listovým těstem a tím vytvoříme tlustší pláty a ty potom ***H*** dáme dohromady a provedeme proces činění, díky čemuž vytvoříme kůži. Jsem tedy velmi nadšený z toho, že vám můžu poprvé ukázat ***H*** to, co se nám potvořilo vytvořit. Rovnou od nás z laboratoře, ***H*** nová ***H*** kůže, kožený výrobek, bez toho aniž by muselo zemřít zvíře. Tato

kůže má H všechny charakteristiky, všechny, H je úplně stejná jako normální kůže nebo kožené výrobky ze zvířat, ale, H a to proto, že pochází také ze zvířete, X ale můžeme ji vytvořit tak, že už H rovnou bude mít H tvar například H peněženky nebo H nějaké tašky či přímo sedadla a je to mnohem jednodušší.

Můžeme také H kontrolovat vlastnosti této kůže, například tento kousek H je H vytvořen jenom ze sedmi H plátů, ze sedmi vrstev a můžeme tedy vidět, že je průhledný skoro. A tady tento druhý má dvacet jedna těch vrstev a naopak je neprůhledný. A to H takhle nemůžete pracovat s H normální H kůží, na kterou jsme zvyklejí. Můžeme se také zaměřit na H jemnost H nebo elasticitu nebo výdrž či prodyšnost H kůže. Můžeme se také H poučit a H můžeme vytvářet různé vzory a můžeme H zajistit, aby ta kůže byla pro nás H lepší.

A když se nad tím zamyslíme, jak by teda mohla vypadat H budoucnost H našich zvířat? Nemusí vypadat tak, H jak je dnes, jak můžete vidět, může vypadat spíše takto, jako je na tomto dalším obrázku. Můžeme H s ní pracovat stejně, jako když vytváříme nebo vyrábíme pivo nebo víno nebo jogurt. Můžeme H ma mít H věci, které dnes H vyrábíme v podstatě v laboratořích stejně jako v pivovarech, akorát že zde místo H vyrábění piva H vyrábíme H kůži anebo maso. A vezměte si, kdybychom H se poučili, H jak, o tom, jak se, jak tento proces probíhá, jak H vzniká maso a kůže, X tak H to by bylo něco úplně jiného H na rozdíl od H jatek a dalších míst, kde se s masem a kůží pracuje dnes, kdy nevíme, jak to probíhá. Bylo by to mnohem H transparentní, bylo by to také H mnohem efektivnější a mo, mohli bychom H také se chovat humánněji. Můžeme tedy vytvořet nové, vytvářet nová zařízení, nemusíme jen zabíjet zvířata, která jsou pro nás zdrojem H jídla a zdrojem výrobků, ale můžeme se posunout k něčemu humánnějšímu, můžeme se posunout k něčemu, co je mnohem H kultivovanější. Děkuji vám.

Attachment 6: Transcript of Interpreter 4

Když jsem se svým otcem založil firmu o 3D tisku lidských tkání a buněk, tak si lidé nejdříve zpočátku mysleli, že jsme šílení. Ale od té doby jsme udělali mnoho velkého pro pokroku, nejenom v naší laboratoři, ale i v laboře na celém světě. A pak se nás ptali lidé. Když dokážete vypěstovat lidské části těla, dokážete vytvořit i ***H*** živočišné produkty, jako je maso nebo kůže?

Něk, když to poprvé někdo navrhl, tak jsem si myslel, že oni jsou vlastně šílení, ale pak jsem si uvědomil, že to není ani vlastně tak šílený nápad. Co je šílený nápad, je to, co děláme dnes, tady. Jsem si jist, že za třicet let, když se podíváme zpět do mulunosti, jak jsme, ***H*** jak jsme chovali zvířata a zabíjeli, abychom měli maso a kůži, tak tak se nám to bude zdát zcela nehumánní, šílen. Víte o tom, že v tom, že teď máme šedesát miliard hosp ***H*** dobytka, který má, ***H*** který chováme, abychom měli vejce, maso, kůži a v roce 2050 to bude až sto miliard dobytka.

