



Review Technological Turn in Interpreting

LIU Bin^{[a],*}

^[a] School of Foreign Languages, North China Electric Power University, Beijing, China.

* Corresponding author.

Received 20 December 2023; accepted 29 January 2024

Published online 26 February 2024

Abstract

This paper takes a bird-eye review of technology in interpreting studies (IS). The goal is to assess the advent of a “technological turn” by examining to what extent technology has transformed IS both within existing paradigms and expanded existing borders. The results show that although technology has permeated existing sub-disciplines in interpreting, their adoption and interaction between frameworks are not extensive enough. Therefore, although a technological turn is underway, it is far from complete.

Key words: Interpreting technology; Technological turn; Paradigm shift

Liu, B. (2024). Review Technological Turn in Interpreting. *Studies in Literature and Language*, 28(1), 44-52. Available from: <http://www.cscanada.net/index.php/sll/article/view/13343>
 DOI: <http://dx.doi.org/10.3968/13343>

1. INTRODUCTION

Interpreting technology has become more accessible and easy to use than ever before, thanks in large part to better technology, and the global pandemic, forcing many cross-linguistic (Przepiórkowska, 2021) activities online. Interpreting studies in general is often perceived as an offshoot of translation studies. However, although the technological turn in translation has been discussed, little has been discussed about the current trends in interpreting studies. This paper aims to provide a bird’s eye view of the technological transformation in interpreting.

Interpreting Studies (IS) is generally perceived as a sub-branch of Translation Studies (TS), with an emphasis on practical applications (DeFranq et al., 2019). However, technology permeation has been different for TS compared with IS. For TS and translation practices in particular, the discipline has been reluctant to embrace new technology (Wang, 2020). Only in recent years, with the development of more mature technology, did machine involvement become “an integral part of translation practice in the world” (Olohan 2017, 279), with “translators spend[ing] most of their time interacting with translation technology” (Christensen, Flanagan and Schjoldager 2017). Technology in interpreting practices, in contrast, has played an enabling role since the end of WWI (Wang, 2020) making it fundamental to the practice of conference interpreting.

Despite the almost ubiquitous presence of interpreting since the early 20th century, the literature shows that technological innovations are not treated under a single heading as ‘interpreting technology’ but viewed as a cross-cutting force of change that made it “more difficult to accommodate within traditional conceptual boundaries” (Pochhacker 2018, 58).

The notion of ‘technological turn’ appeared first in TS as the ‘globalization turn’ (Snell-Hornby, 2010) and, more commonly, as the ‘technological turn’ (Cronin 2010; O’Hagan 2013; Fantinuoli 2018). Though the term is used, there is yet a fixed definition. Generally, Munday explored the term ‘technological turn’ to refer to the impact of technology on not just translation (and interpreting) practices, but also “the role, relationship and status of translators” (Munday 2008, 192); others have characterized it as how the language industry conceptualizes technology in the translation ecosystem (Angelone, Ehrensberger-Dow and Massey 2019). O’Hagan (2013,513) describes the turn as a gradual process in which theorizations “begin to incorporate the increasingly evident impact of technology”.

In interpreting studies, the definition of a ‘turn’ in a more narrow sense, Fantinuoli has ascribed a more practical focused definition, describing it as “the combination of acceleration and growth of technological sophistication forms the background for the penetration of a certain innovation into a specific aspect of life” (Fantinuoli, 2019). For a more detailed definition, we refer to Wang (2020), which states the turn as “interpreting product and their relationship with interpreters per se, but also on the interdisciplinary interaction with terminology management, machine translation, and voice recognition”.

No matter which definition to adopt, the result of the incorporation of technology in interpreting can be seen as causing “previously stable conceptual boundaries of interpreting [to change]” (Pochhacker 2018, 57). It is evident that in the 21st century technology determines how translations [interpreting] are commissioned, produced, distributed and consumed or used and will “radically change the daily life of the translator and interpreter”(Snell-Hornby, 2006, p. 56).

The issue with the discussion of the technology turn in interpreting is that, unlike their counterparts in TS, IS researchers have only engaged in scant discussions on whether the discipline is experiencing or has completed this ‘turn’.

Previous studies focusing on defining the technological turn in IS in prominent TS/IS journals included technology-based or technology-dependent key terms (e.g. remote interpreting, computer-aided interpreting, AVT, computer-aided interpreting teaching, etc.). These studies are mostly interested in the practical application of interpreting while grouping technology-related research methods (such as eye tracking, fMRI, and corpus studies) as part of other sub-branches (cognitive, corpus-based TS).

To fill the gap in the literature, this current paper tries to discuss whether IS as a whole or a number of its sub-branches have incorporated language technologies into their theoretical framework and research methodologies.

The main objective is to discuss to what extent is technology pushing and transforming the boundaries of interpreting.

2. TECHNOLOGY IN INTERPRETING

Today, technology permeates all aspects of modern lives, including interpreting ecosystems and practices, as well as how research is conducted. It has been argued that technology represents a connecting bridge across time, distance, modality, linguality, and automaticity (Pochhacker, 2018).

As a preliminary example, the study of SimConseq interpreting in which an interpreter listens to a recording of the speaker, while in consecutive interpreting mode has disrupted the previous definition of the source message is presented or available to the interpreter only

once (Pochhacker, 2018). Similarly, an argument can be made that modes of interpreting such as computer-aided interpreting (CAI) and machine interpreting (MI) that rely on a pre-prepared corpus, have conducted interpreting before the the speaker has opened their mouth.

