



The Ergonomics of Literary Machine Translation

Effects of Technology on Translator Flow

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TRADITAL

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Previous work

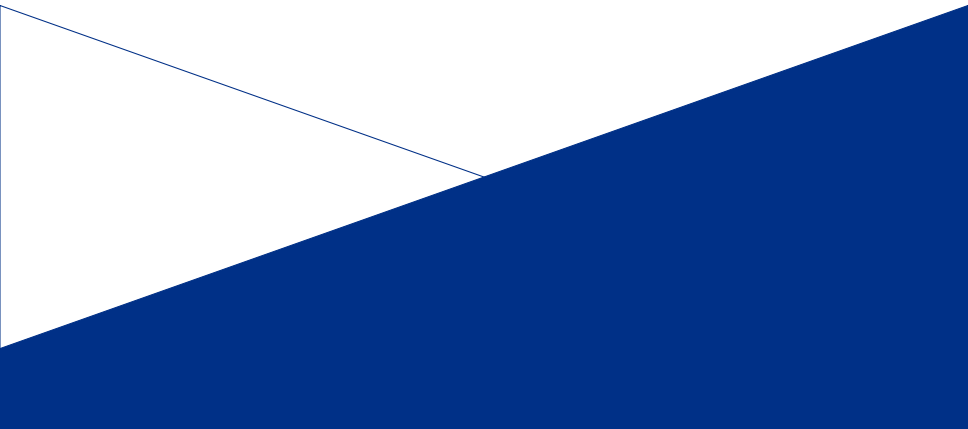
Expert evaluation

Improving ergonomics

Shifting paradigm

References

Previous work



ULB Some context

AUTHORS', PERFORMERS' AND OTHER CREATIVE WORKERS' ORGANISATIONS JOINT STATEMENT ON ARTIFICIAL INTELLIGENCE AND THE DRAFT AI ACT

BRUSSELS, 26TH SEPTEMBER, 2023

We represent several hundred thousand professional authors, performers, and other creative workers and artists, who rely entirely on their ability to create and control the use of their work, as well as their voice, likeness, and other personal data, to make a living. We all share a common concern as generative AI rapidly spreads in a legal environment which is poorly enforced and lacks adequate safeguards regarding the use of our members' works and personal data for AI training purposes. Equally problematic are the numerous unauthorised, abusive, and deceptively transformational uses of our members' protected works and personal data by AI-powered technologies.

Our eyes are on the EU AI Act, which represents the first attempt by a major regulator to establish a legal framework for the advancement of this technology, while safeguarding fundamental societal and individual rights. As the negotiation of this Proposal enters its final "trilogue" stage, we must reiterate our position and insist on the absolute need for a human-centric approach to regulating generative AI. This approach should recognise, secure and enforce the right of our members to control the use of their artistic creations during the machine-learning process. To make sure it protects human artistry and creativity, it must be built upon principles of informed consent, transparency, fair remuneration and contractual practices.

We acknowledge that AI represents an extraordinary technological advancement with immense potential to enhance various aspects of our lives, including in our sector. However, it is crucial to recognise that despite these benefits, there exists a clear need to regulate this technology. Generative AI is trained on large sets of data and huge amounts of protected contents scraped and copied from the internet. It is programmed to deliver outputs that closely mimic and have the ability to compete with human creation. This technology poses several risks to our creative communities:

Firstly, the protected works, voices, and images of our members are often used without their knowledge, consent and remuneration to generate content. Some of these uses may harm their moral and personality rights and prejudice their personal and professional reputation. Additionally, there is a risk that their own work may become displaced, leading them to compete against their digital replicas, with dire economic consequences. There is also a broader societal risk, as people may be led to believe that the content they encounter—whether in text, audio, or video—is a genuine and truthful human creation, when it is the mere result of AI generation or manipulation. This deception can have far-reaching implications for the spread of misinformation and the erosion of trust in the authenticity of digital content.

VdÜ / A*ds / IGÜ - Offener Brief zur KI-Verordnung

Inhalt:

Forderungen für die Regulierung von KI
Was ist Unübersetzbarkeit?
Was und Sprachbarrieren?
Was gefährdet die Rechtfähigkeit unseres Berufs – und warum ist das exemplarisch?
Manifest für menschliche Sprache

Siehe geehrte Repräsentanten im Deutschen Bundestag und Österreichs in der EU, sehr geehrte Damen und Herren, liebe Leserinnen,

Unübersetzbarsteinde erleben bereits jetzt, wie sich die Automatisierung von geistiger Arbeit und menschlicher Sprache auf ihre Arbeit und auch die Gesellschaft insgesamt auswirkt. Die Kunst, aber auch die Demokratie werden bedroht. Die deutschsprachigen Verbände der Unübersetzbarsteinde in Deutschland, Österreich und der Schweiz sowie ihre Unterstützerinnen wurden vor dieser Entwicklung und seinen drohenden Gefahren alarmiert.