Zvířata nejsou jenom surovinou, jsou to, ***H*** žijí. A náš dobytek taky využívá nejvíce naší vody, půdy a také jsou jedním z největších producentů skleníkových plynů. Takže to ovlivňuje ***H*** i globální oteplování. A také to, to také o, je tam oblast, kde je vě velké riziko onemocnění a rizik. Nemůžeme teda pokračovat touto cestou, která může ovlivnit naše, která může ovlivnit naše ***H*** jídlo, naše zdraví, naš naše životní prostředí.

Živočišné produkty jsou vlastně jenom, ***H*** jsou jenom tkáně. Nyní dokážeme teda, **…** takže my pě, my chováme relativně ***H*** komplikovaná zvířata, abychom měli jednoduché tkáně. Co kdybychom to obrátili? Co kdybychom začli od toho, z čeho jsou vytvořeny tkáně, od základní jednotky života, od buňky?

Toto je biofabrikace, kde jednotlivé tkáně moůžeme použít, aby vytvořily další biologické ***H*** věci, jako jsou tkáně, buňky. Již v medicíně jsme dokázali ***H*** vytvořit zaj, ***H*** nová části těla, jako jsou uši, kůže nebo ***H*** chlopně X. Takže biofabrikace je možná humánní, měřitelná a také ***H*** průmysl.

Podívejme se na příklad kůže. Zvý, zdůrazňuji kůži, protože ji využíváme tak často, protože je tak krásná a už dlouho je součástí naš našich dějin. Kůž, ***H*** vypěstovat kůži je také velice jednodušši než vypěstovat zvíře. Využívá jenom jednoho, jedné buňky. A je také méně polarizující pro konzumenty. Dokud biofabrikace není zcela pochopena, tak je možné, že mnoho lidí bude preferovat, aby nosit spíše ***H*** nové materiály, než aby jedli nové jídlo. Takže je vlastně tedy tato biofabrikovaná kůže je vlastně bránou pro nás. Když budeme úspěšní v této oblasti, takže naše další produkty jako maso budou mít jednodušší vstup na trh.

Jak to můžeme tedy udělat? Abychom vypěstovali kůži, odej odejmeme teda buňky ze zvířete. Může to být kráva, ovce nebo něco i exotičtějšího. Toto vůbec ne neovlivní vůbec to zvíře. Jenom prostě izolujeme tuto tkáň a pak ji, ***H*** pak ji dáme do petri ***H*** misky a to pak roste, ***H*** rozdělí se až na miliony. A pak tady máme tu kulturu, která ***H*** vytvoří vlastně tu tkáň, co vytvoří teda extracelulární matrix. Ono to je vlastně ten prvotní stavební, ***H*** stavební káme. Takže vezmeme tuto tkáň, z ní pak vytvoříme vrstvu a pak tyto vrstvy budeme na sebe vrstvit, něco jako u listového těsta, abychom vytvořili silnější vrstvu. To pak spojíme. Takže tady máme několik ***H*** vrst vrstvu a to pak dáme do jednoho stroje, který to zmenší a také to obarví. Jsem teda ***H*** nadšen, abych vám mohl ukázat naši první várku biofabrikované kůže. Toto je pravá kůže, aniž bychom museli obětovat zvíře. Může

to mít veškeré charakteristiky kůže, protože je to vyrobeno ze stejné tkáně, *H* ze stejné buňky. A co je ještě lepší, *H* není tu , jsou žádné, *H* není, nevznikl tady žádný odpad, můžeme to *H* si přesně stanovit, aby to bylo na peněženku nebo na sedadlo v autě. A navíc na této kůži nenajdeme žádné jizvy anebo znečištění.

A dokonce dokážeme i ovlivnit *H* kvalitu kůže ve velice zajímavým způsob. Tento kousek kůže je, se skládá jenom ze sedmi vrstev a je skoro průhledné, průhledná. A tady ta kůže je dvace, *H* je, se skládá z jednadvaceti vrstev a je docela neprůhledná. Tuto kontrolu nemůžete mít u běžné kůže. Toto *H* tu kůži můžeme ovlivnit podle toho, jak chceme třeba, aby to bylo měkké, jak to má být prodyšné, jak to má být elastické, jak moc to má vydrží a taky můžeme ovlivnit i *H* motiv. Můžeme to do hodně *H* mimikovat přírodu, ale také ji vylepšit. Ta naše kůže dělá to samé co současná kůže, ale s naší představivostí dokáže udělat i více.

