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## 書評

John Rhodes

*The End of Plagues: The Global Battle against Infectious Disease*

Palgrave Macmillan, September 2013, 256 pages

Xu Duoduo\*

John Rhodes' *The End of Plagues* takes readers on a journey through the history of vaccination, blending science, history, and human stories to show how vaccines have shaped global health. The book is not only a rich narrative of medical progress but also a valuable resource for understanding the complexities of cooperation between humans, pathogens, and the environment. It provides an essential perspective for *kyosei* studies.

The book begins with a brief prehistory of vaccines. Chapter 1, “The Power of the Invisible” introduces the historical fear of unseen forces like microbes and how humans began to understand their role in diseases. Chapters 2 and 3 delve into early pioneers of vaccination and the cultural and scientific contexts that shaped their work.

In Chapter 4, ‘Why Not Try the Experiment?’, Rhodes recounts Jenner’s groundbreaking development of the smallpox vaccine, followed by an account of the widespread adoption of vaccination and its impact on public health in Chapter 5.

Chapters 6 through 8 examine the social and ethical challenges that arose with early vaccine campaigns, such as logistical difficulties and public resistance. These chapters underscore the global nature of vaccine efforts, linking them to broader themes of trust and cooperation.

Moving into the 19<sup>th</sup> and 20<sup>th</sup> centuries, Chapters 9 and 10 chart the emergence of modern microbiology and immunology, focusing on figures like Louis Pasteur and Robert Koch. These chapters illuminate the shift from superstition to scientific understanding in combating infectious diseases.

Chapters 11 to 16 tackle landmark medical achievements, from the

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eradication of polio to the invention of the influenza vaccine. Rhodes also discusses the darker side of vaccine history, such as contamination issues and ethical dilemmas in research.

In the later chapters, Rhodes details how vaccines were mobilized during global crises, showing the interplay between science, politics, and cultural contexts. Chapter 19, 'The Final Defeat of Smallpox' offers an inspiring conclusion, celebrating the eradication of smallpox as a triumph of international collaboration.

Chapters 20 to 24 broaden the discussion to include modern challenges, such as vaccine hesitancy (Ch.21 'Benefits, Risks, and Fears'), to end the book with reflections on global interconnectedness and future possibilities (Ch.22 'Inspiration in the Global Village').

To explore these ideas further, my review below will examine the book from five different perspectives: (1) the role of vaccines in global efforts to combat infectious diseases; (2) how the concept of *kyosei* contributes to vaccine development and distribution; (3) the challenges of living together with disease in contemporary societies; (4) Rhodes' use of storytelling to illuminate scientific and social issues; and (5) the relevance of his work in addressing current and future public health challenges.

## 1. A global quest: The endless battle against plagues

As explained above, Rhodes' grand historical account traces humanity's efforts to control infectious diseases, starting with Edward Jenner's 1796 discovery of the smallpox vaccine. It highlights key developments in immunology and vaccines, such as those for polio and influenza, and the obstacles encountered, including public fear, political resistance, and the need for international cooperation. Rhodes emphasizes that fighting infectious diseases is a global effort, rooted in the collaboration between countries, scientists, and communities. This idea resonates strongly today, especially in light of the COVID-19 pandemic, which demonstrated the importance of coordinated global action.

Edward Jenner conducted his smallpox experiment in 1796. It took place in the village of Berkeley, Gloucestershire, England. As we learn from Rhodes, Jenner took material from a cowpox blister on the hand of a milkmaid named Sarah Nelmes. Then he used it to infect James Phipps, an 8-year-old boy who had never had smallpox. This simple procedure became the basis for the first vaccine (p.33). The author also covers later efforts, such as the “foundling voyages”, a method used in the early 19th century to transport smallpox vaccines to remote areas. This process involved vaccinating orphaned children and using them as “human carriers” to keep the vaccine viable during long journeys. While these voyages may initially seem harsh and utilitarian, Rhodes explains that this method was seen as a practical solution at the time, given the possibility of keeping vaccines viable over long distances. (p.49). These episodes show human ingenuity and dedication in combating diseases.