Through the proposed analysis, it will be confirmed that working notions of ‘interpreting’ inherently include how it interfaces with technology through multiple intersections, that is, ‘interpreting’, an inherently technologically reliant process, is undergoing dramatic horizontal changes that make it hard not to redefine what constitutes ‘interpreting’.

The paper is structured as follows: first of all, the notion of ‘turn’ will be critically discussed, including the fuzziness of the notion of ‘turn’ in IS publications, as well as the specific nature of the said ‘technological turn’.

It will then propose to analyze the completion of the turn by means of observing transversally how much technology in the broad sense represents a connecting thread across sub-disciplines, as well as by referring to research inspired by different ‘turns’, such as the linguistic, interpretive, or cognitive turns in IS.

3. DEFINING A TURN

3.1 Challenges against the technological turn

The notion of ‘turn’ in TS is most impacted by Snell-Hornby (2010, 366) as “a clearly visible and striking change of direction [...] perhaps even amounting to a redefinition of the subject concerned”. These changes of direction are ‘dynamic’ phenomena, and they enrich the underlying theoretical and methodological foundation of the discipline. [...] only be perceived and defined as such after it is already complete” (ibid:369).

This definition is built on Kuhn’s Structure of Scientific Revolutions (1996), in which a ‘paradigm turn’ helps to break through and revolutionize the field in studying something that cannot be adequately treated with current paradigms. In essence, ‘turns’ helped it “expand, define and establish itself as a specific academic discipline”, with each ‘turn’ helping borrow not only theoretical frameworks from related disciplines, but also bringing “changes in methodology” (Flynn and Gambier 2011, 88).

Therefore, although previous turns in TS and IS mostly involved borrowing frameworks and perspectives from linguistics, sociology and cognitive science, the introduction of new theories is not by themselves necessary nor sufficient for a paradigmatic turn. Rather it is the end result that when the way a field is viewed dramatically shifts, a turn can be deemed to have occurred. As Gambier and van Doorslaer (2016,2) pointed out in their examination of TS ‘turns’, over the years, the notion of viewing TS from the perspective of framework

borrowed from other disciplines might facilitate the “false illusion that some sort of [...] Kuhnian paradigm change is involved”.

One specific feature of the ‘technological turn’, if compared to the rest of the proposed or existing turns, relates to the specific way in which it emerged and consolidated. The technological turn in interpreting did not emerge as the pressing need to borrow from related disciplines, but rather, from new forms for applications deriving from existing practices that have led to the emergence of new forms. This transformation is reflected in TS, as Cronin puts it, a turn that is “driven not by theoretical developments in cognate areas of inquiry”, but is the “result of significant shifts in the way in which translation is carried out in the contemporary world” (Cronin 2010).

Technology-oriented research in IS and its sub-disciplines thus emerged through the impact of drastic changes in when, where, and how interpreting is commissioned, prepared, produced, managed, presented, absorbed, and designed. Of course, this does not mean that interdisciplinarity and borrowing from other disciplines has not happened. In fact, crossovers from other disciplines are heavily featured in the process.

The examples include the works of Kerremans et al. (2019) look at the relationship in power in remote interpreting for public service; Bendazzoli (2018), Wang et al. (2021), Plevoets et al. (2016), Camile and Defrancq (2019) studied corpus interpreting from the angles of linguistics, computational linguistics, machine learning, and gender. Works in CAI often import research from CAT, Ortiz and Cavallo (2018), which in turn relies on theories imported from Information Science (Bowker and Delsey 2016), Computational Linguistics and the extensive research in Natural Language Processing and Machine Translation (MT), or pairing TS with Computer Science (Alcina 2008). In the realm of Text-to-audio, simultaneous translation, and AVT scholars have proposed the creation of Comparative Media Studies (Littau 2016).

This is a small but representative summary of the many attempts to borrow from disciplines related to technology to enrich the theoretical frameworks in IS in the technological arena.

3.2 Connecting the turns

The field of interpreting, has gone from the Translation theory, to the Interpretive theory, cognitive processing, discursive interactive, translation theory and neurolinguistic turns (Pochhacker, 2022: 73). Each time, the field of interpreting borrows ideas, concepts and perspectives from other fields, and gained perspectives.

Whether the ‘technological turn’ exists might be complicated by epistemological fuzziness between IS and TS. Although technology has gained greater traction in recent years (Wang, 2019), dedicated publications

for technology in IS are still largely missing, with one monogram dedicated to interpreting technologies (Fantinuoli, 2018), and two special issues for interpreting technologies (2018 in Translation and Interpreting Studies, and Tradumàtica in 2019). This is likely the result of IS itself being treated by and large as a sub-discipline of TS, with only two dedicated journals (e.g. International Journal of Interpreter Education and Interpreting). Despite the lack of dedicated journals, there is a growing interest in language technologies and digital resources in the field of interpreting. See, for instance, the number of related papers presented in relevant conferences and workshops (e.g., the 8th AIIC Interpreters for Interpreters Workshop, 2017; the two editions of HiT-IT2, 2017, 2019; and all editions of Translating and the Computer since 2017).

One of the greatest arguments against a technological turn is the fact that technology in interpreting so far, has only played the role of ‘tools’ that expanded pre-existing paradigms, rather than bringing fresh perspectives of study (Zhao, 2018). This perception can trace its root to three sources.

The first is how technology enters IS. Chesterman (2018) discusses this process of conceptual boundary shifts when new phenomena or concepts emerge. He resorts to two conceptual tools: the so-called ‘splinter’ and ‘lumping’ concepts. He indicates that when novel phenomena emerge, scholars react initially by either ‘lumping’ the concept into existing areas, or ‘splitting’ the phenomenon/a into a distinct and different sub-area.

