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# COVERT SIMULTANEOUS POST-EDITING IN ONLINE ASSESSMENT OF STUDENTS' SIGHT TRANSLATION

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***Abstract****. This first attempt aims to determine the extent of students' covert use of machine translation (MT) in the online assessment of their sight translation, the strategies of such use, and its signs. The study is based on the analysis of target texts (TT) of specialised online sight translation from Ukrainian into English by 13 BA and 10 MA students. The procedure involved the comparison of the students' TTs with their MT counterparts. Signs of covert MT were found in 46% of the BA and 30% of the MA students' translations. The main method of this covert MT use is "simultaneous post-editing", i.e., the immediate oral post-editing of the MT text generated by the students on their screens and hidden from the assessor, while they deliver their supposedly original TTs. Simultaneous post-editing strategies range from replacing individual lexemes with their synonyms, adding and deleting elements, changing the syntactic functions of words or phrases, rearranging sentence fragments, transforming their structure, to applying several of these strategies simultaneously. Other methods of concealment include alternating MT systems in translating the same source text, as well as artificially slowing down the process of reading the TT from the screen, accompanied by pauses in the relevant text fragments to perform certain mental operations. In order to increase objectivity, the author recommends a delayed assessment of students' online interpreting recordings. The research perspective is to study the didactic potential of simultaneous post-editing as a procedure for developing general interpreting skills.*

***Keywords:*** *online interpreter training; specialised sight translation; online assessment; simultaneous post-editing; machine translation; strategies for covert MT use.*

## ПРИХОВАНЕ СИНХРОННЕ ПОСТРЕДАГУВАННЯ В ОНЛАЙНОВОМУ ОЦІНЮВАННІ СТУДЕНТСЬКОГО УСНОГО ПЕРЕКЛАДУ З АРКУША

**Анотація.** Метою цього першого у цій сфері дослідження є визначення ступеня поширеності прихованого використання студентами машинного перекладу (МП) в процесі онлайнового оцінювання їхнього усного перекладу з аркуша, способів такого використання та його ознак. Дослідження ґрунтується на результатах аналізу текстів перекладу (ТП) спеціалізованого онлайнового усного перекладу з аркуша українською мовою з англійської студентів бакалаврського (13 випробуваних) і магістерського (10 випробуваних) рівнів. Змістом дослідження було порівняння ТП студентів з ТП МП тих самих текстів оригіналу. Ознаки МП було виявлено в 46% ТП студентів бакалаврського і 30% – магістерського рівнів. Головною стратегією прихованого використання МП є

«синхронне постредагування», тобто миттєве усне редагування ТП МП, виведеного студентом на свій екран монітора і прихованого від оцінювача, з одночасним озвучуванням відредагованого таким чином тексту. Діапазон головних способів постредагування коливається від синонімічної заміни окремих лексем, додавання, вилучення і переставляння елементів, зміни синтаксичних функцій слів і словосполучень та трансформації їх структури до одночасного застосування кількох із цих способів. Інші методи приховування включають зміну систем МП в процесі перекладу одного й того ж тексту оригіналу, а також штучне уповільнення темпу зчитування редагованого тексту з екрану, що супроводжується паузами у відповідних його фрагментах, необхідними для здійснення певних ментальних операцій. Для підвищення об'єктивності, автор рекомендує відкладене оцінювання онлайнових записів ТП студентів. Перспективою дослідження є вивчення потенціалу синхронного постредагування як вправи для розвитку загальних умінь усного перекладу.

**Ключові слова:** онлайнове навчання усного перекладу; галузевий переклад з аркушу; онлайнове оцінювання; синхронне постредагування; машинний переклад; способи прихованого використання машинного перекладу.

## 1. INTRODUCTION

**Problem statement.** The comprehensive online teaching in Ukraine began due to quarantine restrictions (COVID-19), but is still ongoing due to the ruthless invasion of the Russian troops and their constant shelling of civilians. The new learning environment has stimulated the students' intensive use of information and communication technologies (ICT), but has also been accompanied by some complications. These relate, in particular, to the active use of machine translation (MT) systems by future translators to speed up their homework, as well as to the assessment of students' non-MT translation and interpreting skills.

Although the use of ICT tools in education is generally a positive trend, the use of MT in the online training of future translators/interpreters has also raised some problems. In the most general terms, the essence of their professional competence development is the formation of an appropriate neural network in their minds through the performance of the relevant activity, i.e., in our case, translation or interpreting. Typical translation (or interpreting) problems reappear in one way or another in every text. Thus, in the practice of translation/interpreting, most of which is done independently, the mind gradually develops the appropriate solution algorithms, contributing to the development of the increasingly complex neural network that ensures the growth of the professional competence of the translator/interpreter.

