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BOOK REVIEW

The Ninth Revolution: Transforming Food Systems for Good

■ Sayed Nader Azam-Ali

Singapore: World Scientific Publishing Co. Pet, Ltd, 2021.
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Azam-Ali's publication is a succinct attempt at surveying the milestones of historical food revolutions in a world historical paradigm that very few other agricultural developmental economics or history volumes attempt to do.

The book begins with a survey of the first food revolution that started about 10,000 years ago, a fateful human venture that evolved from hunting activities to growing food for human survival (p. 2). It started off with humble origins as Neolithic peoples dabbled with cultivating domesticated wild cereals and raising goats and sheep as their first farmed animals (p.5). Neolithic villages soon grew to form expansionist empires through warfare. Hydraulic empires (Agricultural Food System Revolutions 2 to 5 in this book's chronology) made possible by irrigation technologies then emerged alongside the first civilizations, driven by pressure of food trade, socioeconomic stratification/consumption, and generation of surplus for expansion of human societies (p. 29).

Readers can expect a level of historicity in this book, a narrative of the human development of agri-food cultivation. Further curiosity about the political-economic implications of traditional methods of farming, especially in terms of the developmental field, may be referred to [Hayami and Godo \(2005\)](#). This noted some of these time-honoured efficient communal irrigation techniques that could still be found in Southeast Asia, such as in Ilocos in the Philippines and Bali, Indonesia.

While the emergence of hydraulic communities was discussed in this book, the origins of the modern mass-production advanced hydraulic farmlands was not. The author characterized the Sixth Revolution as the emergence of the Green Revolution, which exerted a centripetal force on the global food

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system, resulting in increasingly homogenous diets and agri-food supply for most of humanity. The book then noted the pay-off in this exchange—monoculture in this form of cultivation resulted in a decline in biodiversity, and technology was widely utilized to augment production volumes (p. 61).

While the author included the Green Revolution in his narrative as one of the milestones in world historical agri-food development, he did not elaborate on the critiques, challenges, and problems of the revolution. The Green Revolution had its own problems with non-compatible transferability of Asian experiences to Africa (due to differing local conditions), exhaustion of yield potential from Green Revolution technologies, and supply gluts caused by the very success of the Green Revolution. This was something not extensively explained by the author. Readers may therefore turn to [Rosset, Collins, and Lapp \(2000\)](#); [Hayami and Godo \(2005\)](#); [Diagne et al. \(2012\)](#); [Shaw \(2019\)](#); and [Hurt \(2020\)](#) for this purpose.

Chronologically treating the milestone achievements in the agrifood revolution was the author's forte as it could bring the readers into a neat temporal journey into the advancement and progress of agri-food development. This book's chronology places the Green Revolution ahead of the Titanic Agrifood Revolution No. 7 with its "cheap food" paradigm and the formation of food supply chains and their accompanying production, transport/logistics, processing, packaging, storage, retail, consumption, and loss and wastes of foods while feeding most of the global populations (p. 91). The contemporary age of "cheap food" modern roots was not explained fully by the author. Readers who might have interest in this could instead refer to [Hayami and Godo \(2005\)](#), who highlighted the origins of modern food mass production from the plantation system. The age of food processing is traceable to the plantation system again, as plantation products like bananas and black tea leaves have to be machine-processed, harvested, packed, refrigerated (for bananas), and shipped off. An industrial division of labor was necessary in such sectors.

The author was careful to detail both tangible physical hardware as well as the importance of progress in intangible epistemological advancements. Besides "hardware" (processes, equipment, and infrastructure) upgrades in consecutive agriculture revolutions, the "software" of human talents and epistemological processes also need to keep pace with such physical improvements. In chapter 5, the Eighth Revolution was said to be based on global agricultural research and education, where modularization and compartmentalization of agricultural sciences emerged. The research ecosystem went beyond universities and included stakeholders like international organizations, government institutions and agencies, and non-governmental organizations. With globalization, the agricultural epistemological and academic systems had truly become global.

