

Teaching Academic English in the Age of AI

—Notes on What Translation Software Means for University

English Education—

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1. Introduction

Time was, and not so long ago either, when a University teacher of academic writing in English would be alerted to the fact that a student was using translation software by the egregious and often incomprehensible nature of the English. This is no longer the case. Free online services are now producing Japanese-to-English translations of such high quality that a teacher's suspicions are aroused not by the awkwardness of the writing but by its naturalness and the absence of errors. And the speed at which neural machine translation (NMT) programmes are improving, of course, is accelerating. Effectively, the machines have won, or soon will have, and teachers need to formulate a response to the new world our students inhabit. Not only do these students no longer need a command of grammatical structures and sufficient lexical knowledge to be able to produce passable English prose, they can also now dispense with the onerous task of reading in the language, at least if the texts in question are digital, as they now so often are. The aim of this essay is to offer a tentative, initial exploration of how foreign language teachers might begin to frame a response to the new technological environment in which we now find ourselves.

2. The State of the Art

However much we might feel that we have been caught off guard by the pace of these advances in translation software, they have not actually occurred overnight. This year marks the 59th Annual Meeting of the Association for Computational Linguistics, which will take place over six days. The Proceedings from the 58th Meeting run to more than 9,000 pages and

bear testimony to the scale and persistence of human efforts to find ways to use computers to model natural language and explore solutions to linguistic problems. In contrast, the machine translation sub-field has only recently emerged as worthy of an equivalent event of its own. Last year saw the Fifth Conference on Machine Translation (WMT 2020), although the community began holding annual workshops in 2006. The 2020 iteration featured a mere 19 oral presentations and 112 poster presentations, but there were another 40 full papers that could not be accommodated, and the 1,200 pages of the Proceedings suggest that this is a field that has grown rapidly.

In the wider world beyond the conference auditorium, it is the small German company DeepL that has found itself in the limelight. Their software has been much lauded for its ability to produce idiomatic and nuanced translations that are superior to those generated by their far larger rivals such as Google or Microsoft. Reviewers for *TechCrunch* concluded in 2017 that, ‘Whereas Google Translate often goes for a very literal translation that misses some nuances and idioms [...], DeepL often provides a more natural translation that comes closer to that of a trained translator’. Exploiting the computational power of the world’s ‘23rd most powerful supercomputer’, DeepL’s neural network draws on a database comprising in excess of a billion translations (Coldeway & Lardinois 2017). The efficacy of what is on offer can easily be tested by anyone with an internet connection. Here is an example: a paragraph translated from the Japanese edition of *Business Insider*, a news website dedicated to the world of American business and finance. The article discusses the financial implications of the COVID-19 pandemic for universities in the United States. The Japanese source text is given below, followed by an English rendering generated using the free version of DeepL.

いくつかの点で、大学はすでに大きな変化を見せている。新型コロナウイルスのパンデミックはアメリカ各地の大学を“完全リモート”に移行させ、学生たちはビデオチャットや共有されたドキュメントを通じてオンラインで授業を受けるなどしている。そして、多くの学生がこうした状況に満足していない。インディアナ大学やパデュー大学、ミシガン大学、ジョージワシントン大学、ボストン大学、ブラウン大学といった複数の大学の学生たちが授業料の返還を求めて大学を訴えている。

これはまだ序の口かもしれない。

DeepL offers the following English translation:

In some respects, universities are already undergoing significant change. The new coronavirus pandemic has made universities across the US “fully remote”, with students taking classes online via video chat and shared documents. And many

students are not happy with the situation. Students at several universities, including Indiana University, Purdue University, the University of Michigan, George Washington University, Boston University and Brown University, are suing the universities for tuition refunds.

This may be just the beginning.

In the original US edition of the website, the text is as follows:

In some ways, the colleges have already seen significant change. The coronavirus pandemic has forced colleges and universities across the nation to go fully remote, taking lectures and labs online in the form of video chats and shared online documents. And many students aren't happy. Some have sued their college for tuition reimbursement, including students at Indiana University, Purdue University, University of Michigan, George Washington University, Boston University, Brown University, and others.