In online learning, however, a student can instantly translate any text by simply pressing the appropriate key. As the student's consciousness is not involved in this 'translation', the relevant neural network is not developed, nor is the professional competence of the translator. As the temptation to save time is too great for most students (Yang et al., 2021), the hope that the lack of analytical and thinking activity will be compensated for by post-editing the MT text (or other subjective factors) is rarely justified.

Initially, students simply ran the source text (ST) through the MT system and sent the translation to their teachers, often without even reading it. Teachers, irritated by the poor quality of the target texts (TT) and the obvious signs of cheating, responded with punitive measures, and as a result, students moved on to more sophisticated MT strategies, using simple post-editing schemes, i.e. replacing some words in the MT text with their synonyms, without making any fundamental changes in the sentence structure. As teachers eventually learnt to recognise the signs of MT in such modified texts, students also became more sophisticated in their strategies for disguising MT, making it increasingly difficult for teachers to prove the fact of its use. Therefore, teachers in turn improved their skills in identifying the signs of MT in students' work. Since the main motivation for students to use MT is to save time, this "arms race" should theoretically lose its meaning when the time spent by students on disguising the use of MT exceeds the time spent on translation without the help of a machine.

In the early stages, the use of MT was limited to translation, but over time, computer technology improved, as did students' IT proficiency, and as a result, signs of MT appeared in students' interpreting, at least in its consecutive and sight-translation forms. Therefore, there is a need to investigate how widespread the practice of students' MT use is in online interpreting (especially during assessment), and what the strategies of such use are.

**Analysis of recent studies and publications.** The problem of the impact of ICT tools, and MT in particular, on the development of professional translation competence has recently attracted considerable attention from scholars.

In particular, the study by Gaspari et al. (2015) showed the growing influence of ICT in the translation and localisation industry. Other authors discovered the ICT significant potential for teaching scientific and technological (Bihych & Strilets, 2020), including heterovalent (Ihnatenko, 2020) translation, as well as interpreting (Pysanko & Pysanko, 2022). The survey by Man et al. (2020) showed a positive correlation between students' knowledge of translation technologies and their use, while Rodríguez Vázquez et al. (2022) focused on the impact of MT on the accessibility of target texts for people with special needs.

The idea of introducing MT systems into translation training programmes is supported by many authors (Pym, 2013; Kenny & Doherty, 2014; Mellinger, 2017; Rodríguez de Céspedes, 2019; Schmidhofer & Mair, 2019; Lemish et al. 2020). This idea is based on the changing views of the concept of translation in general. Teixeira and O'Brian (2017), who see translation as a form of human–computer interaction, argue for a more caring and inclusive approach towards the translator by translation technology developers, on the one hand, and for wider acceptance of the benefits of technology by the translation community, on the other. Jiménez-Crespo (2020) argues that technology has already permeated translation studies to the extent that it may be redefined as "human-computer interaction," even in the contexts of literary translation.

However, the question of the comparative efficiency of human and machine translation remains controversial. The conclusions of the relevant studies vary widely. Some claim the unconditional superiority of human translation over MT (Loock, 2018), while others found no significant difference between them (Daems et al., 2017). Still others believe that MT post-editing is more effective (Yang et al., 2021). In particular, Poirier and Roy (2023) highlight the shortcomings of MT and the importance of human intervention in post-editing,

even if this intervention can be error-prone. Other researchers (Boulanger & Gagnon, 2023) consider the development of translators' critical approach to machine-translated texts to be extremely important because they consider translators (unlike the machines) to be actively involved in the construction of social reality. This assumption partially corroborates earlier findings (Mossop, 2019) on translators' subjective feelings that the use of information technologies reduces the status of translators in society. Ruokonen and Koskinen (2017) examined translators' emotional narratives of their interaction with technology and found that machinic agency is mostly seen in a positive light, although some of the deviant patterns suggest that the translator-computer interaction can be viewed in more complex terms. The general trend seems to be moving towards the idea of trans-human translation that goes beyond purely human translation to include ICT in addition, but which empowers rather than marginalises translators (Alonso & Calvo, 2015).