This, for example, is what happened when corpus based IS was included as part of the interpretive theory turn, rather than the technology turn (Mona Baker, 1993), while other phenomena, such as ‘Machine Interpreting’, tend to be artificially ‘split’ into a different research area from translation theory or the neurolinguistics paradigm.

Another related issue in the conceptual divide is the overlap of the phenomena or areas of interest, such as technology overlaps with interpreting technology tools, cognitive studies, AVT studies, MT research, or research inspired by the sociological turn that discusses translation technology tools (e.g. Fantinuoli, 2018). Therefore, making it difficult to ascribe which sub-discipline the technology in question belongs to.

The third issue relates to the different conceptualizations of ‘technology’. The narrower conceptualization of technology primarily involves ‘interpreting technologies’ such as interpreting memory (IM), MI, and recording pens (Pastor, 2021). The broader definition includes the impact of all kinds of digital technologies in a wider sense, including technology-dependent phenomena and their impact on interpreting interpreters, or interpreting research. The latter include the likes of corpus technologies, eye-tracking, brain activity, or online surveys for sociological/ethnographic studies. This broad definition is often overlooked by

current interpreting technology reviews, which focus on interpreting applications. The broad conceptualization also incorporates descriptive, theoretical or applied research into novel technology-based phenomena, such as transpeaking, text-to-audio translation (simultaneous translation), or mobile interpreting Apps. The negligence to take into account many aspects of IS in which technology plays pivotal roles is unfortunate. Therefore, the latter, more road definition is taken in this paper to analyze the ‘technological turn’.

4. SO, ARE WE THERE YET?

The question is whether the technological turn--a paradigmatic change of direction, or a redefinition of what ‘interpreting’ is--can be considered complete.

To answer this question, we need to first turn our gaze to translation studies, which many scholars claim that the discipline has already completed said ‘turn’ (Jiménez-Crespo, 2020).

For interpreting, Fantinuoli has argued for such a turn, and called for fellow interpreting researchers to join his claim, although his focus was limited to the more narrow sense of interpreting technologies as described above. (Fantinuoli, 2018). Others have recently expressed their doubts (Zhao, 2018), claiming that although interpreting has aspects in which technology has become incorporated into existing frameworks, and that while such integration has yielded expanded perspectives, they are not significant enough to merit the term “turn”, rather “technology-enabled methods” might be a better term (ibid). Such concerns also reflect the attitude of some TS scholars that the impact of technology in TS in general might be minimal (i.e. Munday 2008, 15; O’Hagan 2013; Doherty 2016, 952).

Another complaint for ‘turn’ can be described as a lack of adoption of interpreting technology in practical applications by interpreters, audiences, and language service providers in all but a few niche situations (Corpas Pastor and Fern, 2016), and that the existing research in interpreting technology remain largely confined to pre-existing, largely self-contained frameworks (Wang, 2020).

Third, scholars argue that fast-evolving translation technologies are slowly absorbed or adopted within IS (Corpas Pastor and Fern, 2016), and that IS researchers have a tendency to remain within the scope of their “native” discipline (Giles, 2009) rather than integrate technology-oriented research. However, this claim is outdated, as interpreting researchers are more and more adopting methods such as Corpus-based interpreting (Wang, 2020).

The fourth argument is that this kind of research tends to focus on specific issues such as descriptive and pedagogical topics, while others, such as social and ideological ones, tend to be neglected (Olohan 2017, 265).

All these issues imply that the IS might be unable to fully transform the way interpreting studies is viewed, to the extent that it becomes a paradigmatic change (Zhao, 2018). On the opposite end, some scholars also claim the opposite, recognizing the ever-expanding volume of research from different approaches, perspectives and goals, including research on technology-based methodologies.

Pochhacker (2018), for example, claims that technology has had a profound impact on IS, to the extent that it disrupts traditional definitions of interpreting. However, such claims are not yet supported by existing bibliometric analysis.

Is this disparity between existing research, how can we be certain if, and to what extent is a ‘technological turn’ occurring? What percentage of the overall production might qualify as a significant ‘change of direction’ within the discipline?

How can we know if we have arrived?

This article argues that the ‘turn’ has not been completed and proposes two complementary mechanisms to confirm that IS is currently undergoing radical shifts in paradigm, but not to the extent to qualify as a paradigmatic change.

The first involves intradisciplinary connections and how technology appears in sub-disciplines. The second involves bibliometric analyses.

The first approach involves a transversal cross-sub-disciplinary analysis from a wider or macro understanding of ‘technology’. It involves a critical account of studies and publications that cut across subdisciplines in TS and at the same time highlight technology in their theoretical frameworks or methodologies.

It includes all types of interactions and interfaces between technology and interpreting-related phenomena, as well as research methodologies in IS. The emphasis is placed on intradisciplinary connections between sub-disciplines or areas that have focused on technology in one way or another. This includes approaches such as translation theory, interpretive theory, cognitive theory, discourse interaction, and neurolinguistics, as well as pedagogy/training, corpus-based interpreting, interpreter social interactions, and professional management.

For the latter method, a complete bibliometric review was conducted by Wang (2020), which examined interpreting related technologies in Chinese and English Journals between 1988-2019. The result was 51 journal articles on general interpreting technology reviews, 43 on CAIT, 39 on Interpreting Corpus, 30 on remote interpreting, 21 on telephonic interpreting, 11 on terminology management, and 28 on other modes of interpreting such as MI, AVT, sign language interpreting, voice recognition, interpreting pen, and tablets. Wang’s comments on the dearth of research in IS technology studies are much in line with the observations made by previous research (Fantinuoli, 2018; Braun, 2018).

