

Could Google Translate Shakespeare?

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Over the course of just a few decades, computers have rapidly encroached on every aspect of our lives, and translation is no exception to this trend. Automatic translation was one of the first uses that was envisaged for the early computers in the 1950s, but progress was painfully slow, and in 1966 a damning report by the US Government's Automatic Language Processing Advisory Committee concluded that Machine Translation (MT) research was a waste of time and money. This was a major setback for the field, and led to the withdrawal of funding from early MT development programmes. Over the next quarter century the research emphasis switched from MT to Computer-Aided Translation (CAT) and the (much more successful) development of computer tools to assist human translators. By the 1990s, though, with ever-increasing computing power MT was seriously back on the research agenda, and with the advent of the internet, free online MT became a reality. What is more, with the availability of a vast corpus of pre-translated material online for computers to assimilate, the nature of MT itself changed and so-called Example-Based Machine Translation was superseded by Statistical Machine Translation (SMT) systems that compared a text to previous translations and backed their hunches to produce output that they calculated was going to be the closest match. The best known of this new generation of SMT systems is Google Translate, which launched in 2006 and (as when the Google search engine itself launched in the late 1990s) immediately blew away all the competition with its clever algorithms. Google Translate was rolled out to phones and tablets; Microsoft Translator emerged as its main competitor, integrated with the Bing search engine and now Skype.

We've become so spoilt that we now expect our devices to provide us with serviceable translations of many kinds of text, at the touch of a screen. At the back of these developments lies the old fantasy of a universal translator: from Leibniz to *Star Trek* and *The Hitchhiker's Guide to the Galaxy*, humanity has dreamt of a device that might redeem its Fall into multilingualism as recounted in the Biblical story of the Tower of Babel. And at last the Babelfish seems to be a reality in the shape of a new generation of "hearables"—earpieces (notably Google's Pixel Buds, released in November 2017) which link together advanced voice recognition, machine translation and speech generation technologies wirelessly in real time on the fly via mobile phones. That's if you believe the hype, and there's a lot of hype!

But all the techno-evangelism tends to gloss over the real drawbacks to such systems that exist even now, especially when it comes to lesser-used language combinations. As so often, we English-users have a skewed perspective, for the quality of the MT output depends to a considerable extent on how much translated material is already out there on the internet to train the system with. In 2016–17 Google Translate was upgraded to another new paradigm, Neural Machine Translation, which translates complete sentences at a time and in general functions much more like a human. The results so far are very promising, but of course there is a downside to all this, too: the better the MT system, the fewer human translators are needed. In technical translation circles it is widely expected that the future for human translators will lie not in generating translations themselves (even with the aid of CAT tools), but in post-editing machine-translated output.

Amidst all these gloomy prognostications an exception has always been made for literary translation. Now human literary translators use computers in lots of different ways: they type their translations on them, for a start; they use email and social media networks to communicate with other translators, editors and publishers; they consult online dictionaries,

glossaries and search engines, and other sites such as *linguee.com* (which effectively treats the whole web as a corpus and scours it for bilingual translated sentence pairs on the fly). What literary translators don't generally do, though, is use CAT tools; indeed, I don't know of any *literary* translator training programme that includes a core module familiarising students with the latest language technologies. At the University of East Anglia (UEA) the British Centre for Literary Translation is part of a European-wide network of literary translator training institutions called PETRA-E, which published a *Framework of Reference for the Education and Training of Literary Translators* in the summer of 2016. During the two years of discussions that preceded this publication I suggested including "familiarity with translation technologies" as one of the competences we should be expecting of literary translators, but that didn't meet with general approval, and in the end the only mention of technology in the publication is "ability to search the internet" (which in this day and age is setting the bar about as low as it can go).

Now over the history of reflection on the development of MT, literary translation has routinely been excluded from its remit. This attitude dates right back to 1949, when—five years before MT even got properly under way—J.E. Holmström was pre-emptively trashing it in a report for UNESCO, writing that from a MT system "the resulting literary style would be atrocious and fuller of 'howlers' and false values than the worst that any human translator produces."