The problem here is the balance between developing students' translation/interpreting-oriented ICT skills, on the one hand, and their purely human translation/interpreting skills, on the other. How can we ensure that students do not overuse technology to the detriment of their human translation/interpreting competence in online courses? The first step is to find out the extent to which students use ICT in the activities where it is not expected to be used, as well as the strategies of such use. In the literature reviewed, we did not find any studies that aimed to identify the practice and ways of students' covert use of MT during online assessment of their translation/interpreting competence, where no use ICT tools is expected. Lu and Han (2023) investigated the potential of automated MT metrics for assessing human interpreting and found that some of them had moderate to strong correlations with the human-assigned scores in some cases, especially for the English-to-Chinese direction. However, this is not related to the human assessment of the extent to which MT is used in the course of human interpreting. This problem seems to be most relevant for Ukraine at the moment, due to the factors mentioned earlier, but given the current trends in the rapid spread of online learning, it may soon become more acute on the global scale as well.

**The research objectives**. The aim of this study was to determine the extent of students' covert use of MT in online control of their non-MT sight-translation skills, the strategies of such use, and the signs by which teachers can detect it. Basing on the results of this study, it was expected that appropriate recommendations would be formulated.

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## 2. RESEARCH METHODS AND PARTICIPANTS

The participants were 13 BA students (fourth year) and 10 MA students (first year) from the School of Foreign Languages at V.N. Karazin Kharkiv National University. The BA students' subject area was scientific and technical translation (coal mining), while the MA students' subject area was the copyright protection (patenting). The study was related to the assessment of sight translation. In order to identify the features of MT and the strategies of its possible covert use, we analysed the participants' intermediate-test TTs in the combined course of translation and interpreting within the above-mentioned subject areas.

During the test, each student was shown a 1,200-character Ukrainian ST, consisting of three fragments of approximately 400 characters each (see Appendix). They were given 30 seconds to look at it, and were asked to sight translate it into English. Each student's translation was recorded, and then analysed for the presence of MT-features and possible strategies of covert MT use. In order to determine the degree of agreement between the TTs produced by the participants, on the one hand, and the machine-translated text, on the other, we used a special programme (Compare text, 2023), which shows the percentage of similarity between the two texts and the changes made by the students. The results of the analysis are presented below

## 3. RESULTS AND DISCUSSION

In general, evidence of covert MT use was found in at least 46% of the TTs of BA students' and 30% of those of MA students. This means that within 30 seconds, these students managed to take a screenshot of the image on the screen, run it through an MT engine, and then read the MT TT from the screen using different covert strategies, which are analysed below.

The simplest strategy involves infrequent synonymic lexical substitutions (mainly of individual words) in the MT TT. To illustrate this strategy, let us consider fragment 1 of Participant 1's (P1) TT (the differences between the two texts are shown in bold).

**Table 1.** Fragment 1. Comparison of target texts translated by machine (MT TT) and participant 1 (P1 TT)

| MT TT (Google Translate) | P1 TT |
|---|---|
| *In Denmark, a coal-fired thermal power plant has achieved a net electrical efficiency of more than 47%, and the overall* ***efficiency of the plant*** *has reached 91% for* ***power*** *generation and district heating. In thermal power plants operating on different types of fuel outside Copenhagen, a net electrical efficiency of 49% can be achieved. The* ***total*** *efficiency of the* ***station*** *for electricity generation and* ***heat supply*** *can reach 94%.* | *In Denmark, a coal-fired thermal power plant* ***has*** *achieved a net electrical efficiency of more than 47%, and the overall* ***there has been*** *reached 91% for* ***electricity*** *generation and district heating. In thermal power plants operating on different types of fuel outside Copenhagen, a net electrical efficiency of 49% can be achieved. The* ***overall*** *efficiency of the* ***plant*** *for electricity generation and* ***district heating*** *can reach 94%.* |

As we can see, P1 changed the form of the past simple (*achieved*) to the present perfect (*has achieved*), unsuccessfully used the phrase *there is* instead of *efficiency of the plant*, substituted the lexemes *power* (with *electricity)*, *total* (with *overall)*, *station* (with *plant)*, *heat supply* (with *district heating*). Given the small number of these substitutions, it is not surprising that the degree of agreement between these two TTs, as measured by the above-mentioned software (Compare text, 2023), is very high (77%). In fact, the significant similarity of these texts is obvious, even without special calculations, and therefore the teacher's conclusion about the use of MT should not raise any objections.

Participant 2 (P2) made more substitutions in the translation of the same passage, both in terms of number and variability. Her TT is shown below (changes in bold).