Jak může vypadat budoucnost *H* živočišných produktů, živočišné kůže? Nemělo by to vypadat takhle, tak, jak to vypadá v současné době. Spíše by to mohlo být něco takového. Již *H* pracujeme s kulturou buně, například u vína, piva nebo jogurtů. Co se týče i potravin, tak kultura původ, *H* jídla se také zcela jinak *H* změnila. Vlastně máme teda tyto pivovary, to je vlastně i taková laboratoř. Představte si, že v takové oblas, *H* v takovém středisku nemá, *H* nevyrábíte pivo, ale maso, kůži. Představte si, že máte prohlídky tímto střediskem, kde můžete vidět, jak vypadá ten proces od začátku až do konce. Můžete i ochutnáva. Je to čisté, otevřené a také vás to něco nového naučí. A to je kontrastivní s tím, jak to, jak je v současné době vyráběná a získáná kůže a maso z dobytka. Takže biofabrikace je přírodní *H* pokrok, je také eficientní, humánní, ekologické. Umožňuje nám to být ekologický. Můžeme vytvořit nové materiály, produkty a také nová střediska, nové oblasti. Musíme odejít jenom z toho zabíjení zvířat, abychom přešli k něčemu civilnějšímu a také vyspělejšímu. Nejspíš me *H* jdou snad už možná budeme připraveni na něco kultivovaného, kultivovanějšího, doslova.

Attachment 7: Transcript of Interpreter 5

Když jsme s otcem založili společnost na *H* 3D tisk lidských orgánů a tkání, tak si o nás lidé mysleli, že jsme se zbláznili. Ale od té doby *H* jsme viděli velký *H* velký rozvoj tohoto odvětví a nakonec se nás lidé začali ptát, když můžete vypěstovat části lidských těl, můžete také pěstovat *H* živočišné produkty jako maso a kůži?

Když mi to n řekli napoprvé, tak jsem si myslel, že se zbláznili oni, ale brzy jsem si uvědomil, že tohle není vůbec šílený nápad. Je šílené to, co děláme dnes. Já jsem přesvědčený, že když se za pár let ohlédneme, jak jsme dnes každoročně zabíjeli *H* miliardy zvířat, abychom měli maso a kabelky, tak si opravdu budeme myslet, že jsme se tehdy zbláznili. *H* Dnes *H* máme šedesát *H* miliard *H* hospodářských zvířat, abychom měli vajíčka a maso a mléčné produkty. A zatímco *H* roste populace na celém světě, toto se bude muset zvýšit na téměř sto miliard *H* zvířat.

Ale tohle si na naší planetě vybere strašlivou daň. *H* Netýká se to jen *H* zvířat jako materiálu, oni jsou přece živé bytosti. A zvířata využívají spoustu země, *H* pitné vody a produkují spoustu skleníkových plynů, které působí změnu klimatu. A také když máte takové množství zvířat velmi *H* velmi blízko k sobě, tak *H* se mezi sebou kříží a to není dobře. Takže takhle dále nemůžeme pokračovat. Je to nebezpečné pro životní prostředí a zd *H* z zdravotní stránku.

Živočišné produkty jsou totiž jen shluk *H* shluk tkání. A my teď můžeme *H* vytvořit produkty z relativně jednoduchých tkání. *H* Proč bychom museli začínat s komplexními zvířaty, můžeme *H* začít už s tím, z čeho jsou ty tkáně složeny, se základními stavebními buňkami.

A tohle je biofabrikace. *H* Můžeme užít samotné buňky, abychom vytvořili tkáně a vypěstovali orgány. *H* Biofabrikaci už používáme pro *H* to, abychom vypěstovali *H* buňky, kůži orgány a ty už můžeme implantovat pacientům. A také biofabrikaci používáme jako, bychom mohli používat jako udržitelné nové odvětví.

