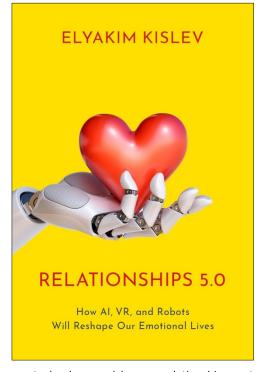Elyakim Kislev, **Relationships 5.0: How AI, VR, and Robots Will Reshape Our Emotional Lives,** Oxford, UK: Oxford University Press, 2022, 304 pp., $16.30 (hardcover).

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An efficient artificial intelligence–powered language model, ChatGPT, which first came out in November 2022 and crossed 100 million users within two months, has been the fastest growing application in history (Milmo, 2023). While some speak highly of its personalized, emotional, and humanlike conversations, as well as its unprecedented power in textual, coding, and commercial fields, others are holding more conservative and cautious attitudes toward the new rising concerns about privacy, job cuts, and ethics. How would artificial intelligence (AI), virtual reality (VR), and robots shape our future society? What do these technologies mean for our interactions and relationships, a vital part of social construction? Is there any solution to maximizing benefits while reducing possible damages?

In *Relationship 5.0: How AI, VR, and Robots Will Reshape Our Emotional Lives*, Elyakim Kislev offers a forward-looking examination of the evolving interplay between technology and human relationships, set against the backdrop of the burgeoning chatbot revolution. The book presents a detailed historical analysis, beginning with the influence of primitive tools used by hunter-gatherers in forming clans, progressing to the role of agrarian technology in shaping multigenerational family structures, and further to the industrial revolution's impact on the nuclear family. Kislev then explores the information revolution's contribution to the rise of individualism. Looking into the future, he speculates on how the next generation's advanced technologies might diversify and redefine companionships. This scholarly work encapsulates the trajectory of our emotional lives as they have developed in tandem with technological advancements across various historical epochs.

The first part of this book offers a historical overview of personal lives, exploring the evolution of the past four "relationship eras" and how technological advancements have instigated a series of social changes influencing relationship dynamics. In his exploration of the evolution of human relationships, Kislev delineates a journey from the early days of hunter-gatherers to the modern era of technology and information. He categorizes this progression into distinct stages. Relationship 1.0, characterized by the egalitarian and nonmonogamous lifestyle of early humans who lived in small groups, focused on survival with limited tools and resources. Relationship 2.0 emerged in the agricultural period, where multigenerational households formed, signifying property ownership, inheritance, and labor division, with marriages often objectifying women and outlining property boundaries. The Industrial Revolution ushered in Relationship 3.0,

where families became more nuclear and personal lifestyles prevailed over large family structures amid social changes brought by technological advancements and reduced religious influence. Finally, Relationship 4.0, influenced by the informational revolution, marks a shift toward individualism and self-actualization, challenging traditional marriage values and gender roles as education and advanced communication technologies foster new relationship dynamics. This historical arc sets the stage for understanding Relationship 5.0, where past influences and technological advancements converge to shape contemporary human connections.

In Part II, Kislev uses various examples to explore the potential for a "Super-Smart" society. With the emerging AlphaGo, Avakin Life, and Atlas, we have witnessed the fastest growth of AI, VR, and robots, which makes the cognitive, sensorial, and physical revolution once on screen come to real life.

For the cognitive revolution, Kislev posits that AI's potential to mimic human cognitive processes, such as attention mechanisms and multiple memory systems, is significantly advanced by the rapid development in neural networks, deep learning, and reinforcement learning. He categorizes interactions with AI into distinct levels. The initial level involves engaging in basic communication with AI systems, where, despite criticism for their limited understanding of nuanced human emotions, chatbots like Squirrel AI, Ryan, and Replika demonstrate natural-feeling conversations in education, healthcare, and companionship. The next level addresses the emotional impact of AI, suggesting that systems like Ellie, a virtual psychologist, can fulfill human needs for intimacy, empathy, and emotional understanding. The final level considers the development of reciprocal relationships with AI, where Kislev, challenging predominant negative perceptions, argues for the potential of such relationships. Kislev attributes the prevalent negative attitudes toward human-AI relationships to societal norms and stigmas but remains optimistic about a future shift in these perceptions, predicting an evolving landscape in human-artificial intelligence interaction.