Wir betrachten hochentwickelte künstliche Intelligenz als Technologie mit systemischem Risiko und fordern eine starke Regulierung für verbindliche Normierung. Deshalb fordern wir:

1. die Regulierung von generativer KI:
 - Keine Sprachautomatisierung ohne Offenlegung ihrer Funktionsweise und Trainingsdaten.
 - KI-Arbeiten müssen klar als solche, welche unheimlich geschulten Werken sie beim Training verwendet haben.
2. den Schutz von Unübersetzbarsteinden:
 - Kein KI-Training mit unseren Werken gegen unseren Willen.
 - Kein KI-Training mit unseren Arbeitsdaten ohne angemessene Bezahlung.
3. Transparenz und Mitbestimmung:

IA et traduction littéraire : les traductrices et traducteurs exigent la transparence.

Association pour la promotion de la TRADUCTION LITTÉRAIRE

CEATL et al. "AI Act." EWC, 26 Sept. 2023.

A*dS, IGÜ and VdÜ. "Offener Brief zur KI-Verordnung." VdÜ, 26 Feb. 2024.

ATLF and ATLAS. "IA et traduction littéraire : les traductrices et traducteurs exigent la transparence."

ATLAS, March 2023.

- ▶ Personalization of translation technologies
- ▶ MT adapted to translator-style

O'Brien, Sharon and Owen Conlan. "Moving Towards Personalising Translation Technology." *Moving Boundaries in Translation Studies*, edited by Helle Dam *et al.*, Routledge, 2018, pp. 81–97.

Kenny, Dorothy and Marion Winters. "Customization, Personalization and Style in Literary Machine Translation." *Translation, Interpreting and Technological Change: Innovations in Research, Practice and Training*, edited by Marion Winters *et al.*, Bloomsbury, 2024, pp. 59–79.

Hansen, Damien *et al.* "La traduction littéraire automatique : Adapter la machine à la traduction humaine individualisée." *Journal of Data Mining & Digital Humanities*, 2022, pp. 1–19.

Yirmibeşoğlu, Zeynep *et al.* "Incorporating Human Translator Style into English-Turkish Literary Machine Translation." *Proceedings EAMT 2023*, edited by Mary Nurminen *et al.*, EAMT, 2023, pp. 419–428.

Train



Generic data

4M segments

Fine-tune



Literary data

500K segments

Customize



Personal data

150K segments

Personal model



EN > FR

Hansen, Damien and Emmanuelle Esperança-Rodier. “Human-Adapted MT for Literary Texts: Reality or Fantasy?” *Proceedings of NeTTT 2022*, edited by Sheila Castilho *et al.*, Incoma Ltd, 2023, pp. 178–190.

Automated evaluation:

- ▶ much higher metrics score (string-based, neural and stylometric)
- ▶ translations syntactically less closer to the source
- ▶ increased lexical diversity

Hansen, Damien and Emmanuelle Esperança-Rodier. “Human-Adapted MT for Literary Texts: Reality or Fantasy?” *Proceedings of NeTTT 2022*, edited by Sheila Castilho *et al.*, Incoma Ltd, 2023, pp. 178–190.

Human annotation:

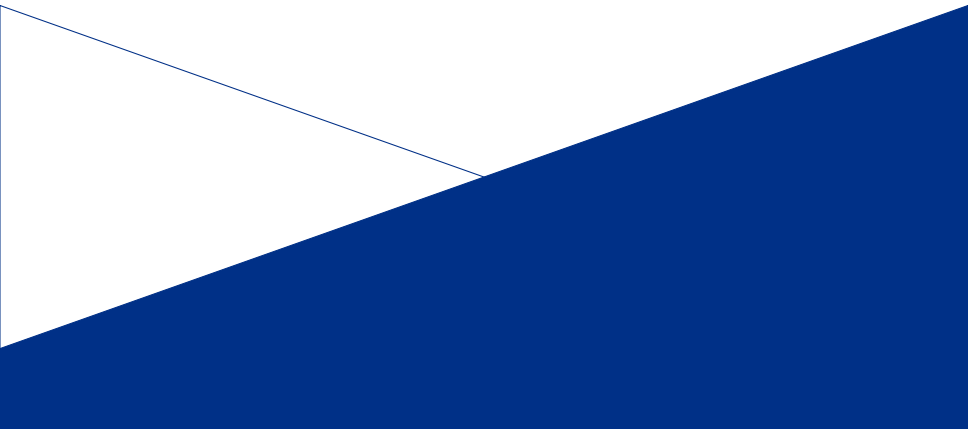
- ▶ translation generally closer to the reference (lexically, syntactically)
- ▶ imitation of transl. “strategies” (omission, modulation, transposition)
- ▶ improvement in aspects considered as major limitations of MT (merging/splitting of sentences, syntactic reorganizing, rephrasing, use of synonyms)

Hansen, Damien and Emmanuelle Esperança-Rodier. “Human-Adapted MT for Literary Texts: Reality or Fantasy?” *Proceedings of NeTTT 2022*, edited by Sheila Castilho *et al.*, Incoma Ltd, 2023, pp. 178–190.

