

Book Review

Christopher Joseph Jenks. *New Frontiers in Language and Technology*. Cambridge University Press. 2023. <https://doi.org/10.1017/9781009184403>.

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1 General introduction

In the 21st century, the Fourth Industrial Revolution (4IR) has profoundly influenced human life and the development of society. As Stearns (2020) contends, “the industrial revolution was the most important single development in human history over the past three centuries.” (p. 13). The prevalence and significance of emerging technologies such as virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) are so substantial that they shape the way people conduct business on a global scale. Technology has a significant impact on a wide range of areas, including biology, human life, economy, language education and learning, among many others. However, while 4IR transformations bring optimistic outcomes to advance society, they also pose certain communication threats.

Considering the significance of 4IR transformations, applied linguists have realized the value of examining how these technological advancements collectively reshape human behavior and communication. In light of this, *New Frontiers in Language and Technology* – one installment of the “*Elements in Applied Linguistics*” by Christopher Joseph Jenks from Utrecht University – offers innovative perspectives on the interplay between language and technology. The book provides comprehensive insights into how 4IR’s technological shifts are woven through a complex tapestry of language and technological issues. Simplified, Jenks’ work elucidates the contemporary dynamics of emergent technologies within the 4IR and their consequential effects on the field of applied linguistics, particularly in terms of fostering creativity and innovation.

2 Book introduction

The book delves into several issues related to the 4IR, which represent both immediate and significant research areas in the nexus of language and technology.

It examines the profound effects of technology on applied linguistics by introducing new instruments and methodologies for language learning, teaching, and scholarly inquiry. Comprised of six chapters, the book scrutinizes the influence of 4IR on daily human life and the economy, identifies potential challenges for applied linguists, and investigates the frameworks of power governing the regulation of information and communication.

Chapter 1 highlights the transformative impact of the 4IR on various aspects of life, from daily communication to advances in the biological sciences. It introduces concepts such as “Phygital”, “Internet of Things”, “Metaverse”, and “Biofabrication” to underscore the revolutionary shifts taking place. The chapter also delineates three defining characteristics of these technological changes – Velocity, Breadth and Depth, and System impact – to assert that we are deep within the 4IR, with technology exerting unprecedented social influence. Additionally, it presents three social processes to elucidate the need for applied linguists to engage with 4IR issues and to understand the evolving modalities of human interaction, behavior, and cognition.

In Chapter 2, the author shifts to human-machine interfaces, a domain where the processing of natural language by computers is considered pivotal (Gu, 2021). This topic is highlighted as central to understanding the organization of language in our lives. The chapter categorizes human-machine communication into different modes and discusses their linguistic applications. The author posits that this classification can reveal research opportunities within technology studies. A paradigmatic shift is presented, drawing from post-humanism, new materialism, and quantum physics to guide researchers in contemplating the changing relationship between machines and human communication. This shift is posited to help scholars reassess the implications of these evolving dynamics for language education and consider ethical factors in the use of technology in computer-assisted language learning (CALL).

Chapter 3 turns to the significance of digital economies and their intersection with applied linguistics. The chapter discusses how technological advancement affects the discourse of money, the evolution of web-based business practices and business decisions. The characteristics and components of digital economies are outlined, along with their effects on participants. The chapter underscores the need for applied linguists to acknowledge and examine the deeper implications these digital shifts have within their field.

Chapter 4 identifies five interrelated categories as a comprehensive framework for understanding and addressing the array of threats and challenges that come with the 4IR, ranging from the mundane to complex problems. These categories facilitate a nuanced evaluation of ethical concerns, including but not limited to equality of learning outcomes, emotional support, privacy and audio/video data protection, and misconduct behaviors (Liu & Lei, 2023). The author also claims that in communicating 4IR threats, individuals, industries, and institutions all have a

shared obligation to promote ethically sound and responsible practices when using technology in language learning environments, which underscores the importance of ethical concerns in the field of CALL.