Finally, this book is updated and trendy in contextualizing agri-food development in contemporary concerns such as climate change, energy use / conservation and environmentalism. This is especially important as the US under the Biden Administration is making climate change mitigation its utmost national security priority and forms the only basis in which the US and China can cooperate, even as the two superpowers clash. He highlighted in Chapter 9 that Revolution No. 9 is based on transformative energy use because extractive industries have exacted high human costs on societies and communities around the world in terms of environmental, social, and governance issues, stimulating public expectations of corporate social responsibility (or CSR) behavior from the agricultural private sector. The author argues that, so far, much of human efforts are focused on restricting extraction output but the profit orientation of the global agri-food industry, proliferation of the manufacturing process (equipment and fertilizers), food processing, consumption, and preparation of foods continue to thwart these efforts (pp. 280, 281, and 284).

While the author painted an effective macro picture, he did not analyze detailed case studies. Another advantage of this book is that there is

a bit of agri-futurology in the volume. Readers are given insights into selected topics as the book projects into the future. In the near future, the author raises the dire prospects of growing more food for more people in a hotter planet, where climatic difficulties are unevenly distributed, disproportionately affecting areas that had already been hit by severe climatic conditions (p. 291). The author makes the argument that technological mechanization of food production has depersonalized humans and removed the hitherto important small-scale farmers from the system (just as the Industrial Revolution has removed artisans from the production process (p. 293). While the book pointed out the depersonalization of human workers, it did not contextualize it in terms of economic concepts like labor and production. For instance, perceived feudal and unproductive peasants are in fact far better farmers than large-scale plantations with hired (sometimes foreign) workforce as the former are micro units of the local community armed with specialized local knowledge of the land (Hayami and Godo 2005).

The book makes a persuasive argument for the promise of advanced technologies in solving contemporary farming problems. In Chapter 8, the author agrees with solutions proposed in some existing major studies. For example, the use of renewable energies, sharing of data between farming communities, using Industry 4.0 technologies to grow crops in agriculturally marginalized landscapes, using genetic knowledge to develop under-cultivated/climate-proof crop species, and localizing traditional foods to diversify regional diets around the world, are all useful in contributing toward the UN Sustainable Development Goals (or SDGs) (p. 298).

The author's enthusiasm for technological solutions can be balanced by a host of mitigating factors in favor of traditionalism and its advantages. The strength of this book lies in the longitudinal analyses of the agri-food revolution presented in a reader-friendly way without being bogged down by excessive technical details. This is seldom found

in other agri-food volumes that tend to delve into technical factors like soil conditions, climatic impacts, and other technical factors, making them unsuitable for professional trade, lay, and popular readers. At the same time, it presents specialized materials from an expert's point of view on the synchronic and diachronic chronological evolution of food revolutions, something that world historical volumes sorely lack. Another strength of the book is the illustration of interesting stories through rich case studies. For example, on page 8, the Kew Garden's depository of seeds included the rubber crop that was native to South America but was smuggled out of the continent in 1876 and planted in the then British colonies of Ceylon and Malaya where they thrived as a cash crop. It is little nuggets of information like these that fascinate both the lay readers as well as the technically competent reader to relate world events to milestones in agri-food evolution.

Readers can expect a rich tapestry of stories to provide the historical contexts behind the milestone agri-food revolutionary developments. There are no glaring flaws, and perhaps the only desire left on the readers' part, especially social scientists, is to contextualize the rich materials in developmental economics. To contextualize the materials and understand agri-food revolution in political economy and developmental economics, supplementary readings such as development economics books will help better understand the policy implications (e.g., Iversen et al. 2021; Lampietti, El Ebed, and Schroeder 2020; Barrett et al. 2019; and Voegelé 2018). For example, reading this book clarifies the innovative aspect of the Green Revolution, succinctly and aptly situated in the longitudinal evolution of food revolutions throughout history. But complementing it with further readings (i.e., on the natural resource constraints of the Green Revolution and local condition variations as a constraining factor on its universal application) will provide better understanding of the economic impacts and needed policy measures.

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