I won't dwell on the history of MT development here: instead, let's fast-forward almost half a century to 1997 and look at a first set of literary examples presented in his remarkable book *Le ton beau de Marot* by American translator and academic Douglas Hofstadter. The book's subtitle—"In Praise of the Music of Language"—gives a clue to its preoccupations; Hofstadter himself referred to it simply as "my ruminations on the art of translation." The book concerns itself (among many other things) with myriad translations of a short poem by French Renaissance poet Clément Marot (1496–1544), *A une damoyselle malade* ("To a Sick Young Woman"). The poem, written in 1537, addresses an ailing little girl and encourages her to get better, and it begins like this:

Ma mignonne,
Je vous donne
Le bon jour;
Le séjour
C'est prison.
Guérison
Recouvrez,
Puis ouvrez
Votre porte
Et qu'on sorte
Vitement,
Car Clément
Le vous mande.

You can tell just from this excerpt (thirteen of its 28 lines) that the poem uses a highly constrained form (which is what attracted Hofstadter): it is in rhyming couplets, and each line has only three syllables. Now at this point one could throw up one's hands, say "that's impossible to translate," and dwell on what proverbially gets "lost in translation." Hofstadter is more of a glass-half-full kind of guy, though, and reacts the other way: in an exuberant

celebration of the art of translation he publishes no fewer than 88 different versions of this poem, produced by himself and his friends, in a *tour de force* reminiscent of the work of the French *Oulipo* writers Georges Perec and Raymond Queneau. Hofstadter is obsessed with how one might translate this poem, his premise being that the more constrained the form, the more licence it gives the translator to work with it and be creative. As he put it in a letter to the *New York Times* shortly after publication (31 August 1997): “The charm of the Marot poem is its extremely tight rhyme scheme—just three syllables per line—forcing translators to explore the far nooks and crannies of semantic and syntactic space to reproduce its structure, its flavour and its content.”

Hofstadter sent the Marot poem out to many of his friends accompanied by a couple of literal crib translations of his own. Here is one of them (the opening thirteen lines again)—a version in which he deliberately tones down any literary effects and which, as a result, he hesitates to call a translation at all (“as bland, boring, and literal a translation of Marot’s poem as could ever be imagined”):

My sweet,
I bid you
A good day;
The stay
Is prison.
Health
Recover,
Then open
Your door,
And go out
Quickly,
For Clément
Tells you to.

Now the book includes many fine and funny and thought-provoking translations, but (and it is a but) it also includes three computer-generated versions, which are presented as warnings. Hofstadter is a computer scientist, but one would be mistaken in thinking that this makes him *de facto* sympathetic towards MT. In fact, quite the contrary. Amusingly, the reader can get a flavour of his attitude towards MT simply from the index entry:

Machine translation: [...] anemic conception of translation involved in [...]; corner-cutting as par for the course [...]; exaggerated claims for [...]; simple tricks conflated with full skill [...]; stumbling about in dark, thanks to lack of life experience [...]; using vast database, but no attempt at understanding.

To demonstrate the ineptness of MT in the 1990s Hofstadter includes three execrable automatic translations, including one by then market leader Systran:

My nice,
I give you
The hello.
The stay,
It is prison.
Cure

Cover,
 Then open
 Your door,
 Vitement
 Kind
 For Clément
 You it mande.

Hofstadter comments here: “Like all other MT programs, Systran has no concept of literary form, tone, or anything of the sort.” Now in the 21st century MT has taken rapid strides forward, as we have already seen, but despite the advent of Google Translate many commentators are still unimpressed. Here’s Cambridge philosophy professor Tim Crane damning it with faint praise in the *Times Literary Supplement* (28 January 2015):

Google Translate does work, and it is getting better every day thanks to the strength of its algorithms and the sheer brute force of its data-mining. It does not provide identities of meaning, but it does give word-by-word translations, and it does this mechanically. Google Translate will not get very far with translating a poem, of course [...]

Crane has good reason to be sceptical—here are some recent outputs (generated in late 2017) from three MT engines tackling the opening of Marot’s poem. I’ve chosen the three leaders in the field at present: Google Translate, Microsoft Translator and the exciting new kid on the neural block, DeepL Translator (released in August 2017 by Linguee):

Google Translate

My darling,
 I give you
 Hello;
 The stay
 It’s prison.
 Healing
 cover,
 Then open
 Your door
 And let’s get out
 avoidance,
 Car Clement
 The you asks.

Microsoft Translator

Sweetie,
 I give you
 The Good day;
 The Stay
 It’s prison.
 Healing
 Cover,
 Then open
 Your door
 And we go out
 Avoidance,
 Because Clement
 The.