- ▶ Clear improvement of the tool itself, however...
- ▶ Translations remain nowhere near human production
- ▶ Human oversight remains necessary in all stages
- ▶ So far, no indication on...

How useful actually is the tool?

Expert evaluation



A process-oriented perspective

”

Traditionally, literary translation has mostly been studied from a **product perspective**: the great majority of the analyses involve final translations, source text–target text comparisons and sometimes draft versions. But studying translations from a product point of view will not lay bare the factors that made them the way they are; these are only revealed through **analyses of actual processes** and the influences bearing on them.

— Borg 2023

Borg, Claudine. *A Literary Translation in the Making: A Process-Oriented Perspective*. Routledge, 2023.

- ▶ Extrinsic, task-based evaluation
- ▶ “Embodied” and “situated” perspective on translation
- ▶ Ecological validity of the study

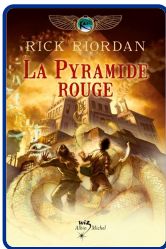
Blanchon, Hervé and Christian Boitet. “Pour l’évaluation externe des systèmes de TA par des méthodes fondées sur la tâche.” *Traitement Automatique Des Langues*, vol. 48, no. 1, 2007, pp. 33–65.

Risku, Hanna. “A Cognitive Scientific View on Technical Communication and Translation: Do Embodiment and Situatedness Really Make a Difference?” *Target*, vol. 22, no. 1, 2010, pp. 94–111.

Kenny, Dorothy and Marion Winters. “Machine Translation, Ethics and the Literary Translator’s Voice.” *Translation Spaces*, vol. 9, no. 1, 2020, pp. 123–49.



Nathalie Serval



Phase	Date	Place	Type	Tool	Time
1	8 Dec. 2022	Online	Non-directive interview		1h45
2	5 May 2023	Domicile	Observation and think-aloud Semi-structured interview	<i>Trados</i>	5h45 1h15
3	18 Dec. 2023	Online	Non-directive interview		1h45
4	15 Feb. 2024	Office	Observation and think-aloud Semi-structured interview	<i>OmegaT</i>	2h00 1h45

Kaufmann, Jean-Claude. *L'entretien compréhensif*. 3rd ed., Armand Colin, 2013.

The screenshot displays the Trados Studio 2022 interface. The main window is divided into three panes: the Source Text Editor on the left, the Target Text Editor on the right, and the Translation Memory (TM) pane at the bottom. The Source Text Editor shows a document titled 'magyk_7_en.docx.sdlxliff' with the following text:

199 **1**
200 **What Lies Beneath**
201 *In the Vaults of the Manuscriptorium, The Live Plan of What Lies Beneath was unrolled on a large table. Lit by a bright lantern that hung above the table, the large and fragile sheet of opalescent **Magyk** paper lay weighted down by standard Manuscriptorium paperweights—squares of lead backed with blue felt.*
202 *The Live Plan of What Lies Beneath was a map of all the Ice Tunnels that ran below the Castle—apart from the section that traveled out to the Isles of Syren.*
203 *As its name suggested, the Live Plan was a little more than just a plan. **Magykally**, it showed what was happening in the Ice Tunnels at that very moment.*
204 *Gathered around it were the new Chief Hermetic Scribe, O. Beetle Beetle; Romilly Badger, the Inspection Clerk; and Partridge, the new Scribe of Maps.*
205
206 If you had walked into the Vaults at that moment it would not have been clear who actually was the Chief Hermetic Scribe.
207 Beetle's long blue- and-gold coat of office had been banished to a nearby hook because its gold-banded sleeves scratched the delicate Live Plan and he was wearing his comfortable old Admiral's jacket, which kept out the chill of the Vaults.
208 With his dark hair flopping forward over his eyes, Beetle looked very much at home as he leaned over the Live Plan, concentrating hard.
209 Suddenly Romilly—a slight girl with light brown hair and what Partridge thought was a cute, goofy smile—squeaked with excitement.
210 A faint luminous splodge was moving along a wide tunnel below the Palace.
211 "Well spotted," said Beetle. "Ice Wraiths are not easy to see."
212
213 I reckon that's Moaning Hilda."
214 "There's another one!"
215 "Romilly, was it?"