*In Denmark, a **coal plant**… a **coal power plant achieved** electrical efficiency **over** 47%, and the **general electric** efficiency of the plant has **achieved** 91% **during** power generation and **central** heating. Power plants **which work** on different types of fuel outside Copenhagen, electrical efficiency of 49% can be achieved. The **general electric** efficiency of **plant which generates electricity** and **central heating** can **achieve** 94%.*

In this case, there is a greater variety of substitutions, accompanied by deletions and additions of words. For example, in the five-component term *coal-fired thermal power plant* used in the MT TT, P2 deleted two components in her TT, resulting in a three-word term (*coal power plant*). In general, it appears that P2 deletes from the MT TT those unfamiliar terms, whose meaning she is not sure of. For example, in the first and second sentences, she deletes the words *thermal* (*thermal power plant*), and *net* (*net electrical efficiency*). She also makes extensive use of simple synonymous or quasi-synonymous replacements, substituting *over* for *more than*, *general* (*efficiency*) for *overall* (*efficiency),* and adding the word *electric* (*general **electric** efficiency)*. There is also an addition in the last sentence of this fragment – *general **electric** efficiency* instead of *total efficiency* in the MT TT. Other changes include: in the first sentence, lexical and grammatical substitutions – change of grammatical tense (past simple (***achieved***) instead of present perfect (***has** achieved*)), lexical synonymous substitution (***achieved*** instead of ***reached***), unproductive substitution of the preposition *for* to indicate the purpose (in the MT) with the non-equivalent temporal preposition *during*. In the second sentence, the omission of the preposition at the beginning (***In** thermal power plants*) turns the adverbial phrase of the place (*power plants*) into the subject of the sentence, seriously endangering its comprehensibility. There is also a synonymous substitution of the present participle *operating* with a subordinate clause link word (*which generates*) that strengthens the function of *power plants* as the subject. Otherwise, the second sentence is an almost complete copy of the MT version. The third sentence contains synonymous substitutions of *total* (for *general*), *station for electricity generation* (for *plant which generates electricity*), *heat supply* (for *central heating*), *reach* (for *achieve*) and an addition (*general **electric** efficiency*).

This widening of the range of substitutions, together with the occasional use of word deletions and additions, significantly reduced the mathematical coincidence rates in the two texts (50%), but the very fact that Participant 2 used MT in her TT generation is beyond doubt – this is evidenced by the length of the chains of completely identical words in the compared texts (the longest being 15 words in the second sentence, not counting the omission of *net*), interrupted by isolated cases of synonymous substitution.

A more inventive strategy is the one used by Participant 3 (P3) – simultaneous substitution of vocabulary and transformation of sentence structure, an example of which is given below.

**Table 2.** Fragment 2. Comparison of target texts translated by machine (MT TT) and participant 3 (P3 TT)

| MT TT (Google) | P3 TT |
|---|---|
| *Coal generates at least 40% of the world's electricity, and in 2022* ***coal will generate about a third of US electricity, up from about 49% in 2018****. As* ***of*** *2012, the use of coal for* ***electricity*** *generation* ***in the United States*** *has been* ***declining*** *as large reserves of natural gas, produced by hydraulic fracturing of tight shale formations,* ***have become available*** *at low prices.* | *Coal generates at least 40% of the world's electricity, and in 2022* ***about a third of electricity will be generated from coal in the United States, compared to 2018, there is*** *about 49%.* ***And for*** *2012, the use of coal* ***in the United States was less the*** *generation* ***was decreasing****, as large reserves of natural gas, produced by hydraulic fracturing of tight shale formations,* ***at*** *low prices.* |

This fragment, like the previous one, also contains substitutions – one synonymous (*was decreasing* instead of *has been declining*) and two less successful attempts: *And for* instead of *As of* and *there is* instead of *up from*. The main strategy, however, is to change the structure of the sentence, specifically, from active voice to passive voice (*coal will generate about a third of US electricity – about a third of electricity will be generated from coal in the United States*). Here we can see almost literally identical elements: the phrase *about a third of... electricity* is moved from the end of the sentence in the MT TT to the beginning of the sentence; *coal will generate* is transformed into a passive structure (*will be generated from coal*), as a result of which this phrase in the student's variant is moved to the end of the sentence, compared to the initial position in the MT TT. The meaning of *US* (*US electricity)* in the MT is expanded, and its function is changed to that of an adverbial of place (*in the United States)*. The meaning of the phrase *up from about 49% in 2018* in the MT TT has been slightly changed – *compared to 2018,* although some loss of the meaning is compensated for by the context. *The* transformation of the phrase *"the use of coal for electricity generation in the United States has been declining"* triggered the loss of the logical connection between the components, resulting in the double marking of the concept of *declining* (*has been declining*) in the participant's TT (*was less* and *was decreasing*), while the absence of a comma between them causes problems with the transfer of meaning in general. Finally, in an attempt to transform the MT TT, P3, probably due to inattention, deleted the predicate (*have become available),* which worsened the overall prospects of understanding the sentence. As a result of this strategy, the degree of similarity between the machine-generated target text and that of P3 decreased slightly (to 45%). Thus, purely mathematically, the teacher may no longer be able to prove the fact of the use of MT, but will have to corroborate it through additional analysis.

