

Book Review

Book review on *Machine Translation for Everyone: Empowering Users in the Age of Artificial Intelligence*, by **Dorothy Kenny, ed.** Language Science Press, 2022, viii+210 pp.

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1 Book introduction

Over the past two decades, great advances have been made in the field of machine translation (MT) thanks to the rapid development of artificial intelligence. In particular, the emergence of neural machine translation (NMT) has exerted a profound impact on both the language service industry and ordinary language users' daily lives. It is not uncommon for translators to post-edit MT drafts and for readers to browse international news in non-native languages with the help of online MT engines. However, a lack of knowledge about MT may lead to misunderstandings and uncritical use of this technology. Therefore, it is essential to develop users' "machine translation literacy," which is understood as the ability to comprehend, evaluate and make good use of MT systems (Bowker & Ciro, 2019, 88).

The volume *Machine Translation for Everyone: Empowering Users in the Age of Artificial Intelligence* answers this call. It aims to promote multilingual citizenship and professional translation and offers MT users a comprehensive understanding of the technology and how to use it efficiently. Compared with previous works on translation technology in general (Kenny, 2017; O'Hagan, 2020), and those concerning MT in specific contexts, such as scholarly communication (Bowker & Ciro, 2019), the volume under review gives special attention to MT in a much wider range of contexts, such as translation workflow and language education. Importantly, as suggested by its title, the volume takes all potential MT users as its target readers, seeking to empower them in the age of artificial intelligence. The volume's editor, Professor Dorothy Kenny, is a distinguished scholar from Dublin City University, which is well known for its translation technology education and research. The expertise of the other contributors, who are also leading scholars in MT research, ensures the quality of the volume and its insights.

The volume itself consists of nine chapters by invited scholars, which cover a wide range of MT issues, such as MT quality evaluation, pre-editing and post-editing, MT ethics and MT applications in various settings.

The volume opens with Olga Torres-Hostench's explanation of multilingualism in Chapter 1. Multilingualism, a fundamental value of the European Union, can be fostered by MT and language learning, as Torres-Hostench illustrates through the case of universities as multilingual communities. This chapter highlights the advantageous role of MT in expanding languages available not only in translation but also in language learning.

Chapter 2 by Dorothy Kenny explores issues related to human translation and MT, focusing first on human translation, the important role of translators and how translators solve translation problems. The chapter then shifts to types of MT and discusses their strengths and weaknesses. In some cases, MT may not be invincible as it relies on human translation and its outputs still require human editing, leaving space for human-machine relationships. Denny underscores the pressing need to improve MT literacy among ordinary users.

In Chapter 3, Caroline Rossi and Alice Carré examine the evaluation of MT quality, advocating a "pragmatic approach" that takes evaluation as a means of selecting a suitable MT engine based on the situation, often through a combination of human and automatic evaluation (52). The authors go to great effort to explain automatic evaluation metrics (AEMs), such as translation error rate (TER), human translation edit rate (HTER) and bilingual evaluation understudy (BLEU), using easy-to-understand examples. As the authors point out, caution should be exercised when comparing AEM scales because the same score of "1", for example, could represent the best for one metric (e.g., BLEU) but the worst for another (e.g., HTER).

The following chapters (Chapters 4 and 5) discuss the related issues of pre-editing and post-editing. Chapter 4, co-authored by Pilar Sánchez-Gijón and Dorothy Kenny, discusses pre-editing, arguing that raw MT output quality depends not only on the MT engine but also on the appropriateness of source text. To improve MT output quality, the authors provide a list of guidelines for MT pre-editing in terms of lexical choice, structure, style and referential elements. Chapter 5 by Sharon O'Brien draws attention to concerns over post-editing, a heated topic in translation technology. Instead of introducing post-editing strategies, the author focuses on post-editing effort measurement. Referring to Krings (2001), she introduces three dimensions of measurement, comprising temporal, technical and cognitive dimensions. Her final remarks about post-editor training have implications for both translation learners and practitioners.

Chapter 6 by Joss Moorkens addresses ethical issues in MT development and use. Taking two translators' working experiences as case studies, the author considers ethical problems in both MT system development and professional workflows. The author criticises a series of unethical practices, such as using web-crawler data in MT system training and moving translation production to post-editing without consulting other stakeholders. In his view, inappropriate use of MT may pose threats to the

sustainability of the translation industry and linguistic diversity, resulting in societal bias and the impoverishment of poorly resourced languages.