This might just be the beginning.

DeepL's translation here seems flawless. It is idiomatic, natural and entirely readable. Strangely, it has even managed to improve on the original English. There is a subtle difference between 'This may be just the beginning' and 'This might just be the beginning'. Given the context, both sentences must mean that what we are seeing is only the beginning of a process which is going to continue for some time, placing increasing numbers of universities under financial pressure. But in the latter version—the English original—the position of the 'just' produces a certain ambiguity insofar as, out of context, the 'might just be' could also mean 'might possibly be', as in the phrase 'It might just help', which is how the Oxford English Dictionary illustrates this usage. The minor improvement represented by the more stable phrasing of 'This may be just the beginning', where the 'just' unequivocally conveys the meaning 'only', is due to the accuracy and naturalness of DeepL's rendering of the Japanese sentence “これはまだ序の口かもしれない”.

The new translation tools, then, are becoming formidably good. They are also not limited to text displayed on screens. Computer-assisted language services now extend to listening and speaking, the skills required for spontaneous, real-time interaction, and also the skills which the Japanese English education system is notoriously least equipped to develop in school children. We have more or less arrived at the point where reliable, near-simultaneous translation is now available for spoken language. For those who require something a little more sophisticated than the kind of experience provided by the latest smartphone apps, the company Timekettle offers translation earbuds. This technology, currently retailing at between \$200 and \$300, allows two people, each wearing one of a set of two earbuds, to hold a conversation across two different languages. The Japanese Ministry of Education recently

backed away from a plan to incorporate English exams from the private sector into the university admissions process, which would have obliged many school-leavers to take tests which measured their proficiency as speakers of the language (Sano 2019). By the time the education system returns to address this lacuna in the assessment criteria, it may well be possible to argue that the skill has been rendered obsolete by advances in technology.

3. The State of Play

As language teachers, our initial task should be to determine to what extent the students we teach are making use of these new tools. This was, in part, the aim of a study conducted very recently at two Japanese universities by Tim Newfields and Ivan Botev (forthcoming, 2021). Their principal goal was to increase their students' awareness of both the advantages and the potential pitfalls of using AI-powered online software to complete translation tasks. But their paper is also an initial attempt to fill a gap which they have identified in the research literature by documenting the use of machine translation among EFL learners at tertiary educational institutions in Japan. Without being prompted to do so, 66% of their 87 subjects, all either first- or second-year students at universities in Tokyo, chose to employ online software to translate the greetings and other text which typically appear on Japanese New Year's cards. Of these students, a clear majority of 79% opted to use Google Translate, and most of the others (14%) used Weblio.

The Department of Information Technology at Shinshu University, in collaboration with the SGE's English Department, is in the process of conducting similar research, and an initial questionnaire on the use of translation software by first- and second-year students has so far garnered around 330 responses.¹ The sample is already almost four times larger than that employed by Newfields and Botev, and will in the end be much larger still. There is insufficient space here to offer more than a few preliminary comments, and a fuller analysis of the data will be forthcoming later in the year. But a cursory glance at the results to date suggests a picture very similar to the Tokyo-based study. Almost 93% of the students responding use translation software on their computer or phone, and Google is by far the most popular choice. Only 15% have so far found their way to the delights of DeepL. Since one aim of the survey is to measure students' level of awareness with respect to translation programmes, they have also been asked if they have compared the different services on offer, a question to which around 38% have replied in the affirmative. That students are discriminating in the use they make of the apps is also suggested by the fact that more than half harbour doubts about the accuracy of the translations produced. Nonetheless, a significant proportion are using the software at least some of the time both when writing English (60%) and when reading English-language websites (76%).