In some cases, the decrease in the similarity of the student's TT to the MT TT was caused by the participants' errors during the simultaneous post-editing, which eventually led to the distortion or loss of the meaning of the ST. This is clearly seen in the TT of Participant 4 (P4) in rendering Fragment 2 (see above).

***Coals are produced*** *at least 40%* ***in the*** *world, and in 2022,* ***in the USA, coals were produced at*** *about a third of electricity,* ***if we compare with*** *about 49% in 2018. In 2012, in the USA,* ***coals are reduced of use*** *for* ***the production of*** *electricity,* ***because large deposits*** *of natural gas* ***appeared, which were*** *obtained by hydraulic fracturing of tight shale formations,* ***at*** *low prices*.

Looking at this fragment as a whole, we can see relatively large remnants of MT TT (up to eight words in a row), interspersed with those that P4 tried to process without losing the ST meaning, although she did not always succeed. For example, when trying to transform the first clause of the MT TT into a passive construction, P4 lost the semantic object (*electricity*). Instead, after the unsuccessful transformation, the semantic subject in the original text (*coal generates*), became a semantic object (*coals are produced),* which distorting the meaning of the ST. As a result of the mechanical addition of the next phrase borrowed from the MT TT (*at least 40%*) and the unmotivated addition of the preposition (***in*** *the world*), this fragment lost its original meaning altogether. In the second coordinate clause, beginning after the comma, P4 unsuccessfully transformed the same semantic subject into an object by changing the active voice (*coal will generate*) into the passive voice, and, for some unknown reason, replacing the future tense with the past tense (*coals were produced*) and adding another preposition (***at*** *about a third of electricity*). Such operations rendered this sentence equally meaningless.

In addition, P4 was generally successful in replacing the phrase *up from about 49%* in the MT TT with a conditional (*if we compare with*), especially since the machine made a mistake here (it should be ***down*** *from about 49%),* although the phrase lost its complement. Another conversion in this sentence is the transformation of the *US* into an adverbial of place (*in USA),* which does not affect the meaning.

In the next sentence, P4 replaced *As of 2012* with *In 2012*, brought the adverbial of place forward, shortened it to an abbreviation (*in USA),* and moved it to the beginning of the sentence. She also tried to rephrase *the use of coal for electricity generation... has been declining*, but made several inappropriate substitutions in the process. First, she turned the semantic subject (*the use of coal)* into the semantic object (*coals are reduced*), which is traditional for her; then she turned the attributive construction (*electricity generation*) into the *of*-phrase, while replacing *generation* with its synonym (*production*), and ineffectively paraphrasing the fragment with *use*: compare – *coals are reduced of use* vs *the use of coal* in MT.

In the subordinate clause of the cause and reason, P4 used the synonym *obtained* (together with the linking phrase *which were* ineffectively attached to *appeared*) instead of *produced,* and also replaced almost all the lexemes of the phrase *as large reserves... have become available* with their synonyms (*because large deposits... appeared*), moving the predicate closer to the subject, unlike in the MT TT, where we see a delayed predicate. However, this shift significantly worsened comprehension, as the meaning of *at low prices* (in the participant's case – ***by*** *low prices)* was dissociated from the predicate.

Thus, unsuccessful transformations have reduced the comprehensibility of the TT, but have contributed to a significant decrease (31%) in the similarity to the MT TT, which makes it difficult for the teachers to argue for the use of the MT if they are guided only by quantitative indicators.

A more complicated strategy is the change of the MT engine by the same student in the course of doing the same task. It should be borne in mind that students can quickly exchange (among themselves) versions of different MT engines of the relevant fragments in the course of completing the same task, as well as in the intervals between them. As the order and content of the fragments varied for different students, the presence or absence of MT versions for the relevant fragments may influence the student's choice of strategy.

For example, Participant 5 (P5) probably did not have an MT version of fragment 1, which is why she had to translate it herself, as evidenced by the low percentage of matches with the MT – 29%.

In fragment 2, however, there was a rapid increase in the similarity to MT (*DeepL Translate*) – 61%. The nature of these matches, shown below, leaves no doubt about the use of the MT system.