DeepL Translator

My cute girl,
 I’ll give you
 The good day;
 The stay
 It’s prison.
 Healing
 Cover it up,
 Then open up
 Your door
 And get us out of here
 Treatment,
 For Clement
 The mande you.

All three do tolerably well at first but then come a cropper in the last three lines, reading *vitement* (in modern French simply *vite*) as “avoidance” (*évitement*) or “treatment” (*traitement*) and unable to recover the sentence (the difficulty compounded by their unfamiliarity with the final word, *mande*). From which we can deduce that the exercise is more or less designed to show MT in the worst possible light. Not only do these MT engines not get the literary effects, but because of the archaic French they don’t even get all the basic meanings.

Over the last five years or so the tide has nevertheless been turning in favour of the potential use of MT in literary translation. In 2012 Rob Voigt and Dan Jurafsky of Stanford University asked (tentatively, rhetorically) in a paper titled “Towards a Literary Machine Translation”:

Given the explosion of statistical methodologies in MT, are we now at a point where we can hope to begin tackling some of the questions associated with a potential literary machine translation?

Two years later, Antonio Toral and Andy Way from Dublin City University published a short position paper titled “Is machine translation ready for literature?” The answer was a qualified yes:

While we may be far from having MT that is useful to assist with the translation of poetry between distant languages such as English and Chinese, we have provided evidence that state-of-the-art MT can already be useful to assist with the translation of novels between related languages.

In a more substantial follow-up study from 2015 they demonstrate the qualified usefulness of MT using Albert Camus’ *L’étranger* (*The Stranger*), but it is significant that this is a novel renowned among other things for the deliberately stripped-down nature of its prose.

So could Google translate *Shakespeare*? The question has a straight answer, and I think by now you will be able to guess what it is: Yes (duh!), of course Google could translate Shakespeare. *Google can translate Shakespeare now, just not very well.*

Let’s take a look at some Shakespeare. What else but Hamlet’s most famous soliloquy? Shakespeare, of course, is more recent than Marot, but not by much (in the case of *Hamlet*, 65 years), so one would expect this to pose significant problems for a MT engine. And indeed it does:

Shakespeare

To be, or not to be, that is the question:
Whether ’tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or to take arms against a sea of troubles
And by opposing end them.

Google Translate

Um zu sein oder nicht zu sein, das ist die Frage:
Ob es edler im Kopf ist zu leiden
Die Schleudern und Pfeile des unerhörten Vermögens,
Oder Waffen gegen ein Meer von Schwierigkeiten zu nehmen
Und durch das Gegeneinander beenden sie.

This is our first taste of Google translating Shakespeare and it’s embarrassing. It begins “In order to be or not to be,” which doesn’t have much of a ring to it, and in the third line makes the mistake of reading “fortune” in the financial sense (an occupational hazard of a MT engine trained on business texts)—a mistake made likewise by Microsoft Translator, which is also thrown by the second line’s contracted “’tis” and does what MT engines generally do when they’re stumped, namely reproduce the source text unaltered (hoping that it’s a proper

name)—except in this case it has added capitals as if shouting its own inadequacy in textspeak.

Microsoft Translator

Zu sein, oder nicht zu sein, das ist die Frage:
Ob 'TIS edler in den Geist zu leiden
Die Schlingen und Pfeile von unerhörtem Vermögen,
Oder die Waffen gegen ein Meer von Schwierigkeiten zu nehmen
Und gegen Ende Sie.

DeepL Translator

Sein oder Nichtsein, das ist die Frage:
Ob es edler im Gemüt ist, zu leiden.
Die Schleudern und Pfeile des unverschämten Glücks,
Oder Waffen gegen ein Meer von Unruhen zu nehmen.
Und indem man ihnen entgegengesetzt, beendet man sie.

The third example, DeepL, is much more interesting, because it's actually not bad at all. It's grammatically pretty correct and only let down by the wordiness of the fifth line. A bit of light post-editing and it might be usable.

Before we become too complacent, though, let me take a second Shakespeare example, this time from *A Midsummer Night's Dream*. The play is much loved (and much cited) by scholars of translation because when Bottom the Weaver is transformed and receives an ass's head in Act 3, Scene 1, this prompts Peter Quince to remark "Bless thee, Bottom, bless thee. Thou art translated." This in turn has prompted quite a flurry of critical treatments in recent times focussing on issues of translation in the play. Here I want to focus on a rather different aspect, though, namely Bottom's song, with which he serenades Titania shortly after his transformation. She had been lulled to sleep with a song of the nightingale, and she is woken by Bottom singing of more homely birds:

The ousel cock, so black of hue,
With orange-tawny bill,
The throstle with his note so true,
The wren with little quill.

