Book Review

Many important advancements in technology have taken place over the past decade. This has had an enormous impact on our social life and the growth of our modern economies. Daniel Gerstein's (2019) *The story of technology: How we got here and what the future holds* focuses on the evolution of technology, its effects on modern society, and our future. He tells this human journey with technology in vivid and captivating detail, starting with the invention of basic tools, such as the axes, to the most lethal un-crewed drones.

This book was inspired by the kind of technological expertise that the author earned from serving in the United State's Department of Homeland Security's Science and Technology Directorate (DHS-S&T). In this context, the thesis of the book revolves around the role of technology in the early years of the 21st century and how its broad impact on the industry and society. It intended to present, in chronological order, the technological contributions to the trajectory of humankind development, which were most directly connected to his operational experience in DHS-S&T. The author asserts that both society and technology have inspired leaders to think about risks in the tracing of scientific discovery and technological advancement. Consequently, a visionary leader must direct resources to research and development with a keen eye on their pervasive impacts, in order to avoid them or address them.

The book differentiates three aspects of human knowledge which are often confused. The first is science. Science is a branch of knowledge that seeks to understand natural and certain social phenomena. Its methodology is based on extrapolating evidence derived from observation, experimentation, and analysis. The second is technology, which is often a practical application of science. It is often the collection of methods and techniques applied in a purposeful way. The term covers a whole range of human, technical endeavors. The last aspect is research and development (R&D). It is the purposeful work and research undertaken to innovate new capabilities for operational or economic reasons. R&D activities are closely associated with industrial processes. It is tied to two other areas of technical work called innovation and transformation. Innovation refers to a process of translating an idea into a good or service. It is a process of generating, promoting, or operationalizing an idea, often providing a technical

solution for a given problem. The latter refers to a comprehensive change affecting all aspects of a technical paradigm.

Additionally, the author discusses three historical trends in technological innovation:

- Dual use: technologies can serve more than one need at any given time. They can, for example, be used for military applications with lethal outcomes. They can also have ordinary civilian applications.

- Disruptive nature of technology: sometimes technology can transform an industry and create a completely new one.

- Accessibility of technology: advancements in technical means and methods of production have made important technological tools available to a growing share of the world population.

Gerstein discusses historical trends in technology and connects them with his experience at DHS-S&T to highlight how technological changes affected societies across the world and particularly the United States. He also combines academic, research, and operational experience to explain how technology is likely to develop in the future. The author also classifies the attributes of a future successful technology, highlighting the pitfalls that must be avoided to ensure its continued success. He explains the role of technological changes that were connected with his experience with DHS-S&T and his experience as a military officer. The book provides valuable information for a variety of audiences: computer scientists, innovators, engineers, educators both in vocational and regular schools and their students. While the book is accessible to a wide range of audiences, it is particularly informative for the academic and scientific community.

The author stated his fear of continuing the development of technology without wisdom or prudence. The world might have a generation adept at using technology, but one that does so without thinking about the possible harm it might engender. The essential solution for smart societies is to invest in the education of a generation of creative innovators with the foresight to avert risk in new products and create solutions to existed challenges. This would ensure that the advancement of technology is mostly for the greater good of society.

In the author's view, biotechnology, artificial intelligence computing, and mobile Internet are the three most important technological advancements in the past decades in terms of their amelioration of human life. Their impacts include finding ways to invent the appropriate tools and techniques, which ensure that technological inventions are reliable, reproducible, and accurate. One must, however, always remember that these technologies come within wide range of vulnerabilities, risks and threats, which have to be anticipated, followed and resolved.

Gerstein presents the effective role of technology in the development of human societies. The book examines the role of technology in shaping our future with a new vision. However, the close focus on the author's experience in DHS-S&T constitutes a limitation. The level of impact within this context cannot be generalized to all spheres of society, where some areas have seen a very slow change. Yet, the impacts of technological innovations in telecommunication and social media are conspicuously global. Modern society is driven by the advance and the use of technology within transportation, communication, and information technology, which has also contributed to connecting the entire world.

The author emphasizes that the future of technology has not been written yet. It is important, therefore, that the current generation carefully reconsiders the long-term impacts of technology on people's life. In all, this book provides insights into the development of science and technology and their benefits to the military field. However, it says little about other spheres of human activity such as business, health, industry, and academia. This book opens the door for a critical discussion about which one is the most valuable future technological tool.

Future books about the story of technology would need to broaden the geographical and topical scope to present a more comprehensive story of technological development. Yet, a wide range of audiences, including educators and students of technology, will find this book beneficial, rich in details, critical in its approach, and visionary in its conclusions. Its core analysis of how technology shaped our physical world, as well as our socio-political views, has implications even for ordinary readers as well.

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