Moving to a more technical aspect of MT, Chapter 7, co-authored by Juan Antonio Pérez-Ortiz, Mikel L. Forcada and Felipe Sánchez-Martínez, provides a sound demonstration of how NMT works. In this chapter, the authors introduce the fundamental concepts in deep learning, vector representation, attention mechanism and two popular neural models – namely, attention-based transformer and recurrent neural networks. In consideration of readers' varying levels of technical familiarity, details of the underlying working mechanisms were not discussed in depth. Those looking for a comprehensive technical discussion of NMT may, as suggested by the authors, refer to Koehn (2020).

In Chapter 8, Gema Ramírez-Sánchez discusses custom NMT by reviewing its theoretical and practical implications for particular purposes. Instead of relying on generic MT for general purposes, this chapter seeks to offer basic knowledge of custom MT for specific purposes. To achieve custom MT, computer engineers and linguists need to collaborate to contribute to translation quality. This chapter explicitly outlines how to customise an MT engine through data and techniques. In addition to addressing theoretical concerns, this chapter offers practical details on customising a neural MT engine, including tools, customisation strategy, data compilation and preparation, training and testing.

The volume closes with a debate on the controversial role of MT in language learning in Chapter 9. Drawing on examples and findings from recent studies, this chapter considers whether MT might be beneficial to language learning as a kind of digital resource and discusses MT's role in relation to online tools, such as dictionaries and corpora. The tips offered in this chapter may be useful for teachers and learners who use MT in language learning. The potential value of NMT in facilitating classroom teaching and learning is also discussed in terms of error analysis.

2 Critical evaluation

Overall, the chapters in this volume provide a panorama of MT development aimed at readers of varying levels. The volume is a highly welcome, important and stimulating addition to existing literature for three main reasons.

Firstly, it systematically reviews issues of MT in terms of the field's current status, underlying technologies and potential applications in the near future. Although numerous studies on MT have been carried out in recent decades, there remains a lack of comprehensive studies on MT. The volume covers both general issues, such as human-machine relationships and MT ethics, and specialised issues, such as the working mechanisms of NMT and the establishment of custom MT

systems. Some chapters aim to help readers understand how MT works, while others are dedicated to MT applications, such as how to make the best use of MT and avoid pitfalls. The detailed introductions and explanations of all these issues offered in this volume can enhance readers' MT understanding and literacy.

Secondly, the volume considers the role of MT in the age of artificial intelligence but without neglecting the human factors involved. While discussing MT, which relies on technological advances, the volume also pays special attention to issues of human-machine translation and ethical considerations in using MT. This attention calls for reflection on the mania of technology, thus humanising technology in the field (Zhang & Wang, 2022). The volume also positions MT in the wider context of multilingualism, with the aim of benefiting as many users as possible. Moreover, while discussing the potential value of MT in practice, the volume considers contextual factors instead of solely emphasising a technology-driven stance.

Thirdly, the volume addresses a wide readership as the name "translation for everyone" suggests. To help readers navigate the volume easily, the sequence of the chapters is designed to build progressively, with less specialised chapters first and more specialised ones later. When discussing more technical aspects of MT, the contributors employ insightful examples to help readers understand the intricate concepts, metrics or models. For instance, the example of asking a student to "name the days of the week" (63) in Chapter 3 provides a vivid explanation of the basic concepts of precision and recall in AEM, making the concepts accessible to a wide variety of readers.

Despite the above strengths, the volume may have benefited from better organisation of its thematic structure. The structure gives the impression that each chapter discusses a distinct aspect of MT, whereas numerous interconnections exist. For example, Chapters 3, 7 and 8 focus on technical aspects of MT, while Chapters 1, 2 and 6 mainly discuss social aspects, and the rest of the chapters centre on MT applications. While there are, of course, other options for structural adjustment, it would help readers develop a fuller sense of MT if chapters with common themes were grouped. Nevertheless, the volume is an essential read for those concerned with MT and deserves all the readers it can attract for its insights and attention to recent trends concerning MT. It will be an asset to translators and researchers, as well as L2 teachers and learners, with its aim of empowering various MT users across a range of diverse contexts.

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