A mohli bychom začít s tím, že začneme jinak přemýšlet o kůži. *H* Kůže a kožešina se používá velmi rozšířeně a využíváme ji už *H* velmi dlouho a vypěstovat právě toto je mnohem jednodušší než vypěstovat maso. *H* Obsahuje pouze jeden druh buněk a je méně polarizovaná, je pouze dvojrozměrná a biofabrikaci *H* už rozumíme tak, že *H* už lidé jsou ochotni *H* nosit tyto věci, ale ještě nejsou ochotni je jíst. Ale právě kůže to je taková vstupní brána, abychom mohli toto odvětví založit. Pokud se nám to povede, tak *H* můžeme pomoci *H* také přinést výrobu masa X.

A jak na to? Abychom mohli pěstovat kůži, nejprve potřebujeme *H* provést biopsii zvířete, může to být například kráva nebo něco exotičtějšího. A nic to tomu zvířeti neu neudělá, ono může dále žít, jen tyto buňky izolujeme a necháme je množit se. A ony se tak budou množit na miliony a miliardy. A my tyto buňky můžeme *H* vzít a ony obsahují kolagen, to je, to je přírodní pojivo a je to extracelulární matrix a to je ten základní stavební kámen. A my ty buňky vezmeme, vezmeme ten kolagen a my je rozprostřeme a pak na sebe dáme několik těchto *H* těchto vrstev jako jako X těsto a pak je necháme zrát. A nakonec tuto mnohovrstevnatou kůži vezmeme a udělá, a s pomocí chemického procesu z ní uděláme kůži. Takže jsem opravdu rád, že vám můžu napoprvé ukázat *H* první kus naší *H* vytvořené kůže. Tohle je skutečná, pravá kůže, ale žádné zvíře kvůli ní nepadlo. Může mít všechny vlastnosti, které má kůže běžně, protože je stvořena ze stejných *H* stejných buněk.

A je to ještě lepší, protože ***H*** nejsou tady žádné jizvy nebo kousance nebo nemáme žádný odpad. Můžeme je nechat vyrůst ve tvaru ***H*** sedačky do auta nebo peněženky, kabelky, ***H*** nemusí mít tvar té krávy nebo toho aligátora.

A tím, že můžeme ***H*** kůži pěstovat, tak můžeme ovlivnit její vlastnosti velmi zajímavým způsobem. Tenhle kus kůže je, má ***H*** sedm různých vrstev a vidíte, že je téměř ***H*** průhledná. Tato kůže, tato kůže má jednadvacet vrstev a už přes ni nevidíte. Ale ***H*** s běžnou kůží toto vůbec neovlivníte. My tu kůži můžeme ***H*** navrhnout a upravit, aby byla například velmi jemná nebo prodyšná, elastická, hodně vydržela a můžeme ovlivnit i její texturu. Můžeme se snažit ***H*** **…** ***H*** vzít si příklad z přírody. Ale máme různé nápady a můžeme si vymyslet, jak ty produkty mají vypadat.

Nemusí vypadat vůbec takhle, ale tohle je to nejlepší, co dnes dokážeme vytvořit, ale mohly by vypadat třeba takhle. ***H*** S buněčnými kulturami už ***H*** pracujeme dlouho, vezměte si víno nebo výrobu jogurtů. A toto odvětví se vyvíjí a dnes už ***H*** s tím s touto ***H*** technologií pracujeme třeba třeba tady. ***H*** Například ***H*** můžeme tam vyrábět pivo, ale stejným způsobem bychom mohli namísto pivnic vyrábět i i kůži. Představte si, že byste se mohli dozvědět a přímo vidět, jak se tohleto dělá, a mohli byste si to vyzkoušet. Je to velmi transparentní, ***H*** pomáhá nám to pochopit ty procesy a je to úplně jinačí, než ***H*** kde vyrábíme a produkujeme maso teď. Biofabrikace, to je přirozená evoluce našeho průmyslu. Je to efektivní, je to humánní a můžeme být velmi kreativní, můžeme vymýšlet nové materiály, nové produkty, ***H*** nové nová centra. Musíme přestat zabíjet zvířata a těžit z nich. Potřebujeme nějaký civilizovanější způsob, něco něco lepšího. Třeba jsem už připraveni na něco, co je mnohem více kultivované, a to doslova. Děkuji vám.