These transversal connections and interfaces can be seen as a key indicator of the maturity of the ‘technological turn’, as they point to the underlying extent and potential of the turn in changing the academic landscape.

Towards this end, Pochhacker’s classification of IS paradigm (Pochhacker, 2022:75) looks for intersections to demonstrate the underlying influence of technology across the discipline.

Translation theory is the first of the IS paradigm, borne from translation studies. TT focuses on linguistic equivalence and therefore matches with a wide variety of technological applications. For instance, Austerlühl, 2014 reviewed a suite of electronic tools available to the interpreter’s disposal, such as an online encyclopedia, glossary, and machine translation that can be used to facilitate interpreters during the preparation and interpreting, and post-interpreting stages. Of note, tools such as the SimuConseq pen can also be put into this category, as it aids the linguistic accuracy of the interpreting process (Yang, 2017). On a similar track, interpreting corpus for machine-assisted and automated interpreting also belongs to this category, showing a healthy possibility for technology to both impact the ease of individual interpreters, the interpreting process, and comparative research.

The interpretive theory, on the other hand, is less impacted by technology. This makes sense, as machine intelligence, however advanced, lacks the capacity to derive meaning from words. Current MT and MI technology focuses more on probability between large amounts of parallel texts or word segments. The closest application of technology in this paradigm is the use of human trainers to pick out the “sense” from the “nonsense” (Wang et al., 2021).

The cognitive and neurolinguistics paradigms are where technology most strikes out. Methods and tools borrowed from cognitive and neuroscience, such as eye-tracking, fMRI, NIR, and ERP are used to uncover the cognitive load behind interpreting processes, while audio recognition software and algorithms are used to detect the mood and tension in the speaker’s psyche (Schuller, 2022).

In particular, eye-tracking studies have been used to construct models of cognitive load for simultaneous interpreting, sight interpreting, and interpreter mental overload (Dragsted, 2012; Doherty and Kruger, 2018). Similarly, eye-tracking studies have also been used to study the specific issue of ergonomics of technology tools (Defrancq and Fantinuoli, 2021). These studies have identified and applied the notion of a ‘cognitive placebo’ (Fantinuoli, 2021) to describe student interpreters’ increased performance in the presence of CAI, regardless of whether they used it in real-time. Eye-tracking studies have also been used recently in the study of subtitling and dubbing reception (i.e. Doherty and Kruger 2018),

in what amounts to another intersection between TS, IS, technology, and AVT.

An even more interesting intersection of interest can be found in the introduction of socio-cognitive research in which research into cognition needs to incorporate agent cooperation, tool usage, interplay with the environment, translation networks, etc. (Alonso and Calvo 2015). For instance, Pisani and Fantinuoli (2021) examined the impact of technology replacing boothmate interactions in remote interpreting settings, Fantinuoli and Moteccchio (2022) surveyed how latency in the (audio) environment impacted student interpreter’s performance, Hale et al (2022) surveyed interpreter and client preference when it came to the location of police interpreting, while Lim (2013) examined student interpreter’s attitude towards the adoption of CAI.

In terms of the discursive interaction paradigm, as the incorporation of technology invariably involves a change in the traditional actors of interpreting, interactions between human and human, human and machine, machine and machine has become a rich topic of study. As mentioned previously, these interactions also overlap partially with other paradigms. Klammer and Pochhacker (2021) for instance, examined how remote interpreting impacted the quality of patient-doctor interaction; while Xu Et al. (2020) observed the interaction between lawyer and client in a remote-mediated interpreting setting.

Other related research in the IS perspective includes interpreter training through CAIT (Deng and Lu 2018) and how interpreters should adapt to the changing environment (Przepiórkowska, 2021).

Of note, a handful of technologies are already bridging different paradigms. Corpus-Based IS, for example, can be used to study linguistic correspondence (Wu, et al., 2016), cognitive functions (Schuller, 2022), discursive interactions (Setton, 2011:5), and even interpretive theory (Li and Hu, 2015).

However, as of now, the relationships between researchers are rather segregated. With most people focusing on a rather narrow research focus (Wang, 2019). A co-citation analysis of 132 related authors shows distinct clustering patterns based on institutions and personal research interests (Figure 1). Showing that while technology has the potential to bridge gaps, they are still used as tools of sub-disciplines, rather than forming an interconnected web.

In addition, translation has been redefined across the board, explicit or implicitly, as an instance of ‘human-computer interaction’ (O’Brien 2012): publications and research from all perspectives now include technological issues such as computers, online documentary research, online communication/networking, TM or management solutions, or MT systems as part of the translation event, act or ecosystem.

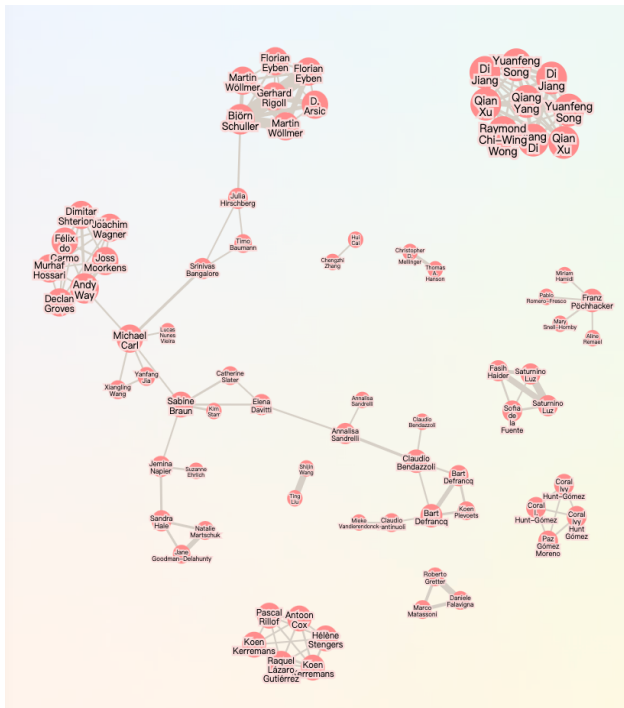


Figure 1
A cluster analysis of co-citation shows that among repeated authors (3 or more publications), current research is contained in relatively closed loops.