Table 3. Fragment 2. Comparison of target texts translated by machine (MT TT) and participant 5 (P5 TT)

| **MT TT (DeepL)** | **P5 TT** |
|---|---|
| *At least 40% of the world's electricity is **generated** from coal, and in 2022, **coal will generate about** one-third of the electricity **in the United States**, **down** from about 49% in 2018. As of 2012, the use of coal for electricity generation in the United States **was declining** as large reserves of natural gas, **obtained** by hydraulic fracturing of tight shale **formations**, **became available at low prices**.* | *At least 40% of the world's electricity is **produced** from coal, and in 2022, **at least** one-third of the **US** electricity will be **produced from coal, up** from about 49% **as it was** in 2018. As of 2012, the use of coal for electricity generation in the United States **declined** as large reserves of natural gas **were found, which was produced** by hydraulic fracturing of tight shale **seams**.* |

Here we see literal coincidences of long (up to 16 words in a row) fragments, between which we can observe attempts to replace words with their synonyms, to add them, or to transform some structures. The first includes the substitution of *generated* with *produced*, *about* – with *at least*, *was declining* – with *declined*, *obtained* – with *was produced*, *formations* – with *seams, became available* – with *were found*. Another substitution (*up* instead of *down*) is antonymous, but justified by the machine's error mentioned above. This suggests that the substitutions by P5 are not mechanical, but involve a degree of reflection. Addition refers to the inappropriate introduction of *as it was.* Transformations include turning the adverbial of place (*electricity generation **in the United States***) into a modifier (***US** electricity*), and expanding the phrase *obtained by hydraulic fracturing* into a full subordinate clause (***that was produced** by hydraulic fracturing*).

Interestingly, in the next passage, P5 again relied on MT, but this time on *Google Translate*. The reason for this change may be the hope that the teacher will not check the same translation for the use of different MT engines. The comparative characteristics of the MT TT and P5's TT are shown below.

**Table 4**. Fragment 3. Comparison of target texts translated by machine (MT TT) and participant 5 (P5 TT)

| MT TT (Google) | P5 TT |
|---|---|
| *The total **of known** deposits that can be mined **with** the help of modern technologies, including **highly** polluting, low-calorie types of coal (for example, brown, bituminous), will be sufficient for many years. Consumption is increasing, and maximum production **may** be reached **within decades**. On the other hand, **to avoid** climate change, we may have to leave a lot of coal in the ground.* | *The total deposits that can be mined **via** with the help of modern technologies, including **high-polluting**, low-calorie types of coal (for example, brown **coal** or bituminous **coal)**, **that** will be sufficient for many years. Consumption is increasing, and **within decades** maximum production **will** be reached. On the other hand, **for avoiding** climate change, we may have to leave a lot of coal in the ground.* |

The degree of similarity between the MT TT and the TT of P5 in this fragment is 69%, but the fact of using the MT is obvious even without special measurements. We see chains of identical words, with synonymous substitutions, word additions, deletions or simple transformations occurring every 8-10 words. In the first sentence, we see almost the same text as the MT TT, except for one deletion (*known*), several elementary synonymous substitutions (*via* for *with* (but the participant forgot to delete *with* in her TT)*, high-polluting* instead of *highly polluting*) and additions (*coal* (twice) and *that*). In the rest of the passage, the participant made two less adequate substitutions (*will* instead of *may*, *for avoiding* instead of *to avoid*) and fronted the phrase *within decades*. Thus, despite the change of the MT system in this passage, the participant's overall approach is not too inventive.

A more complicated strategy is the simultaneous transformation of the sentence structure with the (partial) preservation of the MT TT lexical elements. To illustrate this, let's look at the interpretation of Participant 6 (P6).

**Table 5**. Fragment 4. Comparison of target texts translated by machine (MT TT) and participant 6 (P6 TT)

| MT TT | P6 TT |
|---|---|
| ***At this stage**, only a **specialist** can accurately determine who contributed to the creation of the invention. Improper registration of the list of inventors can lead to **the irrevocable loss of validity** of a patent that could be **obtained by** application. The **specialist should** also **find out whether there have been any** public **disclosures** of **the** invention, **i.e.** any publications, sales offers, etc. Under the **laws of some** jurisdictions, public disclosure or an offer to sell an invention **prior to** filing a patent application **may** prevent the grant of that patent.* | *Only an **expert** can accurately determine who contributed to the creation of the invention **at this stage**. Improper registration of the list of inventors can lead to **losing the effectiveness** of a patent that could be **granted according to such** application. The **expert** also **has to define if** public **discovery** of **an invention took place, meaning that there were some** publications, **or offers to sell or anything else.** Under the **legislation**, **under certain** jurisdictions **in the world**, public disclosure or an offer to sell an invention **before** filing a patent application **can** prevent the grant**ing** of **such** patent.* |

The degree of similarity between the two texts is relatively insignificant (36%), at least it does not provide grounds to definitively accuse the student of using the MT. However, a closer comparison of the two texts provides such reasons.