Attachment 8: Transcript of Interpreter 6

Když jsme s mým otcem založili společnost na 3D tisk ***H*** lidských tkání a orgánů, někteří lidé si o nás zpočátku mysleli, že jsme střelení. Ale od té doby jsme u došlo k velkému vývoji, jak v naší ***H*** laboratoři, tak na světě. A začalo se nám dostávat otázek, když můžete vypěstovat ***H*** lidské části, můžete vypěstovat také části zvířat, jako je maso nebo kůže?

Když mi to někdo poprvé navrhl, popravdě jsem si myslel, že oni byli trošku střelení. Ale když jsem si časem uvědomil, že to nebyl, časem jsem si uvědomil, že to nebyl šílený nápad. Šílené je to, co děláme v dnešní době. Jsem přesvědčený, že za třicet let, až se podíváme zpět na dnešní dobu a na to, jak jsme pěstovali a zabíjeli miliony kusů dobytka, abychom ***H*** z nich udělali hamburgery nebo tašky, uvidíme, že to bylo strašné plýtvání a že to bylo opravdu šílenství. Víte o tom, že v dnešní době ***H*** máme na světě šedesát miliard kusů dobytka, abychom z nich získali ***H*** maso, mléko, ***H*** kůži a podobně? Pro každodenní potřebu? ***H*** Během dalších des, dva, pár desítek let, s tím jako bude vzrůstat naše populace, to bude, budeme potřebovat až sto miliard ***H*** kusů dobytka.

Ale to je obrovské, obrovský zátěž pro naši planetu. Nejsou není to jenom materiál, je jsou to živé bytosti. A již v dnešní době je náš, ***H*** je dobytek největší největším, ***H*** zabírá nejvíce částí půdy, vody a produkuje ***H*** skleníkové plyny. Navíc, když máte tolik kusů dobytka na jednom místě, je to ***H*** líheň ***H*** nemocí a je to, vzniká také zneužívání ze strany člověka. Takže je třeba předejít tady tomu, co ***H*** ohrožuje jak prostředí, tak bezpečnost lidí, tak bezpečnost ***H*** jídla.

Protože je jiný způsob, jak se s tím vypořádat. Zvířata jsou jen tkáně a v dnešní době, kdy, ***H*** v dnešní době ***H*** chováme velice složité zvířata jenom proto, abychom získali poměrně jednoduché tkáně. Co kdybychom místo toho, abychom ***H*** začali se složitými ***H*** zvířaty, nezač, začneme s tím, ***H*** z čeho se tkáně ***H*** skládají, se základní jednotkou života, s buň buňkou.

Tomu se říká vůro výroba živé hmoty, živé buňky. ***H*** Z těchto, z těchto buněk, tyto buňky můžou být použity k vypěstování tkání, orgánů a tak dále. V medicíně již bylo vyt, použito tk buněk k vytvoření částí těla a kůže, kostí, které byly úspěšně transplantovány pa pacientům. Také mimo medicínu lze výroba živých tkání být použita, může to vzniknout, může z toho být ***H*** udržitelný a užitečný oblast, užitečná oblast průmyslu.

A měli bychom začít s výrobou kůže. ***H*** Kůži zdůrazňuji proto, protože kůže je všude, je velice často používaná, je krásná a je to nedílná součást naší historie. A také vytváření kůže je mnohem snazší než vytváření ***H*** výrobků, jako je maso, protože potřebuje pouze jeden typ buněk a je to pouz a je to pouze dvoudimensiální, z velké části. ***H*** Také to není až tak polarizační mezi konzumenty. ***H*** Je jasné, že než bude výroba živých tkání ***H*** za zažíva rozšířenější, lidé spíš budou ochotni ***H*** používat vytvořené tkáně, uměle uměle vytvořenou kůži než uměle vytvořené maso. ***H*** Pokud by se nám povedlo uspět u ***H*** kůže, poté bysme bysme se přiblížili k výrobě ***H*** pro výrobků, jako je maso.