The finch, the sparrow, and the lark,
The plain-song cuckoo grey,
Whose note full many a man doth mark,
And dares not answer nay.

The opening description of the male blackbird is admittedly unusual, but there is still no excuse for the utter uselessness of Google Translate's opening lines, which describe a gay Black man with an (untranslated) "orange-tawny" bill (for services rendered?):

Der Schwuler, so schwarz von der Farbe,
Mit Orange-Tawny-Rechnung,
Das Throstle mit seiner Note ist so wahr,
Der Zaunkönig mit kleiner Feder.

Again the financial (non-)sense has prevailed, producing if not another X-rated version, then at least one that deserves a 15 certificate. For the translator here the important features, I would suggest, are threefold: the maintenance of the line-end rhymes, the ordinariness of the common-or-garden birds, and the concluding cuckoo with its associations of cuckoldry, backing up the ass's ears. What is not so crucial (to the meaning of the song) is that the specific birds be retained (which may well not be common or garden in the target culture anyway).

The first German translation of Bottom's song, by Christoph Martin Wieland (1762), gets all the birds in, but not all the rhymes:

Der Amsel-Hahn von Farb so schwarz,
Von Schnabel Orangen-gelb,
Die Drostel, die so lustig singt,
Das muntre Zeisiglein.

Der Fink, der Sperling und die Lerch,
Der graue Kukuk fein,
Des wahrhaft Lied so mancher hört,
Und darf nicht sagen, Nein!

The classic version is by August Wilhelm von Schlegel (1798):

Die Schwalbe, die den Sommer bringt,
der Spatz, der Zeisig fein,
Die Lerche, die sich lustig schwingt
bis in den Himmel 'nein.

Der Kukuck, der der Grasmück'
so gern ins Nestchen heckt,
Und lacht darob mit arger Tück',
und manchen Ehemann neckt.

Schlegel mentions only five birds, not seven, and of those five two (swallow, siskin) are not in Shakespeare's original, but that really is beside the point when the translation is as effective as this.

Let's pause to take stock. In each of the three cases examined we've seen that the MT engines are doing little better than groping towards translating the meaning. MT is still a long way from being able to produce serviceable literary translations unaided. In some ways I've been deliberately making it difficult for the machines (giving them older, constrained language), yet we've also been asking for translations between European languages, and haven't stretched them as far as language pairs are concerned. Still, they are thrown by basic literary features and especially by contractions and poetic vocabulary (which wouldn't really be a problem to a human translator). You would really need to *pre-edit* the material for the MT engines to have a chance.

Overall, it's a mixed picture at best: some successes but a lot of dross. And what do the successes amount to? Just about conveying the meaning (ideally with human post-editing). But literature—and literary translation—is about so much more than that. Even when it

comes to the better MT productions, would we want to read them? In the case of dramatic texts would we want to perform them? This raises the more profound question: *why would we even want Google to translate Shakespeare?* What's the point of all this?

It's not as though we're in the middle of an aggressive land grab on the part of MT. In this respect Thierry Poibeau's recent introduction to the subject, *Machine Translation*, is typically modest: "The aim of machine translation is not, of course, to address literature or [*sic*] poetry; rather, the idea is to give the most accurate translation of everyday texts." That may be the view from within MT R&D, but—of course—there's another answer to the "why bother" question, and unsurprisingly it's the prospect of saving money. As Voigt and Jurafsky put it:

the prospect of literary MT is appealing. Human translation of literary texts is an extremely time- and money-intensive task, but one that is a crucial element of the global system of transcultural literary exchange.

Literary MT would save publishers money (not that they expend an excessive amount as it is), but they know it hasn't a hope of working yet. I've been setting the bar very high indeed, expecting Fully Automatic High Quality Machine Translation of one of the most demanding kinds of literary text available (rhymed verse). Because of the inherent difficulties of literary translation, that's likely to remain a pipe dream. The thing is, as readers we don't want to accept anything less than high quality. In many commercial contexts a gist translation such as can be provided by an MT engine is perfectly acceptable, but not in literary translation. As Toral and Way put it, "The challenge with translating literature is that the primary function of its translation is expressive, the aim of the translation being not just to communicate meaning but to replicate the source text's stylistic and textual effects on the reader." There's really no point to a literary translation that is all content and no form: a literary translation is nothing if not pleasurably concerned with the means of its own expression.

