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Volume 4, Number 2, Fall 2024

URI: <https://id.erudit.org/iderudit/1115395ar>

DOI: <https://doi.org/10.7202/1115395ar>

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Publisher(s)

New Explorations Association

ISSN

2563-3198 (digital)

[Explore this journal](#)

Cite this review

Ding, L. & Hicks, S. (2024). Review of [Revisiting the Past/Reconfiguring the Future: A Distant Early Warning of Quantum Technology: A Review of Calzati and de Kirckhove's Quantum Ecology: Why and How New Information Technologies Will Reshape Society]. *New Explorations*, 4(2).
<https://doi.org/10.7202/1115395ar>

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Revisiting the Past/Reconfiguring the Future: A Distant Early Warning of Quantum Technology: A Review of Calzati and de Kerckhove's *Quantum Ecology: Why and How New Information Technologies Will Reshape Society*

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Introduction

In the forthcoming volume, *Quantum Ecology: Why and How New Information Technologies Will Reshape Society* (2024), authors Stefano Calzati and Derrick de Kerckhove offer a perspective on the potential repercussions of emerging quantum technologies informed by the illustrious legacy of the Toronto School of Communication, poststructural theorizing, and cutting-edge research into these technologies themselves. The authors warn of a coming paradigm shift vastly detached from previous models of perception formed by linguistic communication or the subsequent emergence of digital technologies. Where the volume provides an interesting approach to understanding the potential socio-technical effects of quantum technology while extending Toronto School theorizing to account for what the authors' label a new 'quantum ecology,' in doing so, there necessarily arises a number of organizational issues and, given the relative infancy of the technology, some commentary borders on hyperbole. Nevertheless, for adherents of the Toronto School tradition and readers looking to broaden their technical knowledge of developing quantum technologies, the volume under review provides a comprehensive summary of the necessary theoretical research to support the authors' overall argument; that developing quantum technologies will one day disrupt the lingual begetting digital environments in which we currently inhabit with potentially far-reaching consequences.

About the Authors

The structure and focus of the book reflects the previous work of both co-authors. **Stefano Calzati**, who according to the publishers' website, is a researcher at Delft University of Technology in the Netherlands and was previously affiliated with Tallinn University of Technology in Estonia and the City University of Hong Kong. His previous books include such volumes as *Mediating Travel Writing*, *Mediated China: The Middle Kingdom in Travel Books and Blogs* (2018) and *Beyond the Genre: Approaching Travel (and) Writing through Interviews with Authors and Bloggers* (2019). These books as well as the authors' other published work straddles the border of media, communications, and technology studies, complimenting the extensive legacy of his co-author who is well

familiar to readers of this journal.

An early collaborator with Marshall McLuhan and former director of the McLuhan Centre for Culture and Technology, **Derrick de Kerckhove** needs little introduction to readers of *New Explorations*. Nevertheless, it is worth reiterating his extensive legacy within the overall tradition given the emphasis placed on foundational tenets of media theory within the volume. Across several publications, de Kerckhove (like Robert K Logan who also worked directly with McLuhan) has introduced many necessary correctives to foundational Toronto School theorizing. From actively fighting against accusations of technological determinism (a theme that emerges in the volume under review) to incorporating more empirical and scientific approaches to the originally more philosophical media ecology tradition, de Kerckhove's work is a testament to the enduring Toronto School perspective of which the volume under review is no exception. Some noteworthy previous works include *The Alphabet and the Brain* (co-edited with Charles J Lumsden) (1988), *The Skin of Culture: Investigating the New Electronic Reality* (1997), *Connected Intelligence: The Arrival of the Web Society* (co-written with Wade Rowland) (1998), *The Architecture of Intelligence* (2001), and *The Point of Being* (co-authored with Cristina Miranda de Almeida) (2014).

Structure and Organization

The book is structured in a series of five chapters following an introduction bookended by an afterward. In the introduction, the authors provide the reader with a foundational knowledge of quantum mechanics and set the overall theoretical foundations for the subsequent chapters which more viscerally trace a shift from linguistically structured existence to ruminating on the potential for a quantum ecology diverging greatly from our contemporary digital epistemology.

Chapter 1 'Language: Alphabetics and Logographic World-Sensing' revisits foundational notions of media ecology and the Toronto School tradition more specifically, developing a framework through which we may observe the foundational epistemological implications of language for human perception from a variety of cultural viewpoints. Chapter 2 'Epistemology: Language and Data Superimposed' provides an overview of the potential compliments and tensions between lingual and digital epistemologies in the modern age, setting the stage for a dedicated discussion of quantum technologies in the subsequent chapters. Chapter 3 'Digitalization: Entangled Datacracy' immerses the reader in our contemporary world of latent "unexcited" data, referring to the contemporary "datafield" as "neither an infallible nor a fully homogenous resource. It is more of a quantified modularization of /reality/," demonstrating the emergence and copresence of quantum and digital paradigms. Chapter 4 'Politics: The Realpolitik of Quantum Fields' discusses the emerging tensions between lingual, digital, and quantum technologies, suggesting "the overlap between the language and digital ecologies provoked an epistemological crisis, the overlap between the digital and quantum ecologies (and also the language one) will likely produce an onto-epistemological crisis."