Jak jak na to? ***H*** Při vytváření m kůže vezmeme buňky ze zvířete, může to být kráva nebo jehně nebo něco exotičnějšího. Tento proces není nijak ***H*** škodlivý a zvíře může nadále ***H*** vesele žít dál. A poté je vypěstujeme a kultivuj kultivujeme je, až z nich uděláme miliardy buň buněk. ***H*** Tyto potom využíváme k produkci kolagenu. Kolagen je látka mezi buňkami, je to přirozená pojící tkáň, takzvaná extracelulární matrice, ale je to také stavební část. Důležitá stavební část. Takže vezmeme buňky a kolagen a vytvoříme z nich, ***H***

vytvoříme z nich ***H*** takové plata, poté je dáváme na sebe jako těsto filu , až nám vznikne hlubší flat plata a poté z nich děláme, dáme jim finální tvar a pomocí vydělávacího procesu získáme kůži. Takže s velikou radostí vám ukážu první ukázku naší ***H*** čerstvě vyrobené kůže z ***H*** laboratoře. Toto je opravdová pravá kůže, aniž by při tom utrpělo nějaké zvíře ***H*** jakékoliv škody. Má vše veškeré charakteristiky kůže, protože se skládá ze stej je vytvořeno ze stejných buněk a není nejsou z nich nejsou na nich žádné ***H*** jizvy, nejsou po nich žádné, nebylo tam žádný ***H*** chlupy, a co je ještě lepší, můžeme vypěstovat přímo kůži ve tvaru třeba peněženky anebo potahu na auta. Není to limitováno tvarem krávy nebo krokodýla.

Vzhledem k tomu, že tento materiál vytváříme, vytvoříme ho, vytváříme ho úplně od začátku, můžeme ho kontrolovat, můžeme ovlivňovat jeho vlastnosti velice zajímavým způsobem. ***H*** Tento kus, který mám, je pouhých sedm vrstev ***H*** položených na sebe, jak vidíte, je to skoro průhledné. A tato kůže má, se skládá z jednadvaceti vrstev a už je poměrně neprůhledná. Tady takovýto způsob kontroly nemáte v případě běžné kůže. Můžeme také upravit jiné, můžeme také podpořit jiné ***H*** kvality, rysy této kůže, jako je ***H*** měkkost, t ***H*** elasticita a výdrž nebo a tak dále. Můžeme pozměnit přírodu a můžeme to ovšem také změ ***H*** zlepšit. ***H*** Toto již můžeme udělat teď, ale představte si, co bychom mohli udělat, když bychom zapojili do imani ***H*** naši představivost.

Nemusí naše budoucnost vypadat takhle, pro toto ve skut takto vypadá dnešní doba, ale mohlo by to v budoucnosti vypadat takto. ***H*** My už ***H*** vyvyrábíme, ***H*** fabrikujeme věci již po st tisíce milionů let, jako je víno, pivo a tak dále. A například pivovar je bioreaktor. Představte si, že bychom v takovémto zařízení, místo toho, abychom tam vařili pivo, bychom tam vytvářeli kůži nebo maso. Představte si takovou procházku po tomto zařízení, poznávání o tom, jakým způsobem se tva ***H*** kůže nebo ***H*** maso vytváří. Sledovali bychom proces od začátku. ***H*** Bylo by to velice otevřené, bylo by to transparentní a bylo by to ekologické. Je to jasným opakem t způsobu ***H*** far fungování farem v dnešní době. Možná výroba živých tkání je přírodní, je další krok v evoluci. Je to př, ***H*** je to přátelské k prostředí, je to aj je to efe efektivní a je to humánní. Mohli bychom přijít s novými ***H*** výrobky, mohli bychom navrhnout nové zařízení a tak dále. Musíme se dostat přes zabíjení zvířat jenom pouze ***H*** jako našich zdrojů a přejít k něčemu civilizovanějšímu a vyvinutějšímu. Možná že jsme připraveni na něco, ***H*** na něco pokročilejšího a kultivovanějšího.