For example, sentence 1 in the MT TT consists of four blocks: (1) *at this stage; (*2) *only a specialist*; (3) *can accurately determine*; (4) *who contributed to the creation of the invention*. In the student's TT, we can see a rearrangement of the above blocks, accompanied by a minor lexical substitution. In particular, block 2 (with the replacement of *specialist* by *expert*) comes first, followed by blocks 3, 4 and 1. The words used in the two texts are practically identical.

In sentence 2, the first 10 words of the sentence are identical in both texts (*Improper registration of the list of inventors can lead to*), then P6 deletes the term *irrevocable*, replaces the noun *loss* with the gerund *losing*, the *validity of* – with *effectiveness*, the phrase *received by* – with *granted according to,* and adds the word *such*.

In sentence 3, P6 switches to a combined strategy of simultaneous syntactic transformation and synonymous substitutions. First, she replaces individual lexemes: *specialist* by *expert*, *should* by *has*, *find out* by *define*, *whether* by *if*. Then, continuing with the lexical substitutions, the participant simultaneously transforms structure *there is/are* (*there have been any public disclosures*) into a direct word order, moving the phrase *public disclosures* to the initial position of the subject with a simultaneous (unsuccessful) lexical substitution (*public* ***discovery***) and introducing the predicate (*took place)*. In the next fragment, in addition to synonymous substitutions (*meaning that* instead of *i.e.*, *offers to sell* instead of *sales offers*), P6 also uses additions (*there were some*, *or anything else)*. In the last sentence, apart from one addition (*in the world)*, there are mainly synonymous substitutions (*legislation* instead of *laws*, *certain* instead of *some*, *before* instead of *prior to*, *can* instead of *may*, *granting* instead of *grant, such* instead of *that*) without any change in the syntactic structure of the MT TT. Thus, although the mathematical indicators (36% of matches between the two texts) demonstrate a fairly high degree of translation independence on the part of P6, their comparative analysis shows that she definitely relies on the MT TT in her sight translation.

An external indicator of the use of simultaneous post-editing is the artificial slowing down of the students' reading of the MT TT (to create the impression of intense mental activity in the process of sight translation), as well as the pauses before the words and phrases that are replaced or transformed. Let's consider this approach using the example of Participant 4's (P4) interpreting of Fragment 2 (see Table 2). Substitutions are shown in bold, and pauses are shown with dots:

***Coals are****… **produced** at least 40% **in** the world, …and in 2022, …**in USA**… **coals**… **were**… **produced** …**at** about… a third of electricity, …**if**… **we compare**… **with** about 49% in 2018. In 2012, …in USA, …**coals are reduced of** us**ing** for **the production of** electricity, **because**… **big deposits**… of natural gas… **appeared, that**… **were** obtained by hydraulic fracturing of tight shale formations, … **by** low prices*.

In this fragment, P4 made twenty lexical substitutions and transformations of MT TT, in fourteen of them (i.e., 70% of the cases) she made a noticeable pause before making the corresponding transformation. It is worth noting that unmotivated pauses are generally not

characteristic of this participant. At least in the interpretation of this passage, she made only three of them, in addition to the fourteen mentioned above.

In other cases, pauses are used to conceal the reliance on the MT. The following passage from Participant 7's interpretation of part of Fragment 2 (see Table 2) is a good example of this approach.

*As **for** 2012, the use of coal for electricity generation in the **US**… **was**… declining, …as… large… reserves of … natural gas, …produced by… … hydraulic… fracturing… of tight… shale formations, …because… ah!... **it** became available at low prices.*

This short passage (42 words) is almost completely identical (differences in bold) to the MT TT, i.e. she read it from the screen. However, during the production of her TT, P7 made 14 unmotivated pauses. One of them (before *hydraulic*) can probably be explained by the fact that she was not sure how to read this word correctly (in the end, she read it incorrectly). In another case, she misidentified a word (saying *because* instead of *became),* but immediately corrected herself. In all the other cases, she had the MT-generated TT in front of her and could read it without pausing, but she deliberately paused to give the impression of an unprepared interpreting. When the teacher gives the mark immediately after listening to the student's performance, this strategy works. For this reason, the best way to assess interpreting in online courses is to listen to recordings of students' interpretations. This allows you to first check each of them for their use of MT.