The Target Text Editor shows the French translation of the same text:

1 **Ce qui g**
Dans la char
s'était sur d
coins par d

1
Ce qui git dessous

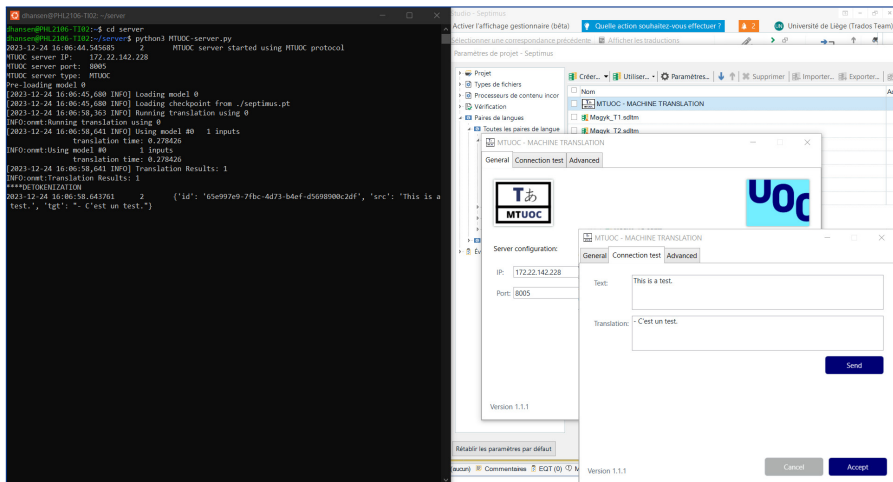
Le fragile pa
Château, à l
Comme son
passait dans
Debout autou
Moustique, l
Bécasseau, l
Si un étrang
premier scri
En effet, Mo
risquaient d'
froid régnant

Romilly, une
Bécasseau p
Un point lum
« Bien vu ! e
repérer.
- Je parie qu
- Il y en a un

The Translation Memory pane at the bottom shows a list of segments with their respective scores and dates:

Segment	Score	Date
The Chief Hermetic Scribe at the Manuscriptorium had it.	100%	29/04/2023 20:06:03 PHL
The Traveler often comes in with a package for Old Foxy—you know, Foxy's dad—he's the Chief Hermetic Scribe.	100%	
*Anyway, there is something about that Chief Hermetic Scribe that bothers me.	100%	
The Necromancer had taken the book to Waldo Watkins, who	100%	

- ▶ Two MT engines (custom and *DeepL*)
 - ▶ Access to previous translation memories
 - ▶ Very light tweaks to de-clutter the interface
- ↪ All tools are readily available (*OpenNMT*, plug-in integration...)



Oliver, Antoni. “MTUOC: easy and free integration of NMT systems in professional translation environments.” *Proceedings of EAMT 2020*, edited by André Martins *et al.*, EAMT, 2020, pp. 467–468.

Post-task impressions: round 1

- ▶ Potential of MT and TMs
- ▶ Custom MT is indeed more adapted, but...
- ▶ Having two suggestions is more useful than one, even if more relevant (the more varied the output, the better)
- ▶ The discussion quickly turned to the heavy ergonomic constraints (RIP my interview plan/advantage of the non-directive interview)
 - ↳ Translator confident in the work put in to appropriate the text, and yet...

”

To be perfectly honest, the brief post-editing work that I conducted on these first pages of *Fyre* based on the suggestions of both computer-assisted tools had left me with the **widespread feeling of having toiled away, only to produce a very unsatisfactory translation**. And so, curiosity drew me to compare the corresponding excerpt from the text I had handed in 2013 [...] Hadn't I been the author of the original translation, my self-esteem would have taken a crushing blow in seeing the **abyssal difference in quality** between both versions.

Serval, Nathalie. Personal communication, 15 May 2023.

Affirmation of style, but...

MT

La reine **sourit à** Hotep-Râ. **Il lui rend son** sourire **un peu tristement et, ensemble, ils** s'avancent. **La reine lève sa lanterne et sa lumière éclaire deux colonnes de marbre blanc qui s'élèvent dans l'obscurité. Ils marchent entre les colonnes, et progressent lentement** sur le sol en mosaïque, **brillant de rouges, de jaunes, de blancs et de verts.**

PE

La reine **et** Hotep-Râ **échangent un** sourire **teinté de mélancolie et** s'avancent sur le sol en mosaïque **aux couleurs éclatantes.**

HT

La reine se tourne vers Hotep-Râ, qui lui adresse un sourire teinté de tristesse. Une paire de colonnes de marbre surgit des ténèbres devant eux. La souveraine et le magicien les franchissent et s'avancent lentement sur une mosaïque aux couleurs éclatantes.