CONCLUSIONS

Technology has empowered interpreting to grow further away, yet closer together with traditional TS. Multimodal translation/interpreting, as allowed by audio recognition and voice recognition, has allowed interpreting to be no longer confined by “spoken”; tools such as CAI, corpus, Remote Interpreting, and recording pens have allowed interpreting to transgress temporal and spatial boundaries, no longer requiring immediacy (in the case of a pre-recorded interpreting in video, or MI trained on parallel corpora); and no longer requiring human to serve as the central of the interpreting practice. (Pochhacker, 2018)

Given the transversal impact of technology across translation practices and IS, the turn is definitely underway. In some areas, technology will not be highlighted or discussed, but this does not mean that a technological turn in its broad sense has not been completed. The ‘cultural turn’ enriched the discipline and nowadays this area of research is embedded within the discipline. But the lack of a general consensus on definitions, and a shortage of comprehensive technology-oriented IS research, will still take some time before the full manifestation of a “technological turn”.

REFERENCES

- Adams, H. (2021). Technology and Conference Interpreting: An introduction to the use of instant messaging apps. *Technium Social Sciences Journal*, 15, 567-572. <https://doi.org/10.47577/tssj.v15i1.2274>
- Alcina, A., Alcina, A., & Alcina, A. (2008). Translation technologies: Scope, tools, and resources. *Target-International Journal of Translation Studies*, 20(1), 79-102. <https://doi.org/10.1075/target.20.1.05alc>
- Alonso, E., & Calvo, E. (2015). Developing a Blueprint for a Technology-mediated Approach to Translation Studies. *Meta: Translators' Journal*, 60(1), 135-157. <https://doi.org/10.7202/1032403ar>
- Angelone, E., Ehrensberger-Dow, M., & Massey, G. (2019). *The Bloomsbury Companion to Language Industry Studies*. <https://doi.org/10.5040/9781350024960>
- Annalisa, S. (2015). Becoming an interpreter: The role of computer technology. *MonTI. Monografías de Traducción e Interpretación*, 2, 111-138. <https://doi.org/10.6035/MonTI.2015.ne2.4>
- Baker, M. (2006). *Translation and Conflict: A Narrative Account*. Routledge.
- Baker, M., Francis, G., & Tognini-Bonelli, E. (1993). *Corpus Linguistics and Translation Studies: Implications and applications*. 9-24. <https://doi.org/10.1075/z.64.15bak>
- Bassnett, S. (2014). *Reflections on Translation*. Multilingual Matters.
- Bassnett, S., & Lefevere, A. (Eds.). (1998). *Constructing cultures: Essays on literary translation*. Multilingual Matters.
- Bassnett, S., & Lefevere, A. (Eds.). (1998). *Translation, history, and culture*. Routledge.
- Braun, S. (2017). What a micro-analytical investigation of additions and expansions in remote interpreting can tell us about interpreters' participation in a shared virtual space. *Journal of Pragmatics*, 107, 165-177. <https://doi.org/10.1016/j.pragma.2016.09.011>
- Braun, S. (2018). The importance of being relevant? A cognitive-pragmatic framework for conceptualizing audiovisual translation. In Y. Gambier & S. Ramos Pinto (Eds.), *Benjamins Current Topics* (Vol. 95, pp. 121-132). John Benjamins Publishing Company. <https://doi.org/10.1075/bct.95.10bra>
- Braun, S., & Starr, K. (2019). Finding the Right Words: Investigating Machine-Generated Video Description Quality Using a Corpus-Based Approach. *Journal of Audiovisual Translation*, 2(2), 11-35. <https://doi.org/10.47476/jat.v2i2.103>
- Braun, S., Davitti, E., & Dicerto, S. (n.d.). *Video-Mediated Interpreting in Legal Settings: Assessing the Implementation*. 27.
- Braun, S., Davitti, E., & Slater, C. (2020). ‘It’s like being in bubbles’: Affordances and challenges of virtual learning environments for collaborative learning in interpreter