## 4. LIMITATIONS

The study described above has a number of natural limitations. These are related to a comparatively small sample size of the participants, their affiliation to only one educational institution, gender characteristics (only women), the proportionately small volume of target texts analysed, pertaining to only two specialised domains, only one language pair (English and Ukrainian) and one direction of interpreting (from Ukrainian into English) and some others, such as longitudinal effects and the level of interpreting competence of the participants. However, this study allows to formulate some preliminary conclusions, which do not pretend to be exhaustive but could be used as a starting point for a more comprehensive research. These conclusions are set out below.

## 5. CONCLUSIONS

1. It is a relatively common practice for students to use covert MT in online assessment of sight translation. At least half of the BA students and a third of MA students use simultaneous post-editing, i.e., the immediate oral post-editing of the machine-translated text generated by the students on their screens and hidden from the teacher-assessor, while they deliver their supposedly original target texts.

2. The strategies of covert simultaneous post-editing vary from the simple replacement of individual lexemes with their (quasi-)synonyms, adding and deleting individual elements, changing the syntactic functions of words or phrases (e.g. replacing the function of modifier with the function of the adverbial of place) to rearranging sentence fragments of the source text, transforming its structure (e.g. using passive constructions

instead of active voice), including the simultaneous application of several of the above strategies. In the latter case, the students' cognitive mechanisms are often overloaded, resulting in the loss of certain fragments of the source text in the target text, up to the loss of its general meaning.

3. In order to disguise the use of MT in the online assessment of sight translation, students can alternate between machine translation systems when translating the same source text, as well as artificially slow down the process of reading it from the screen, which, in particular, gives them additional time for simultaneous post-editing. In addition to the slower speed, other indicators of synonymous substitutions and transformations in the machine-translated target text are the pauses that students make in the relevant text fragments to perform the necessary mental operations. In order to increase the objectivity of the assessment of online interpreting, it is recommended that it be carried out by analysing the students' recordings rather than immediately after they have finished their sight translation.

4. One of the tools used to assess students' simultaneous post-editing in online interpreting is the comparison (using appropriate electronic software) their target texts with those translated by the machine, in order to determine the degree of similarity between them. In addition to purely mathematical parameters, a comparative analysis of the two target texts can provide additional information. The disadvantage of this approach is that it is rather time-consuming, which makes it unlikely to be used on a large scale.

5. Given the need to teach future translators/interpreters to use ICT in their professional work on the one hand, and to develop their creative personalities on the other, it may be promising to look for the optimal balance between these two areas in training. Given the rather complex psychological nature of simultaneous post-editing as a type of activity, it seems appropriate to study its potential as a procedure for developing general interpreting skills, which is an additional prospect for further research.

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**Appendix. Source texts.**

**Fragment 1.** У Данії, на вугільній теплоелектростанції було досягнуто чистого електричного ККД понад 47%, а загальний ККД станції досяг 91% при виробництві електроенергії та централізованому теплопостачанні. На теплоелектростанціях, які працюють на різних видах палива за межами Копенгагена, можна досягти чистого електричного ККД на рівні 49%. Загальний ККД станції з виробництва електроенергії та централізованим теплопостачанням може досягати 94%.

**Fragment 2.** З вугілля у світі виробляється щонайменше 40% електроенергії, а у 2022 році з вугілля у США вироблятиметься близько третини електроенергії, порівняно з приблизно 49% у 2018 році. Станом на 2012 рік, у США зменшувалося використання вугілля для виробництва електроенергії, оскільки з'явилися великі запаси природного газу, отриманого шляхом гідравлічного розриву щільних сланцевих пластів, за низькими цінами.

**Fragment 3.** Загальних відомих покладів, які можна видобувати за допомогою сучасних технологій, включаючи високозабруднюючі, низькокалорійні види вугілля (наприклад, буре, бітумінозне), вистачить на багато років. Споживання зростає, і протягом десятиліть може бути досягнуто максимального видобутку. З іншого боку, щоб уникнути зміни клімату, в землі, можливо, доведеться залишити багато вугілля.

**Fragment 4.** На цьому етапі лише фахівець може точно визначити, хто зробив внесок у створення винаходу. Неправильне оформлення списку винахідників може призвести до незворотної втрати чинності патенту, який міг би бути отриманий за заявкою. Фахівець повинен також з'ясувати, чи мало місце публічне розкриття винаходу, тобто будь-які публікації, пропозиції продажу тощо. За законами деяких юрисдикцій, публічне розкриття або пропозиція продажу винаходу до подання заявки на отримання патенту може перешкодити видачі цього патенту.