MT

Le long manteau bleu et or de Moustique avait été condamné à un crochet parce que ses manches bordées d'or griffaient le délicat plan vivant et qu'il portait sa veste confortable d'amiral, qui empêchait le froid de la chambre forte.

PE

En effet, Moustique avait échangé son manteau bleu et or, dont les manches risquaient d'abîmer le précieux plan, contre sa veste d'amiral, qui le protégeait du froid régnant dans la pièce.

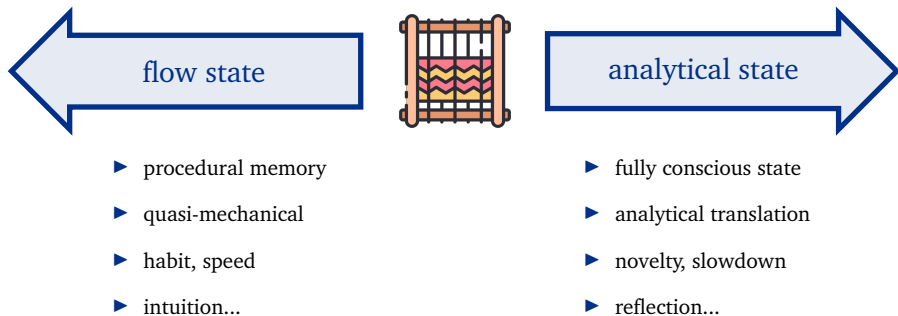
HT

[merged with last sentence] craignant d'abîmer le fragile parchemin aux reflets d'opale avec les rubans dorés qui bordaient les manches de sa robe, Moustique avait ôté celle-ci, révélant la veste d'amiral qu'il portait dessous afin de se protéger du froid des souterrains.

ULB HT remains much more unconstrained

Compared to the HT, the PE is:

- ▶ ~3 times less likely to reorganize paragraphs
- ▶ ~2 times less likely to shift elements beyond sentence level
- ▶ ~5 times less likely to add information/explicitate/deviate from ST



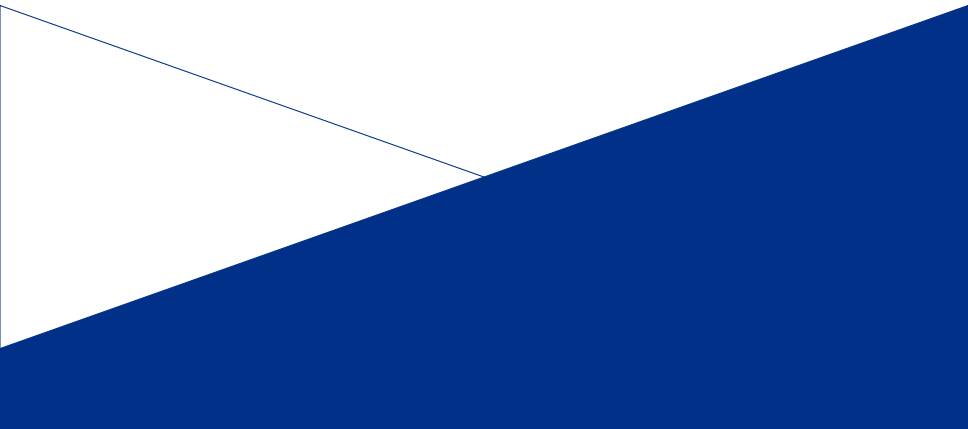
Robinson, Douglas. *Becoming a Translator: An Introduction to the Theory and Practice of Translation*. 3rd ed., Routledge, 2012.

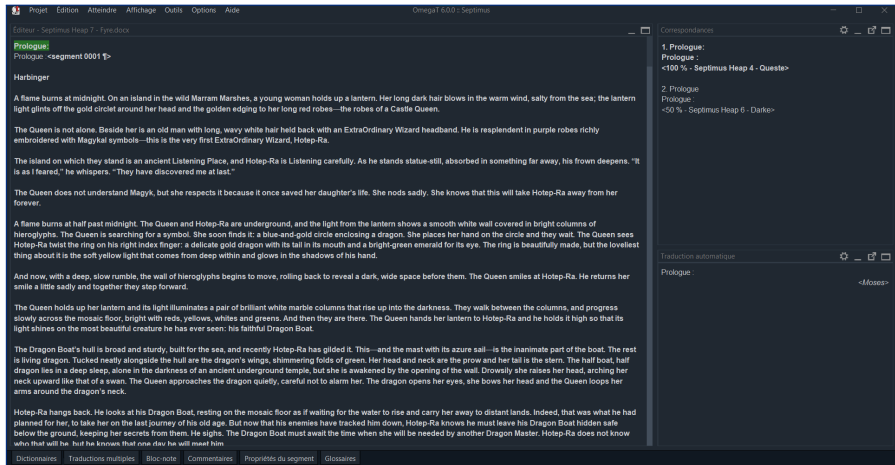
- ▶ The post-editing **interface** (segmentation, clutter...)
 - ↳ extraneous cognitive load
- ▶ The **interaction** with MT (priming, disruption of flow...)
 - ↳ intrinsic cognitive load
- ▶ Interference of MT which prevents deverbalization remains visible in the post-edited text