The book also vividly portrays the parallel efforts of Jonas Salk and Albert Sabin, two renowned researchers in the United States, to develop polio vaccines in the 1950s. Salk, a virologist from a modest immigrant background, developed the first effective inactivated polio vaccine. While Sabin, a medical researcher, created a live-virus oral vaccine that ultimately prevailed due to its ease of administration and longer-lasting immunity (pp.118-121). Rhodes highlights how Jonas Salk and Albert Sabin pursued different approaches to develop polio vaccines in post-World War II America. While their efforts were marked by rivalry, their contributions collectively advanced public health and ultimately led to the eradication of polio in North America. However, the Cold War era’s political tensions, such as the decision to stockpile smallpox as a potential biological weapon, serve as a reminder that distrust and geopolitical divisions can also hinder global health initiatives.

Rhodes also discusses modern challenges, such as HIV/AIDS and malaria, arguing that continued research, innovation and global partnerships are essential. In the next section, I will focus on the book from the perspective of *kyosei* in three different senses of the term: symbiosis, international

cooperation, and scientific collaboration.

## **2. Through the lens of *kyosei*: Symbiosis and cooperation**

Exploring the complex relationship between humans and microbes, this book tells how microbes can be both beneficial and harmful to humans. Some like the bacteria in our gut, are essential for our health, while others, such as the smallpox virus and polio virus, can be deadly. Vaccines play an important role in managing this balance, helping humans protect themselves from harmful microbes while coexisting with the beneficial ones. This balance supports human health and highlights the interconnected nature of living with microbes. We may call this the symbiotic aspect of *kyosei*.

Another aspect of *kyosei* is cooperation. Rhodes discusses how countries have worked together to fight diseases, showing the importance of global cooperation, such as the campaign to eradicate smallpox, where nations shared resources and knowledge globally. The WHO played a leading role in organizing these efforts, sending teams of health workers to remote areas to vaccinate people under tough conditions. This worldwide effort demonstrated how shared action can solve global health problems.

The fight against polio offers another example of international teamwork. As Rhodes mentions, researchers from different countries worked together to create and distribute vaccines. During the Cold War, Dr. Albert Sabin, the American microbiologist earlier, worked together with Soviet scientists, including Dr. Mikhail Chumakov, the head of the Institute of Poliomyelitis and Viral Encephalitis in Moscow. This collaboration made large-scale trials of Sabin's oral polio vaccine in the Soviet Union possible, an important step toward its global success. Despite the political tensions of the era, Rhodes highlights how this partnership led to major progress in fighting polio, showing that cooperation in science can overcome political divides.

## **3. Living with uncertainty: The ongoing battle of HIV/AIDS**

Sir Richard Sykes says in the Foreword to this book: “Over 3.5 billion years of evolution has developed one of the most complex systems in biology, the immune system, without which we would not exist” (Sykes 2013: XI).

This underscores the central role of the immune system in humanity’s ability to coexist with even deadly diseases. Unlike smallpox or polio, which can be eradicated through vaccines, diseases like HIV/AIDS currently lack a vaccine for full prevention or cure. As a result, humanity has had to adopt a new form of coexisting with them.

This form of coexistence where people live with the virus while managing its effects, requires a yet different type of *kyosei* — the cooperation between patients, doctors, researchers, and communities to find new treatments, support those affected, and prevent the spread of the virus. As Rhodes suggests throughout the book, diseases like HIV demand innovative approaches, global cooperation, and a commitment to supporting those most affected. This ongoing battle reflects the resilience of humanity and its ability to adapt, even in the face of profound uncertainty.