Attachment 9: Transcript of Interpreter 7

Když jsem společně se svým tátou založil *H* … společnost, *H* která se zabývala 3D tiskem *H* kůže, tak si někteří o nás mysleli, že jsme blázni, ale *H* zjistili jsme, že *H* maso bylo pěstováno nejenom v naší laboratoři, ale i v *H* celém světě. A říkali jsme si, když můžeme *H* vyprodukovat různé části těla, tak můžeme také vypěstovat *H* maso nebo kůži.

Když mi to někdo poprvé navrhl, tak jsem se domníval, že jsou blázni oni, ale brzy jsem si uvědomil, že tohle není až taková bláznivá záležitost. X *H* Jsem přesvědčen o tom, že když se podíváme třicet let zpátky na to, *H* když se *H* v budoucnosti podíváme zpětně na to, jak jsme dnes *H* zabíjeli zvířata proto, abychom vypěstovali maso, abychom si mohli vyrobit nějaké *H* kabelky, tak je to *H* neskutečné. V tuto chvíli *H* chováme šedesát miliard *H* hospodářských zvířat, abychom *H* vyprodukovali vajíčka, kůži a tak dále. Ovšem *H* za několik desítek let se naše populace zvýší na deset miliard lidí a my budeme pěstovat sto miliard *H* hospodářských zvířat.

X Nejedná se pouze o *H* primární suroviny, toto jsou zvířata a *H* zaměstnávají také, okupují co *H* velké množství naší země a produkují také skleníkové plyny, které poškozují naše životní prostředí. Když žijeme velmi b *H* blízko *H* zvířat *H* nebo když pěstujete zvířata, chováte zvířata ve velké blízkosti, v malé blízkosti, tak jsou *H* náchylní k nemocem. *H* Toto má dopady, takové pěstování *H* zvířat *H* způsobuje *H* risky a hrozbu pro pro naše lidstvo.

Jelikož, *H* co se týče produktů ze zvířat, tak jsou to pouze *H* určité materiály. *H* Tyto produkty jsou tvořeny z docela jednoduchých, *H* jednoduchých *H* materiálů. A my jsme začali náš byznys *H* pěstováním *H* na úrovni *H* nejjednodušší částice života, kterou je *H* buňka.

Zde vidíme v Petriho misce *H* buňku, kt ze které můžeme pěstovat další výrobky. *H* V *H* medicíně biofabrikace již je používána proto, abychom mohli vypěstovat *H* určité *H* části lidského těla jako třeba kůže či *H* dokonce orgány, které byly úspěšně již *H* transplantovány. *H* Tento způsob může být udržitelný, také *H* velmi lidský a může být naší budoucností.

H Podívejme se například na *H* na příklad kůže. Je velmi široce používaná, je nádherná a *H* je již *H* dlouho po dlouhou dobu součástí naší minulosti. A je *H* jednodušší než *H* kultivace masa *H*, je také *H* méně *H* rozporuplná *H* pro pochopení naší společnosti, jelikož *H* na začátku *H* bude více lidí *H* ochotno nosit *H* nové produkty než jít jíst nějaké inovované produkty. X Ovšem *H* jednak, když *H* můžeme uspět v této záležitosti, tak *H* i další produkty, jako je třeba kultivace masa může být *H* uskutečnitelné v budoucnosti.

Abychom mohli vypěstovat *H* kůži, tak musíme použít *H* díky biopsii jednoduchou tedy *H* buňku z nějakého zvířete, ať už je to kráva či *H* zvíře, pardon prase. *H* Nic nijak to zvířeti *H* neublíží a my tedy *H* získáme zdrojovou buňku a potom můžeme *H* buňky pěstovat, *H* získáme tedy miliony těchto buněk. *H* Pojivovou tkání je kolagen a *H* jedná se o tedy *H* extracelulární hmotu *H* neboli také *H* stavební jednotku. My tedy *H* vezmeme tyto vypěstované *H* buňky, *H* vytvoříme z nich pláty a ty na s navrstvíme na sebe, vypadá to asi jako listové těsto. *H* Vezmeme si tuto navrstvenou tyto navrstvené pláty a díky *H* vyčinění je potom *H* provedeme tímto procesem a pak je spojíme dohromady. Tak tedy můžeme zůstat získat *H* kůži z laboratoře. Zde vidíme kůže, která byla vypěstována, *H* aniž by tím utrpělo nějaké zvíře. Podívejte se na vlastnosti této kůže, je vytvořena ze