Chapter 5 looks at how systems of power influence the regulation of information and communication. These systems stem from underlying systemic inequalities, social hierarchies, and cultural dynamics that pervade all societal levels and aspects of life, whether material, immaterial, or institutionalized. The chapter explores human factors like the need for communication, belonging, and information, and how these can establish power systems over technology. Through a set of probing questions, the author emphasizes the need to unravel the complex interplay of power systems entwined with the transformations brought about by the 4IR.

Chapter 6, after summarizing the key points from the preceding chapters, highlights the vital role of language and technological research. By explaining three aspects of scholarship, the author advocates the need for applied linguists to make contributions to scholarship on technology and language by developing literacies, relying on information sharing platforms and adopting dissemination practices. This chapter provides a critical perspective, urging scholars to consider current linguistic and social challenges and offering analytical frameworks to examine the intersections of language and technology. Finally, the author summarizes seven patterns of innovation – hyper-personalization, autonomous systems, predictive analytics, decision support, conversational interactions, recognition systems, and goal-driven systems. These patterns serve to inspire applied linguists to shape the future of language and technology research.

3 Critical evaluation

Overall, the book underscores the critical contributions that applied linguists must make to the field of language and technology studies, particularly in the context of the 4IR. In Chapter 1, it sets the stage by examining the transformative influence of the 4IR on global society and the emerging challenges and opportunities it presents. Chapter 2 advances the discussion by highlighting the potential research avenues for applied linguists through an in-depth understanding of the human-machine interface, suggesting that this intersection is ripe with opportunities for scholarly exploration. Chapter 3 shifts the focus to the unique considerations that applied linguists should take into account within digital economies, ranging from linguistic diversity to the ethical implications of technology use. Chapter 4 builds on these concerns by emphasizing the need for ethical and responsible practices in the use of technology in CALL environments, making the case for proactive engagement with these ethical issues.

In Chapter 5, the book examines the influence of systems of power on how information and communication are regulated, proposing that these systems are deeply rooted in various levels of society and impact the way technology is governed and utilized. Finally, Chapter 6 encourages applied linguists to actively contribute to research on technology and language by engaging with scholarship, developing literacies in new technological domains, and employing effective methods for information sharing and dissemination. By synthesizing insights from these chapters, the book positions applied linguists as key players in addressing the complex dynamics of language and technology within the scope of the 4IR.

Therefore, we believe the book has presented a thorough and thought-provoking examination of the relationship between technological transformation and language, presenting insights that are of significant value to applied linguists. It examines new frontiers in language and technology across the chapters, each tackling distinct topics within this expansive field. This part aims to delve into the strengths and weaknesses of the book, providing a critical evaluation of it.

Firstly, this book stands out by offering a variety of empirical topics, perspectives, and theories on the intersection of language and technology within the context of the 4IR, making the content more comprehensive and authoritative. Regarding topic diversity, the content addresses a broad spectrum of language and technology-related subjects, such as the human-machine interface, digital economies, ethical concerns, systems of power, and the potential impact of 4IR innovations. It provides a holistic view of the subject matter, allowing readers to gain a comprehensive understanding of the complex relationship between language and technology in the digital age. The book also stands out for its diversity of perspectives, examining language and technology from the viewpoints of scholars, readers, and through both positive and negative lenses. Specifically, this book references a range of ideas put forth by scholars in the field to showcase a variety of viewpoints, thus solidifying its theoretical base and enhancing its credibility. Additionally, from the perspective of the reader, the author indicates where additional information on a particular subject may be found and invites the reader to consider the connections between various technological topics, inspiring them to delve deeply into the study of language and technology. The author also advises using critical thinking to comprehend social and linguistic challenges in society in addition to their helpful perspective, highlighting the importance of critical awareness of the relationships among technology, language, and society (Kern, 2006). When it comes to theoretical diversity, the theoretical frameworks derived from different academic backgrounds make great contributions to ongoing technological development. As the use of CALL increased over time, a variety of theories emerged to inform language education practice and innovation as well as research on the efficacy and results of technology mediated practice and communication (Thorne & Smith, 2011). This book covers

diverse theoretical perspectives to interpret and analyze the evolution of humans and technology.