#### 4. Storytelling and addressing gaps

*The End of Plagues* by John Rhodes is a well-crafted work that skillfully combines history, science and personal stories to illuminate the development of vaccines and their profound impact on global health. Rhodes is good at mixing scientific facts with interesting stories, making the topic easy to understand and enjoyable to read. For instance, he brilliantly recounts Louis Pasteur’s groundbreaking work in 1880s on the rabies vaccine. Under immense pressure and with the odds stacked against him, Pasteur took the bold step of testing his experimental vaccine on a young boy named Joseph Meister, who had been bitten by a rabid dog. Despite the high risks involved, the treatment was successful, marking a historic milestone in medical science. This story not only highlights the scientific ingenuity required but also the personal courage and ethical dilemmas faced by researchers striving to save lives (pp.81-82).

Rhodes builds on this narrative by highlighting how unexpected discoveries can drive medical progress, a theme also discussed by Bruno Latour in his book, *The Pasteurization of France* (Latour 1988). Pasteur's work on the rabies vaccine, as Rhodes explains, was not a smooth or planned process. Instead, it was shaped by accidents, failed experiments, and valuable lessons learned along the way. Latour adds another layer to this story by showing that Pasteur's success wasn't just about his scientific skills—it also depended on his ability to connect with society and respond to its needs (Latour 1988). Both Rhodes and Latour emphasize that challenges and mistakes often lead to breakthroughs. This perspective helps readers see how resilience, adaptability, and teamwork are essential for progress in medicine, making scientific achievements like Pasteur's rabies vaccine even more inspiring.

Another important contribution of Rhodes' book is his exploration of the social and cultural factors that influence public health initiatives. He provides insightful analysis of historical vaccine resistance, such as the anti-vaccination movements in 19<sup>th</sup> century England, and discusses the challenges of introducing vaccination programs in regions with strong traditional beliefs. Rhodes emphasizes that public health workers had to engage with local communities and build trust in order to achieve successful vaccination campaigns. This focus on the sociocultural dynamics of health interventions adds depth to the book, illustrating that successful public health efforts require more than just scientific solutions; they also demand a nuanced understanding of human behavior and societal contexts.

While Rhodes thoroughly covers the successes of vaccination, he devotes less attention to the limitations and failures of vaccine development. For instance, although he touches on the challenges of creating an AIDS vaccine, he does not delve deeply into the scientific difficulties or the various strategies that are currently being pursued. This gap highlights an opportunity to investigate how humans adapt to evolving pathogens, a key theme in understanding coexistence with diseases.

Additionally, Rhodes briefly mentions vaccine resistance but does not

offer an in-depth exploration of why certain individuals or communities are skeptical of vaccines. A more detailed discussion of these ongoing challenges would provide readers with a fuller understanding of the complexities of vaccine innovation.

Nevertheless, these are areas where future research could expand on Rhodes' work, providing deeper insights into the ongoing challenges these days.

## 5. Looking ahead: Challenges and opportunities

Rhodes' *The End of Plagues* emphasizes that the battle against infectious diseases is ongoing, with new threats emerging and old ones like malaria and tuberculosis still posing challenges. Although the book was written a decade before COVID-19, its core themes remain highly relevant. Rhodes illustrates how scientific breakthroughs, like the eradication of smallpox and the development of the polio vaccine, were achieved through persistence and global cooperation. These principles were crucial during the COVID-19 pandemic and will continue to guide responses to future health crises.

The COVID-19 pandemic highlighted the power of innovation and collaboration in addressing urgent public health threats. Scientists rapidly developed mRNA vaccines in an emergent period, a breakthrough that demonstrated the adaptability of modern science. While Rhodes does not discuss mRNA technology, his focus on the importance of continuous research and the lessons of past successes provides a framework for understanding how such achievements are made.

By stressing the importance of global cooperation in combating disease, Rhodes give us a lesson which has been reinforced by the pandemic. The widespread distribution of COVID-19 vaccines relied on international collaboration, echoing the partnerships that enabled earlier triumphs in public health. His work highlights how the fight against infectious diseases is not only a scientific challenge but also a social one, requiring trust, collaboration, and shared responsibility.

Connecting past and present, *The End of Plagues* reminds readers that science must continuously evolve to meet new challenges. Rhodes' work remains a timely and relevant reflection on how humanity's resilience and unity are essential to tackling infectious diseases, offering lessons that resonate far beyond the time it was written.

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