- education. *The Interpreter and Translator Trainer*, 14(3), 259-278. <https://doi.org/10.1080/1750399X.2020.1800362>
- Brøgger, M. N., & Zethsen, K. K. (2018). *Moving Boundaries in Translation Studies* (H. V. Dam, Ed.; 1st ed.). Routledge. <https://doi.org/10.4324/9781315121871>
- Camille, C., Collard, C., Defrancq, B., & Defrancq, B. (2019). *Disfluencies in Simultaneous Interpreting, a Corpus-Based Study With Special Reference to Sex*. 264-299. <https://doi.org/10.4324/9780429030376-12>
- Carl, M., & Braun, S. (2017). Translation, interpreting, and new technologies. In K. Malmkjær (Ed.), *The Routledge Handbook of Translation Studies and Linguistics* (1st ed., pp. 374-390). Routledge. <https://doi.org/10.4324/9781315692845-25>
- Carmo, F. do, Shterionov, D., Moorkens, J., Wagner, J., Hossari, M., Paquin, E., Schmidtke, D., Groves, D., & Way, A. (2020). A review of the state-of-the-art in automatic post-editing. *Machine Translation*, 35(2), 101-143. <https://doi.org/10.1007/s10590-020-09252-y>
- Chen, S., & Chen, S. (2017). The construct of cognitive load in interpreting and its measurement. *Perspectives-Studies in Translatology*. <https://doi.org/10.1080/0907676x.2016.1278026>
- Chesterman, A. (n.d.). *Moving conceptual boundaries: So what? Moving Boundaries in Translation Studies*. <https://doi.org/10.4324/9781315121871-2>
- Christensen, T. P., Flanagan, M., & Schjoldager, A. (2017). Mapping Translation Technology Research in Translation Studies. An Introduction to the Thematic Section. *HERMES - Journal of Language and Communication in Business*, 56, 7-20. <https://doi.org/10.7146/hjlc.v0i56.97199>
- Claudio Bendazzoli, & Bendazzoli, C. (2018). *Corpus-based Interpreting Studies: Past, Present and Future Developments of a (Wired) Cottage Industry*. 1-19. https://doi.org/10.1007/978-981-10-6199-8_1
- Claudio Fantinuoli & Bianca Prandi. (2021). *Towards the evaluation of simultaneous speech translation from a communicative perspective*. ArXiv.
- Claudio Fantinuoli & Maddalena Montecchio. (2022). *Defining maximum acceptable latency of AI-enhanced CAI tools*. ArXiv.
- Claudio Fantinuoli. (2017). *Speech Recognition in the Interpreter Workstation*.
- Claudio Fantinuoli. (2018). *Interpreting and technology: The upcoming technological turn*.
- Corpas Pastor, G. (2021). *Interpreting and Technology: Is the Sky Really the Limit?* Proceedings of the Translation and Interpreting Technology Online Conference, 15-24. <https://aclanthology.org/2021.triton-1.3>
- Corpas Pastor, G., & Durán-Muñoz, I. (2018). *Trends in E-Tools and Resources for Translators and Interpreters*. BRILL. [<https://doi.org/10.1163/978900435>]
- Corpas Pastor, G., & Durán-Muñoz, I. (2019). The Impact of Technology on Interpreter Training: A Literature Review. In M. Lacruz & R. Mancho-Barés (Eds.), *New Perspectives in Interpreter Education* (pp. 43-61). John Benjamins Publishing Company. <https://doi.org/10.1075/ata.xix.03cor>
- Cronin, M. (2013). *Translation in the digital age*. Routledge.
- Dai, G. (2021). Use of Machine Translation in the Translation and Interpreting Industry: A Case Study. *Languages*, 6(1), 38. <https://doi.org/10.3390/languages6010038>
- Davitti, E. (2016). *Interpreting in Virtual Reality: Designing and Developing an Immersive Environment for Remote Interpreting*. In D. Dezhina, E. Gorbunova, & D. Golomidova (Eds.), *Proceedings of the 2016 Digital Transformation Conference* (pp. 17-25). <http://ceur-ws.org/Vol-1633/paper3.pdf>
- Davitti, E. (2017). Interpreters vs. Machines: Contrasting the Roles of Technology and Humans in Interpreting Settings. *Translation Spaces*, 6(1), 107-132. <https://doi.org/10.1075/ts.6.1.06dav>
- Davitti, E. (2018). Interpreting remotely: Challenges and opportunities. In S. Braun, K. Kohn, & J. Pokorn (Eds.), *Expanding the Dialogue on Intercultural Professionalism in Interpreting* (pp. 83-109). *John Benjamins Publishing Company*. <https://doi.org/10.1075/btl.138.05dav>
- Davitti, E., & Pasquandrea, S. (2017). Interpreters in conflict zones: The role of interpreters during mediation and conflict resolution processes. In C. Valero-Garcés & R. Tipton (Eds.), *Ideology, Ethics and Policy Development in Public Service Interpreting and Translation* (pp. 198-218). BRILL. https://doi.org/10.1163/9789004327007_010
- Davitti, E., Pasquandrea, S., & Riccardi, A. (2020). Remote interpreting and the challenge of multilingual meetings: A pilot study on user expectations and performance. *Translation & Interpreting*, 12(1), 26-49. <https://translationjournal.net/journal/78-tech/3236-remote-interpreting-and-the-challenge-of-multilingual-meetings-a-pilot-study-on-user-expectations-and-performance.html>
- Davitti, E., Pasquandrea, S., & Riccardi, A. (2021). Remote Interpreting in Legal Settings: User Perspectives and Interactions in the Courtroom. *International Journal of Bilingualism*, 25(3), 813-832. <https://doi.org/10.1177/1367006920981433>
- Depraetere, I. (2021). Legal interpreting in Belgium: A case study on remote interpreting and challenges to professional ethics. *Perspectives: Studies in Translatology*, 29(5), 782-796. <https://doi.org/10.1080/0907676X.2020.1822811>
- Desmet, B., Fantinuoli, C., Vandierendonck, M., & Defrancq, B. (2020). *Interpreting and Technology*. <https://doi.org/10.5281/zenodo.1493281>
- Diaz-Galaz, S., & Perez, I. (2019). Understanding the role of interpreters in cross-cultural healthcare communication: A literature review. *Cultural Diversity & Ethnic Minority Psychology*, 25(2), 150-161. <https://doi.org/10.1037/cdp0000264>
- Diriker, E. (2018). Translation and Interpreting in Conflict Zones: Narratives of the Kurdish Conflict in Turkey. *The Translator*, 24(3), 244-262. <https://doi.org/10.1080/13556509.2018.1517676>