In Chapter 5 'Ecology: A Possible Quantum-Based Paradigm' the authors directly

invoke quantum concepts to demonstrate and warn of the emergence of this new paradigm. Where, as this is a review, we are choosing to leave some mystery to the volume, it is worth noting that the journey from cover to cover is one both profoundly historical and philosophical. The afterward which concludes the book, authored by de Kerckhove, is a reflection on the process of authoring the volume, but as the author notes, “Collaborating on this book has been an unusual adventure. Traveling to understand quantum physics from a nonexpert approach, we ended up, literally, at the edge of reality,” suggesting the process of completing the volume echoes the experience of reading it.

Defining Quantum/Refining Terminology

The book significantly contributes to the field of quantum ecology by applying the concept of *dispositif* as a transdisciplinary lens to explore the origins of a paradigm shift and offer guidance on navigating the evolving sociotechnical landscape. This innovative approach is likely to shape future research in the field. However, this invocation of French Poststructuralism is both a strength of the volume but does, as well, assume foundational knowledge which not all readers attracted to a book about quantum technology may possess. We feel as though a more thorough definition for some philosophical concepts would have rendered the volume more accessible overall. This is, however, a somewhat moot point as the operationalization of some more opaque concepts, in some cases, fundamentally defines the concept via its contextual usage rendering any specific definition largely redundant. Despite this slight criticism, by introducing *dispositif* into this domain for the first time, the authors explore how paradigm shifts have unfolded—from language ecology to digital ecology, and finally, to quantum ecology—across four chapters.

Overall, throughout the volume Calzati and de Kerckhove build on the idea of technology as a framing mechanism for experience, environment, and ecology, as stated, offering a clear explanation of quantum mechanics for readers without a deep background in physics. As noted, these quantum concepts are rigorously defined from the outset to aid the reader in understanding how the terminology is applied throughout the book both literally and figuratively.

Reframing the Narrative

For readers familiar with the extensive legacy of the Toronto School of Communication, the first few chapters may offer an all-too familiar story though in this case used to frame a larger historical shift in socio-technological assemblages. The primary narrative first articulated by Marshall McLuhan has been the subject of expansion, clarification, and revision well into the modern day. Where it may seem redundant to re-articulate many of the basic premises of the discipline, the authors do so to illustrate the truly radical shift in perception, that if taken to its extremes, quantum technology could potentially influence, disrupting both the world of the eye and the realm of the ear which stand foundational to linguistic and digital symbolic forms. Indeed, the diagrams on pages 18 and 20 help clarify how these technological ecologies—language, digital, and quantum—operate through an intricate interaction of actors, factors, and political, media, and ideological influences. These dynamics converge in space, time, and identity, creating a cohesive global technocultural landscape.

Rather than delving into dense physical theories, this book is instead keenly

focused on how quantum technology reshapes human communication, culture, and ultimately perception. The authors highlight key concepts such as uncertainty, decoherence, and entanglement at the ontological and epistemological levels, providing a fresh perspective on the role of quantum mechanics in future epistemologies. Their historical and comprehensive analysis connects the transitions between the eras of language, digitalisation, and quantisation (with quantum mechanics as the foundational system for other physical theories). This work stands out by introducing new potential theoretical frameworks and revised consideration of the overall narrative of human socio-technological assemblages.

Cultural Perspectives

In recent years, many correctives to the discipline of media ecology have been employed to expand the diversity of voices in the literature. Indeed, much of the Toronto School literature was composed with a primarily Western frame of mind with a particular patriarchal bent. I (Hicks) can even remember a somewhat embarrassing incident while teaching the work of Harold Innis where a student bluntly pointed out an error in Innis' understanding of Eastern history. Where scholars have made necessary changes by invoking feminist, Marxist, and other critical perspectives, the volume under review offers a somewhat surprising degree of cross-cultural perspectives proving instructive in clarifying their discussion of written expression overall.

Indeed, the authors enrich their analysis by incorporating a wide variety of cultural perspectives, including a Chinese case study focused on graphic-based writing systems. This example demonstrates their central argument of the chapter: that written forms of communication shape personal, social, and political experiences much like operating systems do. By comparing alphabetic world-sensing systems like those foundational in the West and logographic world-sensing systems as is predominant in the East, the book offers valuable insights into how different reading practices influence the interpretation of context in Western and Eastern cultures and what implications these differing epistemologies may hold in the coming era of quantum.

Conclusion

While quantum mechanics has been debated for decades, advances in technology and new knowledge are prompting a shift in how we understand reality. A paradigm shift in our ontological and epistemological views appears imminent. Although quantum mechanics is deeply entwined with natural physics and can be difficult for scholars in media and cultural studies to grasp, the authors' clear and logical writing style makes the material more accessible. By the end, readers will have developed a comprehensive understanding of the future landscape the book describes.

There may be readers fearful of the brave new world described in the volume. Hype and critique abound in the popular imagination surrounding the emergence of every new technology from ones that were once new, like the printing press, to the more recent adoption and saturation of artificial intelligence in contemporary culture. The authors, carefully avoiding any hint of technological determinism, offer a vision of a

future neither dystopian or utopian. Keeping in tradition with foundational scholarship of the field, the authors present a balanced view of perception renewed by possible quantum advancements. Nevertheless, in actual practice, quantum technology is largely still in its infancy with many practical roadblocks to the technology yet to be overcome. Moreover, traditional computers have been accused of being superior to quantum technology in some everyday applications. Thus, the volume at hand does not so much describe a landscape of the immediate future but, instead, a distant early warning of one possible future.

References

Calzati, Stefano and de Kerckhove, Derrick. *Quantum Ecology: Why and How New Information Technologies Will Reshape Society*. Cambridge and London: MIT Press, 2024.