O'Brien, Sharon *et al.* "Irritating CAT Tool Features that Matter to Translators." *HERMES*, no. 56, 2017, pp. 145–162.

Schumacher, Perrine. *La post-édition de traduction automatique en contexte d'apprentissage : Effets sur la qualité et défis pour l'enseignement de la traduction*. Doctoral thesis, ULiège – UniGE, 2023.

Improving ergonomics



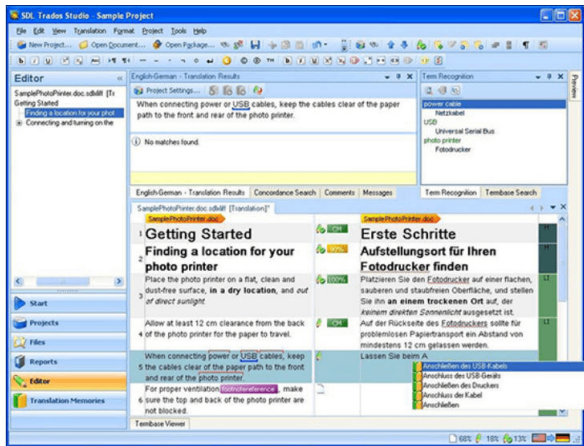


OmegaT. OmegaT Project, 2002.

Post-task impressions: round 2

- ▶ Less cluttered interface (closer to that of a word processor)
- ▶ Resources are peripheral (MTs on the same level as TMs)
- ▶ Paragraph-based segmenting
 - ↳ Noticeable improvements, lesser influence of MT
 - ↳ But segmentation is still constraining (even if invisible)
 - ↳ No miracle solution if we can't customize the interface as well

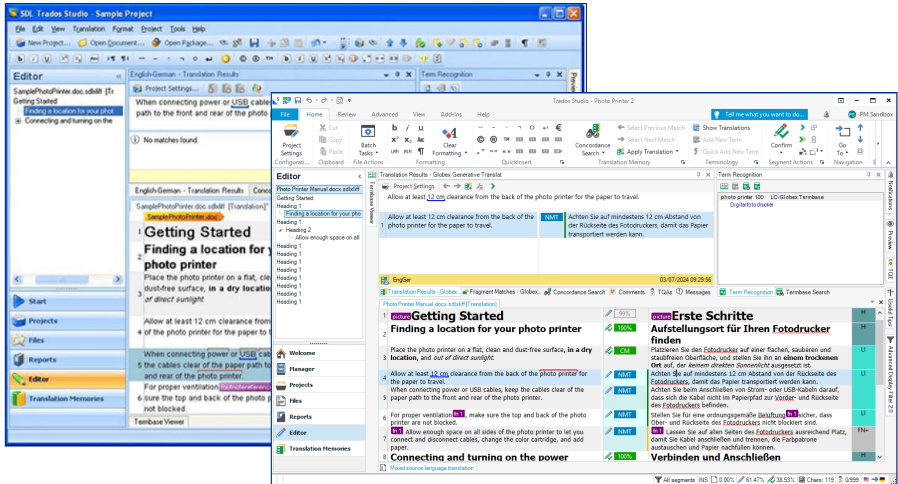
Interface evolution (or lack thereof)



SDL Trados 2009. SDL, 2009.

Trados Studio 2024. RWS Group, 2024.

ULB Interface evolution (or lack thereof)



SDL Trados 2009. SDL, 2009.
Trados Studio 2024. RWS Group, 2024.