4. Teaching and Assessment

Much more research is needed to determine how students are using the new tools. Without employing a research methodology like video monitoring, as Newfields and Botev suggest (11), it will be difficult to know precisely what procedures and habits students have adopted. Nevertheless, it is not hard to imagine the kind of effect the new technology might have, say, on a task like that of composing a 5-paragraph essay, which is a feature of the Academic English syllabus. For many students, the task will be splintered into two quite separate components. A low- or intermediate-level Japanese learner, lacking confidence in their ability to write in English, might well decide that the most time-efficient way to accomplish the task would be to do all the thinking, planning and writing in the L1 first, and then entrust the English to the AI, in which case, one might be forgiven for questioning whether this is still a task that falls within the domain of English language education. The bottom line, at least if one takes a somewhat longer-term view of all this, is that AI-powered systems are steadily taking us closer and closer to a world in which language teachers will become redundant. If computers can do everything with language that humans do, then what exactly is left for humans to do? This is, of course, part of the broader question of what remunerable occupations might remain once machines have taken over all the tasks for which we used to be paid, a question which now looms very large in the minds of many people, from the political elites to corporations and sociologists. One influential study estimated that ‘about 47 percent of total US employment is at risk’ (Frey & Osborne, 2013). The dramatic improvements in machine translation technology, however, should not be taken to mean that the sun is setting on the profession of language teaching, at least not just yet. But teachers urgently need to become more aware of what the technology can do, how it is likely to advance in the near future, and how it can best be employed in the educational context.

It is, of course, a truism that all technological progress encounters resistance, and one response might be to monitor and attempt to curtail, or in some way control, the use students are making of these fast-developing tools. The first problem with this strategy is that it is often far from easy to be absolutely certain that a piece of writing has been machine translated. Nor does it seem particularly likely that it will be possible to prevent students using translation software, except in specific contexts such as invigilated examinations. Then again, perhaps the traditional context of the exam room is an answer of sorts. If students know that, at some point, they will be required to translate or compose a text in exam conditions, then they will be motivated to acquire the skills that will allow them to accomplish such tasks without the assistance of AI-driven software. However, none of this resolves what is perhaps the more fundamental problem. If AI translation is the future of how most people will read and write in foreign languages, then the majority of students might justifiably ask why they need to learn to translate without the aid of machine intelligence.

They would have a point. Insisting that students refrain from using DeepL is not qualitatively different from instructing them to disable the spellchecker function in Microsoft Word.

Perhaps one of the first problems that will occur to teachers is that of how to assess students' writing when some students are probably using translation software and others are not, this being something that, in many instances, we can never be entirely sure about. It is not unlikely, moreover, that some students will experience a sense of anxiety because of uncertainty about whether or not they should be using the software. Are they doing something illicit and so running the risk of being penalized if they are discovered? To many teachers it will seem important that there is a level playing field. If a teacher is assessing written assignments on the basis of accuracy, then a student who is not using the software will be at a considerable disadvantage in a class where other students are using DeepL to write. The simplest and fairest approach is to tell all the students in the class to use the software and then help them to use it better, even if this leaves unresolved the question of how students are ever going to learn to write without the help of the AI. It also begs the question of how to accommodate the student who enjoys writing, in either the L1 or L2, and embraces the challenge of doing it under their own steam.

Accuracy has always been an important category of assessment in language proficiency tests. This is well illustrated by the IELTS (International English Language Testing System) tests. In the academic version of IELTS, the one-hour paper dedicated to writing is split into two components. The second of these requires candidates to write an essay of at least 250 words in response to a point of view or a problem. In other words, one has 40 minutes in which to produce a short piece of connected prose that we might classify, using the genre terms commonly used in the teaching of academic writing, as either a persuasive or a problem-solution essay. An example currently offered as a sample on the IELTS website is as follows: 'International tourism has brought enormous benefit to many places. At the same time, there is concern about its impact on local inhabitants and the environment. Do the disadvantages of international tourism outweigh the advantages?'