- Dragsted, B. (2016). Post-editing in practice: A case study of a machine translation environment. *Translation Spaces*, 5(2), 195-217. <https://doi.org/10.1075/ts.5.2.03dra>
- Duro, V. (2016). Relevance theory, interpreting studies and new frontiers. In C. Valentini & G. L. Falbo (Eds.), *Translation in Transition: Between cognition, computing and technology* (pp. 251-272). Cambridge Scholars Publishing.
- Duro, V. (2020). Interpreting and the quality of pragmatic features: Evidence from a trilingual parallel corpus. *Languages in Contrast*, 20(1), 46-76. <https://doi.org/10.1075/lic.19004.dur>
- Duro, V. (2021). Cognition in interpreting: A comparative analysis of cognitive load in interpreting subtitling and simultaneous interpreting. *Cognitive Linguistic Studies*, 8(1), 35-58. <https://doi.org/10.1075/cogls.00051.dur>
- Dyadic, C., & Zaretskaya, Y. (2016). Interpreting the language of design: A focus on the role of culture in translation and interpretation. *International Journal of Art & Design Education*, 35(3), 412-423. <https://doi.org/10.1111/jade.12119>
- Estienne, E. (2019). Community interpreting in Australia: A critical view on its role, its status and the need for national standards. *International Journal of Interpreter Education*, 11(1), 1-17. <https://digitalcommons.unf.edu/cgi/viewcontent.cgi?article=1193&context=ijie>
- Even-Zohar, I. (1990). Polysystem Studies. *Poetics Today*, 11(1), 9-26.
- Folaron, D., & Ptaszynski, M. (2018). Interpreting literary texts: The role of the translator's empathy. *Translation & Interpreting*, 10(1), 72-89. <https://escholarship.org/uc/item/0fz8w2h5>
- Frank, S. L., Otten, L. J., Galli, G., & Vigliocco, G. (2015). The ERP response to the amount of information conveyed by words in sentences. *Brain and Language*, 140, 1-11. <https://doi.org/10.1016/j.bandl.2014.10.007>
- Frei, A., Pochon-Berger, E., & Condamines, A. (2017). La version: Formation en traduction et apprentissage de la version chez les traducteurs débutants. *Meta: Journal des traducteurs / Meta: Translators' Journal*, 62(3), 489-512. <https://doi.org/10.7202/1041820ar>
- Gambier, Y. (2017). Audiovisual translation as cross-cultural mediation. *Lingue e Linguaggi*, 21, 91-105. <https://doi.org/10.1285/i22390359v21p91>
- Gambier, Y., & Doorslaer, L. V. (Eds.). (2016). *Border Crossings: Translation Studies and other disciplines*. John Benjamins Publishing.
- Garzone, G., & Ilie, C. (Eds.). (2017). *Negotiating (in) multiple languages: A collection of papers arising from the 9th International MALCA Conference, University of Catania, 4-6 November 2015*. Cambridge Scholars Publishing.
- Gile, D. (2009). *Basic Concepts and Models for Interpreter and Translator Training*. John Benjamins Publishing.
- Gile, D. (2016). *Basic concepts and models for interpreter and translator training*. John Benjamins Publishing Company.
- Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Harvard University Press.
- González, M. Á. C. (2004). *Translation theory and the history of the translator*. John Benjamins Publishing.
- Gouadec, D. (2016). *Translation as a profession*. John Benjamins Publishing Company.
- Gutt, E. A. (1991). *Translation and relevance: Cognition and context*. Blackwell.
- Hall, E. T. (1976). *Beyond culture*. Anchor Books.
- Hatim, B., & Mason, I. (1997). *The translator as communicator*. Routledge.
- Hatim, B., & Munday, J. (2004). *Translation: An advanced resource book*. Routledge.
- Hermans, T. (Ed.). (1985). *The manipulation of literature: Studies in literary translation*. Croom Helm.
- Hermans, T. (Ed.). (2007). *The manipulation of literature: Studies in literary translation*. Routledge.
- Hermans, T. (Ed.). (2007). *Translating Others (Vol. 1): The Ethics of Translation*. Routledge.
- Holmes, J. S. (1988). The name and nature of translation studies. In L. Venuti (Ed.), *The translation studies reader* (pp. 172-185). Routledge.
- Holmes, J. S. (1988). *Translating as a purposeful activity: Functionalist approaches explained*. Routledge.
- Horguelin, P. (2017). Expertise professionnelle et performance traductive: Le cas de la traduction vers la langue maternelle. *Meta: Journal des traducteurs / Meta: Translators' Journal*, 62(3), 535-557. <https://doi.org/10.7202/1041822ar>
- Hurtado Albir, A. (2001). *La enseñanza de la traducción*. Cátedra.
- Inghilleri, M. (2005). *Interpreting justice: Ethics, politics and language*. Routledge.
- Jakobson, R. (1959). On linguistic aspects of translation. In R. A. Brower (Ed.), *On translation* (pp. 232-239). Harvard University Press.
- Jiménez-Crespo, M. A. (2015). *Translation and web localization*. Routledge.
- Karakanta, A., Papi, S., Negri, M., & Turchi, M. (2021). *Simultaneous Speech Translation for Live Subtitling: From Delay to Display*. MTSUMMIT.
- Katan, D. (2009). *Translation theory and professional practice: A global survey*. Multilingual Matters.
- Katan, D. (2009). *Translation Theory and Professional Practice: A Global Survey of the Great Traditions*. Palgrave Macmillan.
- Katan, D. (2014). *Translation as intercultural communication*. Routledge.
- Kim, J. S. (2015). Revisiting the role of translation in language learning. *ELT Journal*, 69(3), 295-305. <https://doi.org/10.1093/elt/ccv025>
- Kiraly, D. C. (2016). *A social constructivist approach to translator education: Empowerment from theory to practice*. Routledge.
- Koller, W. (1979). *Einführung in die Übersetzungswissenschaft*. Quelle & Meyer.
- Lambert, J., & Van Gorp, H. (1985). *On defining the translator's object*. John Benjamins Publishing.