Kislev also explores sensorial revolution and Relationship 5.0. He argues that, over the past few years, there has been a significant surge in XR (extended reality) technology, primarily exemplified by virtual reality (VR), and also encompassing forms such as augmented reality (AR) and mixed reality (MR). Both AR and VR use algorithms and devices to create virtual artifacts, and while the former focuses on altering the existing environment, the latter creates a whole new immersive one. MR is the combination of these two technologies. By making virtual plots more realistic, enabling applications to generate new content on their own, and combining different XR technologies, Kislev humorously claims that we are taking a large step toward the virtual world OASIS in the film *Ready Player One* (p. 157). He points out that XR could "identify and elicit complex human emotional experiences" (p. 165), like users of Second Life develop strong relationships in the virtual 3D world, and in another similar VR experiment, people feel guilty about their real partners when they develop relationships with a virtual avatar. Despite the concerns about the "realness" of these technologies and the potential to reduce humans' conversation skills, many people are open to this forthcoming sensorial revolution and have faith in building emotional connections with XR technology.

As for physical revolution, Kislev argued that robots can have a physically intimate attraction for people by replicating the warmth and softness of human interactions, gestures, and facial expressions. A series of studies showed that we have much more empathy and emotional connection with robots than we are willing to admit, and this relationship could be even strengthened by increasing our familiarity with them.

For example, many users refer to an AI-based robot, Vector, using the human pronoun "he" and not "it," and they also have high praise for Vector, claiming it has a personality "that just makes you happy" (p. 204). In the foreseeable future, robots are not only personal psychologists and nurses at care centers but also possible sexual partners. Although most people hold negative attitudes toward robotsexuality, many show interest in this unexplored field: developing robots tailored to specific human needs and engaging in sexual activities with robots posing a lower health risk compared to some human sexual interactions, like sexual encounters with unknown partners or transactions with sex workers. Besides, robosexuality might challenge and reshape traditional views on gender norms and sexual orientations, therefore reducing social prejudice.

This book offers a comprehensive analysis of the emerging dynamics in Relationship 5.0, delving into both its potential benefits and challenges. It uniquely highlights the risks of societal biases being mirrored in robotic behavior, privacy concerns, and the ethical dilemmas inherent in human-machine interactions. While not primarily focused on ethical philosophy, Kislev provides practical solutions, emphasizing the need for diverse robot design. Further, he advocates for advanced robotic innovations coupled with stringent legal measures to safeguard privacy. Central to Kislev's argument is the belief in human virtue; he posits that our history of empathy and compassion can guide the development of ethical and fulfilling relationships with robots, necessitating the establishment of relevant rules and regulations for a harmonious technological coexistence.

The current literature on technology and intimate relationships presents varied focuses, ranging from specific aspects of intimacy (Zhou & Fischer, 2019) to "technological empathy" (McStay, 2018), and interpretations of human-robot interactions through ideological lenses such as feminism (D'Ignazio & Klein, 2023). This book's distinctive contribution lies in its exploration of the anticipated changes in emotional relationships shaped by historical and contemporary technological advancements. It offers a holistic perspective, intertwining historical and modern contexts to understand the evolution of material and relational transformations.

While not offering a definitive answer to the age-old question of what love truly means, the author provides a pragmatic perspective on intimate relationships, arguing that love and bonding are more pragmatic and less mystical, shaped by evolutionary history rather than idealized emotions that we associate with them today. Despite some controversies, his perspective is compelling and particularly relevant in an era marked by rapid advancements in artificial intelligence technology, making this book an excellent starting point for those who find themselves perplexed by the prospects of future human-machine relationships.

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