stejných buněk, jako je normální kůže, a ne ***H*** nevidíme zde žádné kousnutí ***H*** hmyzu, nevidíme zde žádné jizvy po ***H*** vytrhávání chlupů. Z ní můžeme potom vy vyrobit ***H*** kabelky či ***H*** potahy na aut ***H*** na sedačky aut. X

A **…** když ***H*** vypěstujeme tuto kůži ***H*** z jedinečné buňky, tak ***H*** můžeme dosáhnout daleko dalších úspěchů. Zde vidíme ***H*** kůži, která X je skoro tr ***H*** průhledná, a tato kůže je dvacet jedna plátů ***H*** tlustá. Tudíž ***H*** na ***H*** u konvenční kůže nad tím ***H*** nemáme nad ***H*** kvalitou takovou kontrolu. Můžeme kontrolovat ***H*** třeba vzdušnost, ***H*** udržitelnost, ***H*** elasticitu či ***H*** také ***H*** vzory. Můžeme doslova ***H*** imitovat přírodu. Tento druh kůže může dokázat to co současná kůže, ta konvenční, ale i daleko více.

Jak tedy může vypadat budoucnost ***H*** zvířat? Určitě ne takle, jako je tomu ***H*** v dnešní době, ale může to vypadat nějak takle. ***H*** Již jsme ***H*** díky buněčné kultivaci ***H*** byli schopni ***H*** vyrábět pivo, víno či jogurty, ale ***H*** tento proces ***H*** je na, ***H*** je stále ***H*** **…** ***H*** se mu věnujeme dále. X ***H*** Když se podíváme na náš příklad, tak ***H*** nefermentujeme pivo, nevyrábíme pivo, ale například ***H*** kůži nebo ***H*** nebo maso. Když se podíváme na proces ***H*** kultivace masa od začátku až na ***H*** samý konec, tak je to velmi čistý způsob, ***H*** můžeme se z něj spoustu naučit, ***H*** tudíž ***H*** nejedná se o příklad, kdy ***H*** kdy naše továrny jsou vzdálené z našeho ***H*** z našich ***H*** měst, ale tento způsob je ekologický, je efektivní a je také lidský. Můžeme navrhnout nové materiály, nové produkty i nové služby. Ovšem musíme upustit od zabíjení zvířat a vnímat zvířata jako zdroj, ale musíme se posunout do civilizovanějších ***H*** způsobů kultivace produktů a musíme myslet ***H*** tedy více kultivovaně.

Attachment 10: Transcripts of interpreting explanatory notes

Errors marked in the transcripts:

CONTENT:

- Omission, i.e. omitting a piece of information which was present in the original and which is either not redundant and/or whose lack cannot be compensated for in any other way, or it is information which is generally known, its meaning can be inferred, or its absence does not impair comprehensibility
- Shift of meaning, i.e. the information is not missing but its meaning is not precise

LANGUAGE:

- Level of text, i.e. cohesion and coherence
- Level of stylistics, i.e. register, appropriate choice of language means with respect to usual usage, interference
- Level of syntax, i.e. word order, unintelligible sentences, unfinished sentences – false starts
- Level of morphology, i.e. concord between individual constituents, incorrect forms of words, declension
- Level of lexicon, i.e. correctness of terms, adequacy of vocabulary used, usage of non-existing lexical means and/or expressions, hedging

FORM, i.e. the overall oral presentation

- Slip of the tongue
- Improper pronunciation including syllables swallowing
- Unfinished words
- Hesitation sounds
- Pauses in inappropriate places, i.e. pauses longer than 3 seconds in places where there were none in the original speech