Interface evolution (or lack thereof)

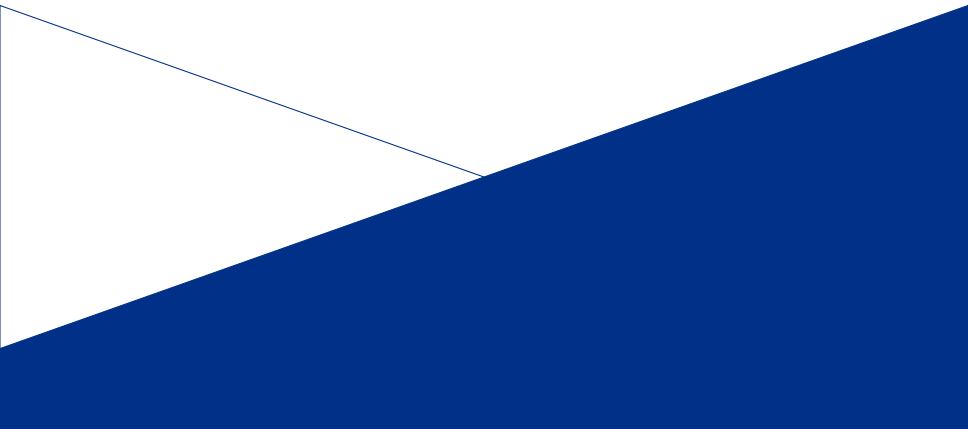
- ▶ Lack of research and improvements focusing on ergonomics
- ▶ Lack of collaboration between the industry and professionals
- ▶ Evolution mainly based on savings and project management
- ▶ Discussions based on quality and productivity, without ever mentioning the interface of the human-machine interaction

Läubli, Samuel *et al.* “The Impact of Text Presentation on Translator Performance.” *Target*, vol. 34, no. 2, 2022, pp. 309–342.

Moorkens, Joss. “‘A tiny cog in a large machine’: Digital Taylorism in the translation industry.” *Translation Spaces*, vol. 9, no. 1, 2020, pp. 12–34.

O’Brien, Sharon *et al.* “Irritating CAT Tool Features that Matter to Translators.” *HERMES*, no. 56, 2017, pp. 145–162.

Shifting paradigm



Possible advantages:

- ▶ Fewer errors
- ▶ Lesser cognitive effort
- ▶ Increased creativity
- ▶ Focus on transl. voice
- ▶ More enjoyable work

Possible advantages:

- ▶ Fewer errors
- ▶ Lesser cognitive effort
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Foresseable disadvantages:

- ▶ Additional errors
- ▶ Higher cognitive effort
- ▶ Constrained creativity
- ▶ Weakened transl. voice
- ▶ Less enjoyable work

Entirely dependent on the:

- ▶ aims for the introduction of technology (resource vs replacement)
- ▶ agency afforded to translators (imposed vs free use of the technology)
- ▶ modality of the interaction (pre-translation vs peripheral suggestion)

↪ Already confirmed by field surveys and research

ATLF and ATLAS. “IA et traduction littéraire : les traductrices et traducteurs exigent la transparence.” *ATLAS*, March 2023.

Brenner, Judith. “Effects of Domain-adapted Machine Translation on the Machine Translation User Experience of Video Game Translators.” *Proceedings of the Second Workshop on Creative-text Translation and Trachnology*, edited by Bram Vanroy *et al.*, EAMT, 2025, pp. 59–75

Automation

Humanization



Machine
translation

Human-assisted
machine translation

Machine-assisted
human translation

Human
translation

Argument against technological determinism and in favour of a radical view on technology:

- ▶ where translators would collectively refuse the use of non-personally owned technology
- ▶ where ownership over translation data would remain with their author
- ▶ where professionals would better positioned to negotiate for better working conditions and agency
- ▶ where technology would be truly human-centred and augmented

We already have the technology:

- ▶ to train personal models (*Opus-CAT*)
- ▶ to integrate them into existing tools (*MTUOC*)
- ▶ to generate multiple MT outputs (MT does this by default)

Nieminen, Tommi. “OPUS-CAT: Desktop NMT with CAT integration and local fine-tuning.” *Proceedings of EACL 2021*, edited by Dimitra Gkatzia and Djamé Seddah, ACL, pp. 288–294

Oliver, Antoni. “MTUOC: easy and free integration of NMT systems in professional translation environments.” *Proceedings of EAMT 2020*, edited by André Martins *et al.*, EAMT, 2020, pp. 467–468.

- ▶ Quality, agency and customization
- ▶ Copyright and data ownership
- ▶ Ecological and financial cost

Forcada, Mikel. “Licensing and Usage Rights of Language Data in Machine Translation.” *Towards Responsible Machine Translation*. Edited by Helena Moniz and Carla Parra Escartín, Springer, pp. 49–69.

Koponen, Maarit *et al.* “Translating with technology: How digitalisation affects authorship and copyright of literary texts.” *Using Technologies for Creative-Text Translation*, edited by James Hadley *et al.*, pp. 180–198.

Strubell, Emma *et al.* “Energy and Policy Considerations for Deep Learning in NLP.” *Proceedings of ACL 2019*, edited by Anna Korhonen *et al.*, ACL, 2019, pp. 3645–3650.