If we turn next to the public version of what the makers of the test (the British Council, IELTS Australia and Cambridge Assessment English) call their 'Band Descriptors', we see that a candidate's answer is assessed according to four categories. The third and fourth of these categories, accounting, one assumes, for half of the score awarded, are 'lexical resource' and 'grammatical range and accuracy'. Were a learner to be tackling a writing task of a similar nature outside exam conditions, these two categories of assessment are areas in which one might expect to obtain a much better score with the assistance of translation software. When the examiners are trying to decide how well an answer measures up to the standards outlined in the 'lexical resource' rubric, they are looking for evidence of a wide

range of vocabulary. A candidate who scores well enough in this category to be deemed able to cope with a university course in an English-speaking country, which would generally mean achieving a band score of around 6.5 or 7.0, would have demonstrated not only that they could write with ‘precision’ but also that they could use ‘less common lexical items with some awareness of style and collocation’. At the same level of proficiency in the ‘grammatical range and accuracy’ column, the examiners would be ticking boxes labelled ‘uses a variety of complex structures’ and ‘frequent error-free sentences’. Although it will depend on how exactly the software is used, a learner at almost any but the highest levels of proficiency will do better in these two categories of lexis and grammar by writing in their native language and then employing, say, DeepL to render their sentences into English. Both the lexical resources one can draw on and the level of grammatical sophistication one can achieve will be much greater in the L1 than in the L2, and DeepL can now pretty much be relied upon to reproduce the complexity of structure and, more certainly still, the items of lexis in English, while making sure that the style and collocations are as they should be.

At the same time, it is crucial to bear in mind that, however effective the AI programme might be at tackling the purely linguistic component of the task, there are other academic skills that need to be taught and honed. This brings us back to the IELTS band descriptors, where we find that the first and second categories of assessment are ‘task response’ and ‘coherence and cohesion’. Both of these categories are very much in the domain of critical thinking. And while AI systems can produce logically structured pieces of writing, such as journalism or financial reports, a student working on an academic essay will not get much help from DeepL when it comes to deciding how best to structure their writing. Cohesion has to do chiefly with whether or not each sentence seems connected to the one that follows in such a way that the writing comes across as an integrated whole rather than as a collection of disconnected fragments. DeepL may be of some assistance here in its capacity to produce and correctly punctuate the appropriate transitional devices. Still other improvements might be supplied by Grammarly, designed not only to flag grammatical errors but also wordiness and tonal inconsistencies, all of which might contribute to achieving a cohesive piece of academic prose (McCracken 2019). Neither of these AI-powered applications, however, can yet determine whether or not the writer has satisfied the IELTS examiner looking for a logically sequenced progression of thought. Nor can they tell the writer if they have presented ‘a fully developed position in answer to the question with relevant, fully extended and well supported ideas’, as one is expected to at the highest band level for ‘task response’.

5. Raising Awareness

The importance of critical thinking skills as an integral part of language education will guide teachers towards a new understanding of what they should be teaching and assessing.

Students, meanwhile, will continue to make increasing use of translation software in cross-language exercises. Inevitably, teachers will need to acknowledge this and seek ways to work with the new technology. A good place to start might be something resembling Newfields and Botev's experiments with raising students' consciousness by guiding them through exercises that involve comparing different translations. Here are a couple of tentative suggestions:

- i) Students could work in small groups and first write a text in Japanese which they translate into English without the support of the software. They then translate the same text again using an application like DeepL and compare the two versions. The DeepL version will almost certainly be the better of the two and the student's task will be to determine in what ways it is better.

- ii) The class all work on the same text translated from English to Japanese using DeepL and in groups work together to evaluate the translation.

Newfields and Botev, though they did not wish to discourage their students from using machine translation, aimed through their consciousness-raising activities to give students a clearer understanding of the potential for mistranslation. Their sense of the performance of the translation apps currently available is that 'human contextual post-editing' remains a necessity if the translation is to be 'socio-culturally appropriate and "natural" in the target language' (3). While they were aware of DeepL, however, they make very little mention of this particular application and it does not feature among the software used by their students. This does not invalidate their assessment of what machine translation is capable of, even if there are cases in which DeepL can produce a 'natural' rendering. The kind of awareness that Newfields and Botev want their students to develop is clearly essential and they are right to warn against the dangers of 'blind reliance on machine-generated texts' (4).