- Lefevere, A. (1992). *Translation, rewriting, and the manipulation of literary fame*. Routledge.
- Lefevere, A. (Ed.). (1992). *Translation, history, and culture*. Routledge.
- Lefevere, A., & Bassnett, S. (Eds.). (1998). *Constructing cultures: Essays on literary translation*. Multilingual Matters.
- Li, D. C. S., & Zhang, G. M. (2000). *The translation of children's literature: A reader*. Multilingual Matters.
- Lörscher, W. (1991). *Translation performance, translation process, and translation strategies: A psycholinguistic investigation*. Gunter Narr Verlag.
- Malmkjaer, K. (Ed.). (2010). *The Routledge Linguistics Encyclopedia*. Routledge.
- Munday, J. (2008). *Introducing translation studies: Theories and applications*. Routledge.
- Munday, J. (2008). *Style and ideology in translation: Latin American writing in English*. Routledge.
- Munday, J. (2012). *Introducing translation studies: Theories and applications*. Routledge.
- Munday, J. (2016). *Introducing Translation Studies: Theories and Applications*. Routledge.
- Newmark, P. (1988). *A Textbook of Translation*. Prentice Hall.
- Nida, E. A., & Taber, C. R. (1982). *The theory and practice of translation*. Brill.
- Nord, C. (1997). *Translating as a purposeful activity: Functionalist approaches explained*. Routledge.
- Olohan, M. (2004). *Introducing corpora in translation studies*. Routledge.
- Pym, A. (2010). *Exploring translation theories*. Routledge.
- Pym, A. (2012). *On Translator Ethics: Principles for mediation between cultures*. John Benjamins Publishing.
- Pym, A. (2014). *Exploring translation theories*. Routledge.
- Robinson, D. (1997). *Becoming a translator: An accelerated course*. Routledge.
- Robinson, D. (2003). *Becoming a Translator: An Introduction to the Theory and Practice of Translation*. Routledge.
- Saldanha, G., & O'Brien, S. (Eds.). (2014). *Research methodologies in translation studies*. Routledge.
- Sandrelli, A., & Sandrelli, A. (2015). *BECOMING AN INTERPRETER: THE ROLE OF COMPUTER TECHNOLOGY*. *MonTI - Monografías de Traducción e Interpretación*, 2, 111-138. <https://doi.org/10.6035/monTI.2015.ne2.4>
- Schäffner, C., & Adab, B. (Eds.). (2000). *Developing Translation Competence*. John Benjamins Publishing.
- Schäffner, C., & Adab, B. (Eds.). (2000). *Translation as intercultural communication*. Continuum.
- Schäffner, C., & Bassnett, S. (Eds.). (2010). *Political discourse, media, and translation*. Cambridge Scholars Publishing.
- Shuttleworth, M., & Cowie, M. (1997). *Dictionary of translation studies*. St. Jerome Publishing.
- Snell-Hornby, M. (1988). *Translation studies: An integrated approach*. John Benjamins Publishing.
- Snell-Hornby, M. (2006). *The turns of translation studies: New paradigms or shifting viewpoints?*. John Benjamins Publishing.
- Snell-Hornby, M. (2012). *The Turns of Translation Studies: New paradigms or shifting viewpoints?*. John Benjamins Publishing.
- Snell-Hornby, M., Pöchhacker, F., & Kaindl, K. (Eds.). (1994). *Translation Studies: An Interdiscipline*. John Benjamins Publishing.
- Tirkkonen-Condit, S. (Ed.). (1995). *Empirical research in translation and intercultural studies*. John Benjamins Publishing.
- Tirkkonen-Condit, S., & Condit, C. (Eds.). (2013). *The professionalization of interpreting: Federal and state court certification processes*. John Benjamins Publishing.
- Toury, G. (1995). *Descriptive translation studies and beyond*. John Benjamins Publishing.
- Tymoczko, M. (2007). *Enlarging translation, empowering translators*. St. Jerome Publishing.
- Tymoczko, M., & Gentzler, E. (Eds.). (2002). *Translation and power*. University of Massachusetts Press.
- Venuti, L. (1995). *The Translator's Invisibility: A History of Translation*. Routledge.
- Venuti, L. (Ed.). (2004). *The translation studies reader*. Routledge.
- Venuti, L. (Ed.). (2012). *The Translation Studies Reader*. Routledge.
- Vermeer, H. J. (2012). *A skopos theory of translation: Some arguments for and against*. Routledge.
- Vinay, J. P., & Darbelnet, J. (1995). *Comparative stylistics of French and English: A methodology for translation*. John Benjamins Publishing.
- Wills, W. (1982). *The science of translation: Problems and methods*. John Benjamins Publishing.
- Wilss, W. (1996). *Knowledge and skills in translator behavior*. John Benjamins Publishing.
- Wolf, M., & Fukari, A. (2007). *Constructing a sociology of translation*. John Benjamins Publishing.
- Zhang, M. (2009). *Translation and creation: Readings of western literature in early modern China, 1840-1918*. John Benjamins Publishing.
- Zlateva, P. (1993). *Translation as social action: Russian and Bulgarian perspectives*. Routledge.