Secondly, the balanced overview of the 4IR in this book is another merit. It weighs both the positive and negative impacts of technological transformation, offering readers an objective perspective on the real-world effects of the 4IR. This balanced discourse assists readers in understanding the multifaceted nature of technological advancements and their implications for society. On the optimistic side, 4IR has brought a number of cutting-edge technologies (Hameed & Hashim, 2022) and technological transformations and innovations bring exciting opportunities to advance societies in many ways. Some of the advancements include transforming the human body's potential through biofabrication (Atala & Yoo, 2015), using an AI-powered chatbot to predict the results based on given data in research work, and using digital tools to create more sustainable economies. The examples mentioned in the chapters demonstrate how technical advancements and changes can result in beneficial effects. Nevertheless, a host of potential dangers, such as social dilemmas, ethical and human rights issues (Mpofu & Nicolaidis, 2019), privacy issues and even illegal tasks, are tied to such opportunities. These dangers can be categorized into a number of different but overlapping issues in the world. For instance, ChatGPT seems particularly problematic to second language educators because it has the potential to facilitate cross-language communication among users of all skill levels, potentially depriving second language learners of vital learning opportunities (Tseng & Warschauer, 2023). These possible risks clearly demonstrate the need for applied linguists to analyze these vulnerabilities from a linguistic and communication standpoint in order to develop a thorough knowledge of 4IR changes.

Thirdly, the book is particularly valuable for applied linguists, highlighting the significant contributions they can make to the language and technology domains. It delves into how applied linguistic research can influence practice and decision-making, especially in the fields like CALL and language education. This focus underscores the vital role applied linguists play in advancing these intertwined disciplines. Considering the role of applied linguistics, the book offers a unique perspective that bridges theory and practice. Technology has already impacted human needs, communication, and social life in both positive and negative ways. On the plus side, for instance, CALL tools provide students with interactive drills, multimedia materials, and language acquisition games that can help them advance their language abilities in enjoyable and interesting ways. On the downside, an over-reliance on CALL tools without adequate supervision or moderation can result in a dependence on technology for language acquisition. This necessitates consideration of learner agency within the CALL environment, as also highlighted by Zhang and Wang (2022). These empirical themes are directly relevant to applied linguistic scholarship. Additionally, 4IR innovation, which exhibits a notable upward

evolutionary trajectory, has a considerable impact both inside and outside of academic circles. As a result, applied linguists should immediately get involved in the research on language and technology and the research needs to be done socially, linguistically and empirically. Besides, in an era of rapid technological development, applied linguists are in a prime position to engage in creative research-based activities that could aid in keeping up with the pace of current technological innovations. By identifying numerous terms, constructs and research topics like phygital, biofabrication, bots, the digital economy, human-machine interfaces, and so on, the author provides research opportunities for the future interdisciplinary study of language and technology. Also, the potential dangers that come with technological transformation mentioned in the book can conversely be viewed as opportunities to shape future language and communication research.

In addition to the significance and values listed above, the book still needs to be improved in certain areas. To begin with, despite the fact that the author suggests a few empirical questions and practical problems that applied linguists should look into and address in order to formalize the empirical agenda, they do not yet cover some of the disciplines within applied linguistics, such as natural language processing (NLP), computerized dynamic assessment (CDA), and intelligent tutoring systems (ITSs) (Son et al., 2023), to name a few. Furthermore, although the author has inserted many figures in the book to aid readers in understanding the text, the figures do not clearly and logically reflect the complicated ideas and the relationship between definitions in the book. From our point of view, adding arrows to the figures can help to further clarify the logical relationship between the ideas and definitions. Finally, while the title of the book, “*New Frontiers in Language and Technology*,” signals a focus on contemporary developments, it is imperative that the author also addresses prior research to serve as a foundational reference and a source of inspiration for applied linguists embarking on future endeavors, in conjunction with shedding light on the latest discoveries.

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