One of their most interesting conclusions is that their students conceptualized translation in terms of using vocabulary and grammar to produce a text, a sentence-level task ('a largely cognitive semantical and grammatical exercise', 13). The students did not consider the social context. Newfields and Botev respond to this by recommending that instructors using translation as a teaching tool adopt a 'functional approach', entailing pragmatic questions concerned with why the text is being translated and for whom it is intended. When asked to evaluate the relative merits in terms of 'naturalness' of several different versions of the same text, the students were sometimes frustrated by the absence of a 'correct' answer (14). This is perhaps unsurprising given the predominance in Japanese education of textbooks and exam questions which admit of only one correct answer. It is also an attitude clearly reflected in the preliminary results of our survey. When asked to give the main reason why they used

translation software, 30% of the 330 students who have completed the survey so far responded that they wanted ‘to get the right answer’ (正解を得るため), making this the most common rationale.

This attitude to translation suggests another area in which there is important work for teachers to do. Many Japanese students approach the task of learning a foreign language as one of memorizing lists of words. This in turn encourages the belief that, for every word in the target language, there is a single equivalent in the L1, and vice versa. Such learners see the relationship between the two languages in the black-and-white terms of word-for-word equivalence. And while this is true, as the translator David Bellos points out, for a group of words, mostly nouns, that designate precisely defined things—words like “polyester”, “recitative” or “crankset”—it is very often not the case. A language is not simply ‘a list of names for things that exist’, a notion known as ‘nomenclaturism’. Hence, we often find that there is no matching equivalent in the other language. Translators find themselves struggling with the “imperfect matching” or anisomorphism of languages’. Bellos offers the well-known example of the absence in Russian of a word that simply means ‘blue’. The available adjectives all include a qualifying notion (e.g. pale blue or navy blue) missing from the less precise English word (82–85). Between two languages as different as Japanese and English, there are, of course, countless examples of the lack of an equivalent expression. Things clearly do get lost in translation and it is naïve to hold onto the conviction that there is always one correct answer, as our students would doubtless prefer to think. As teachers, one of our roles must be to help them grasp that there is often no getting away from the fuzziness. This does not mean that translation is impossible but just that it can often involve a serious effort of negotiation. The Italian writer Umberto Eco once put it like this (2001, ix):

Every sensible and rigorous theory of language shows that a perfect translation is an impossible dream. In spite of this, people translate. It is like the paradox of Achilles and the turtle. Theoretically speaking, Achilles should never reach the turtle. But in reality, he does.

One of the ways this negotiated compromise is reached is through a close attention to cultural context. When translating from Japanese to English, or simply when Japanese learners write in English, the result can often sound uncomfortably unnatural even though it seems that a direct equivalent is available for all the terms in play. The kind of language one routinely sees in institutional contexts in Japan appears at first glance to present no serious problems, yet the English text often feels wrong. This is because it contains a conceptualization of working practices that is distinctively Japanese, in which a particular kind of emphasis is given to the sequential process of first making an aim or a plan and then implementing it (目標にする → 実施する). The words 推進 (usually translated as ‘promotion’) and 支援 (‘support’),

which both feature in the names of institutions, can also sometimes seem out of place. We can ‘translate’ all of these terms insofar as there are words in English that are at least roughly equivalent, but if they’re given the same weight as they have in the Japanese, the effect is likely to be somewhat unnatural. Another example might be the phrase 人材育成 that one often sees in the public-relations discourse of Japanese universities. It is usually translated as the ‘nurturing of human resources’. This might, initially, sound unproblematic. Yet, in fact, it perhaps does not transfer well into more individualist cultures. What the expression reveals is that the Japanese university envisages itself at the service of society at large, of the collective, as it prepares the next generation to enter the workforce. But from the perspective of an individualist culture like the USA, this might seem somewhat alien. An American University is more likely to advertise itself as equipping its students with the skills they, *as individuals*, need to be employable. The service they offer is that of enhancing the opportunities, the ‘life chances’, of the individual rather than providing resources for industry. The issue here has to do not so much with language as with differences in collective psychology, specifically in this case with knowing how to speak to the individualism at the heart of American society (Bellah 2008).² The principal that emerges from these examples is neatly summed up, again, by Umberto Eco (2003, 82):

‘[...] translation is always a shift, not between two languages but between two cultures [...] A translator must take into account rules that are not strictly linguistic but, broadly speaking, cultural.’