Henderson, Peter *et al.* “Towards the Systematic Reporting of the Energy and Carbon Footprints of Machine Learning.” *The Journal of Machine Learning Research*, vol. 21, no. 1, 2020, pp. 1–43.

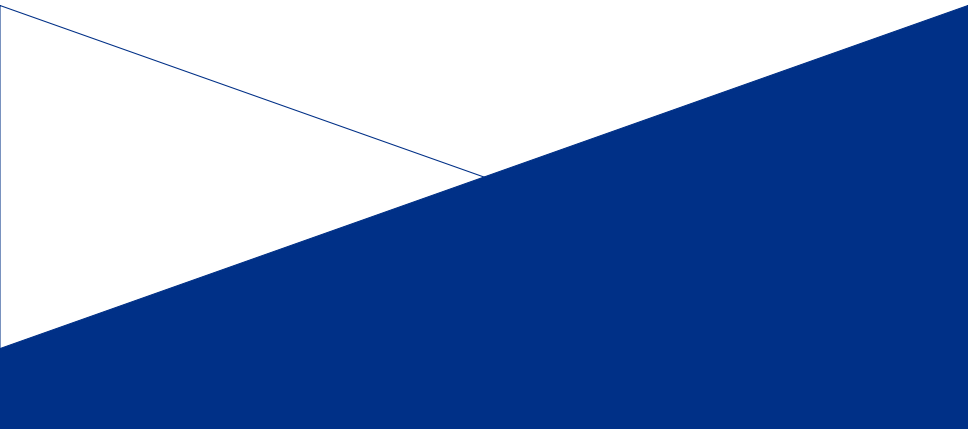
- ▶ Return to user-in-the-loop evaluations
- ▶ Focus not only on the product, but on the process and the ergonomics
- ▶ Add ease-of-use and work satisfaction as part of the evaluation
- ▶ Allow for and explore diverging uses of technology
- ▶ Strive, also as researchers, for more efficient, personalized, customizable, local, transparent and ecological systems

”

There's one thing that I'd like to get accross, if any, it's that I consider my work as a craft. Not that I would describe myself as an artist, although I am one legally speaking. But I'm very attached to that idea of *craft* and to the patient, painstaking and refined work that it implies [...] So, yes, artisans do need tools adapted to their craft, so long as that craftsmanship remains the priority and that artisans remain considered as such.

Serval, Nathalie. Personal interview, 5 May 2023.

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- 📄 Blanchon, Hervé and Christian Boitet (2007). “Pour l’évaluation externe des systèmes de TA par des méthodes fondées sur la tâche”. *Traitement Automatique des Langues*, vol. 48, no. 1, pp. 33–65.
- 📖 Borg, Claudine (2023). *A Literary Translation in the Making: A Process-Oriented Perspective*. New York: Routledge. DOI: [10.4324/9781003150909](https://doi.org/10.4324/9781003150909).
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- 📄 Guerberofo-Arenas, Ana and Antonio Toral (2022). “Creativity in Translation: Machine Translation as a Constraint for Literary Texts”. *Translation Spaces*, vol. 11, no. 2, pp. 184–212. DOI: [10.1075/ts.21025.gue](https://doi.org/10.1075/ts.21025.gue).

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-  Hansen, Damien, Emmanuelle Esperança-Rodier, *et al.* (2022). “**La traduction littéraire automatique : Adapter la machine à la traduction humaine individualisée**”. *Journal of Data Mining & Digital Humanities*, special issue: *Vers une robotique du traduire ?* Edited by Anne Baillot *et al.*, pp. 1–19. DOI: [10.46298/jdmdh.9114](https://doi.org/10.46298/jdmdh.9114).

-  Hansen, Damien and Susan Pickford (2022). “**Traduire la littérature populaire avec l’aide de la machine : Quels avantages et préoccupations pour les professionnel·le·s ?**” Paper presented at *TRACT 2021-2022 - L’impact de l’intelligence artificielle sur la traduction littéraire : théorie, pratique, création*, 14 Apr. 2022, Paris.

-  Henderson, Peter *et al.* (2020). “Towards the Systematic Reporting of the Energy and Carbon Footprints of Machine Learning”. *Journal of Machine Learning Research*, vol. 21, no. 1, pp. 1–43.
-  Kaufmann, Jean-Claude (2013). *L'Entretien compréhensif*. 3rd ed. Paris: Armand Colin.
-  Kenny, Dorothy and Marion Winters (2020). “Machine translation, ethics and the literary translator’s voice”. *Translation Spaces*, vol. 9, no. 1, pp. 123–149. DOI: [10.1075/ts.00024.ken](https://doi.org/10.1075/ts.00024.ken).
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