But while it's true that literary MT is not yet very good, it is improving rapidly, and the latest generation of neural MT has taken further strides forward. In a paper from early 2018, Toral and Way report on training a neural MT system to translate a dozen novels from English to Catalan, and in the case of J.D. Salinger's *The Catcher in the Rye* the result was adjudged by native speakers to be equal in quality to the published human-produced translation 34% of the time. Let's extrapolate, then, and engage in a thought experiment: let's give MT the benefit of the doubt. After all, it would be hugely hubristic if at this stage in its development I were to pronounce that MT couldn't ever translate Shakespeare satisfactorily. Apart from anything else, who am I to decide what a satisfactory Shakespeare translation might be? I mentioned earlier that Shakespeare makes great demands on the translator, and Shakespeare audiences and readers set the bar very high, but there are all kinds of reasons why you might want a Shakespeare translation, and for example if you are learning English then a crib translation might be the most satisfactory version of all. Whatever the actual purpose of a machine-translated output, a standard definition of "satisfactory" would be that it successfully mimics a human translator. That's all that MT is explicitly aiming for anyway. And we can envisage a kind of Turing test whereby if enough users in a blind test can't tell MT output from human-produced, then it's judged a success.

Let's assume that at some point in the future—for specific kinds of literary text (not Shakespeare, definitely prose), translated between specific language pairs (probably into English)—Google (or DeepL or some newer, better model) can produce translations that fool such a Turing test (and with some light post-editing that is basically already achievable). In

fact at a push I think we can even envisage humans learning from computers, computers doing better translations than humans (after all, humans, too, can and do make mistakes), publishers publishing MT output (i.e. not just what is called in the trade MT for assimilation, but literary MT for dissemination as well). Such a vision of MT engines producing glorified crib translations is not much of an ideal, though, and I still fail to be convinced that the resulting translations would sell well. It may represent a state of affairs where MT manages to successfully mimic humans, but what an impoverished, one-dimensional view of what human translators are capable of!

There are many wonderful examples of successful translations produced when human translators have chosen to prioritise aspects of a source text other than the semantic, the mere conveyance of meaning. One reason why a translator might choose to do this is to allow the reader to experience something of the effect of the source language for themselves, as with Celia and Louis Zukofsky's homophonic translations of Catullus or Everett Fox's Schocken Bible. Another reason why human translators might neglect to prioritise meaning in their translations is if they are assuming the reader does not require that service of them, as with my UEA colleague Clive Scott's brilliantly ludic, experimental translations of French poetry intended for the "polyglot reader" capable of understanding his originals. Such a practice takes us right back to the origins of Western literary translation in the ancient world, where translation from Greek into Latin was pursued by Roman writers primarily as a stylistic exercise for the benefit of an educated, elite readership that was literate in the source language.

When the machines are snapping at the heels of human translators, then, it seems to me that the only valid response is to become more creative. In other words, as machines approach human semantic competence, humans need to move in the other direction. If every new work of (a certain kind of) literature can be gist-translated first by a MT engine, then every human-produced translation that follows is a retranslation, with the greater licence and freedom that that entails. Another way of looking at it is that *every* reader of the translation is placed in the same privileged position as their polyglot/bilingual neighbour.

The rise of the machines is a nightmare that we have visited on ourselves since at least the dawn of the industrial age. As far as MT is concerned I've provided examples of machines coming up with some off-the-wall translations, but nothing that one might properly call creative. Till now machine translation has been dumbly going through the motions with no depth of understanding, even if the artificially intelligent, neutrally networked future promises much.

I'll close with an analogy. When photography emerged in the mid-nineteenth century it had a profound effect on painting, and on the representation of the human form in particular. Since a means of "faithful" reproduction and memorialisation now existed, painting was freed up to move in new directions, away from conventional perspective and towards more experimental kinds of figuration such as Cubism. I'd like to suggest that the rise of Machine Translation might have the same galvanising effect on human translators, if they allow themselves to be liberated from the shackles of "faithful" reproduction, of "equivalence" narrowly defined, and freed up to become rather their inner Picasso.

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