It is in this process of negotiation between the two cultures that the AI will most often fall short, and one of the teacher’s principal roles will be to help students look for ways to modify a text so that it works not only linguistically but also culturally. Students could, for instance, be taught how to use online bilingual concordances like Linguee or Reverso-Context to check the naturalness of a phrase by searching for examples in authentic contexts. The latter of these employs that same database of a billion sentences created by human translators on which DeepL depends.

6 . Reading: A Brief Afterword

In this cursory examination of the impact of machine translation on language education, I have focused mostly on questions related to writing in, and translating into, English. In the end, though, it might be reading that we really need to think about. In a world in which a text in one language can be instantaneously and accurately translated into any other, the motivation to read in the original language will evaporate. In Japan, where the translation of foreign-language texts has been a vast industry for decades, the belief that it is necessary to be able to read in English may be confined to the spheres of academic, industrial and medical

research. And tools like DeepL and the next generation of AI-powered translation technology will undoubtedly render the content of scientific texts into more than adequate Japanese versions.

The one kind of text where reading in the original language perhaps really does matter is the literary text. From the end of the Showa era, the reading of literature as a methodology for studying English fell into decline and was gradually supplanted by new approaches grounded in applied linguistics and theories of second language acquisition. In the light of the new pedagogy, with its emphasis on communicative and ‘practical’ language, literature came to be regarded as ‘inauthentic’ (Saito, 2013, 2020). But perhaps the advent of machine translation might on some level result in a re-evaluation of the usefulness of literary texts. Online translation software will undoubtedly be an increasingly effective vehicle for transferring content from one language to another. But once the heavy lifting is done, there will surely be work left for the humans to do in terms of stylistic and cultural adjustment. Here, perhaps, is where literature rediscovers its role in the English language classroom. For, as Yoshifumi Saito has argued, rather than being ‘inauthentic’, it might instead be viewed as the most diverse and inclusive source of authentic language available, providing students with ‘exposure to wider varieties of register and style’ than the ‘highly specialized texts’ that are the stock-in-trade of today’s English teachers (Saito 2020, 22). We need, in other words, to read in order to be able to write, and to read the kinds of texts that can give us a feel for register and style (Saito, 2015).

That said, however, we need also to bear in mind that, before the close reading of literary texts can begin to awaken a sense of such things as genre and tone, our students need to be able to read them with a certain degree of confidence. And this means that they need to read a great quantity of easier texts first to build fluency. Reading extensively has been shown to be crucial to the language acquisition process (Krashen 2004). And one of the dangers of machine translation is that it may make it even more difficult than it is already for Japanese learners to discover the pleasure of reading in the foreign language. Paradoxically, then, if our students are to learn how to critically evaluate the texts produced by machine intelligence, they will first of all have to learn to read without translating.

Notes

¹ The survey has been designed and conducted by the Extensive Reading System (ERS) research group (Mark Brierley, Megumi Hasebe, Takehiro Masuda, Ryoma Nakamura, Masaaki Niimura, and David Ruzicka) with the support of the SGE English Department.

² Compare the observation made by Newfields and Botev (pp. 11–12) when they express their preference for a ‘domesticated’ translation of one of the Japanese phrases in their New Year’s card—お互い健康に気をつけてがんばっていきましょう—in other words, for a rendering adapted to the

cultural context of the English target language: ‘the boundaries between individual responsibility and collective responsibility differ in the *domesticated* and *foreignized* renditions of this text’.

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