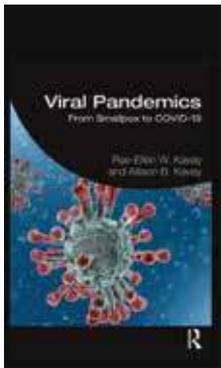


Book Reviews

David A. Bennahum, MD, and Jack Coulehan, MD, Book Review Editors



Viral Pandemics: From Smallpox to COVID-19

Rae-Ellen W. Kavey (AOA, SUNY Downstate Health Sciences University, 1972) and Allison B. Kavey (Routledge/Taylor & Francis Group, 2021, 388 pages)

Reviewed by Pascal James Imperato, MD (AOA, State University of New York, Health Sciences University, College of Medicine, 1976)

Viral Pandemics is a timely volume in which the authors discuss ten viral pandemics, including smallpox, yellow fever, the influenza of 1918, poliomyelitis, HIV/AIDS, West Nile Virus, SARS, Zika, Ebola, and COVID-19. The senior author, Rae-Ellen W. Kavey, MD, is a pediatric cardiologist and public health practitioner who has devoted much of her career to the prevention of heart disease in children. Her co-author and daughter, Allison B. Kavey, is professor of history at City University of New York, John J. College of Criminal Justice, and at the university's Graduate Center. She holds a PhD in the history of medicine from Johns Hopkins University School of Medicine. Together, they have created very comprehensive accounts of the pandemics under discussion.

Inspired by Siddhartha Mukerjee's, *The Emperor of All Maladies. A Biography of Cancer*, they begin each of their pandemic chapters with a personal narrative that establishes a direct connection to the disease under consideration. These chapters follow an introductory one that provides a foundation for a basic understanding of virology and its history. As with most of the other chapters, it is accompanied by an extensive reference list. In disease-specific chapters, a brief bibliography is also provided.

Like Mukerjee's work, *Viral Pandemics* is overall characterized by significant density in its coverage, but also textured by a course-like syllabus structure. The latter may reflect the senior author's experience in teaching undergraduate epidemiology, and an intent for the book to be used as a course text. Chapter texts are usually divided into very useful sections that often cover the disease, the virus, epidemiologic characteristics of pandemics, historical accounts, preventive measures, the development of vaccines and therapies, and a final reflective section titled, "Looking Back. Moving Forward."

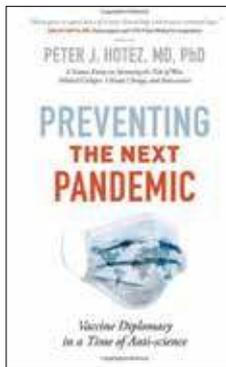
The authors have provided a discussion of the COVID-19 pandemic as thoroughly as was possible when the

book went to press. A revised edition is planned to update the COVID-19 story.

Bringing together their diverse talents, the authors have written a thorough account of the most important viral pandemics that have affected mankind. Their volume is rooted in meticulous research, a sensitive awareness of the social, economic, and historical determinants of disease, and the higher rates of morbidity and mortality in disadvantaged populations. The authors also inform their narratives with a global perspective.

The overall organization of *Viral Pandemics* speaks to its primary value as a text for courses focused on epidemiology and communicable diseases. What sets it apart from other works in these fields is its inclusive coverage of the non-biological determinants of viral pandemics, its attention to health and health care access disparities, and the unique feature of establishing personal connections to each disease. Health professional students and practitioners will find it a good read and an excellent reference.

Dr. Imperato is a member of *The Pharos* editorial board. A former Commissioner of Health of New York City, he is Distinguished Service Professor and Chief Academic Officer of the SUNY Downstate Health Sciences University. He is also Dean Emeritus and Founding Dean of Downstate's School of Public Health.



Preventing the Next Pandemic: Vaccine Diplomacy in a Time of Anti-science

Peter J. Hotez, MD, PhD
Johns Hopkins University Press
March 2, 2021, 161 pages

Reviewed by Francis A. Neelon, MD (AOA, Duke University, 2002, Faculty)

The old adage, "Don't judge a book by its cover," was never more apt than here. Peter J. Hotez's relatively brief (161 pages) jeremiad, *Preventing the Next Pandemic*, is light on "preventing" to the point of evaporation (the index lists no entries for "preventing," "prevention," or "pandemic"). But it is long on Hotez's personal experiences, with and anecdotes about, his crusade for attention to neglected tropical diseases, the remarkable role of vaccines in controlling—even eliminating—a number of human scourges (smallpox,

poliomyelitis, measles), and the potential of vaccines to control a host of neglected tropical and other infectious diseases.

Hotez emphasizes the formative influence of his two-term service as United States science envoy to Morocco, Tunisia, and Saudi Arabia. This role solidified his long-standing belief in vaccine diplomacy to unite and foster cooperation between scientists—and nations—by capitalizing on their desire to help the sick or vulnerable. He gives the example of Albert Sabin (AΩA, New York University School of Medicine, 1937, Alumnus), whose pursuit of an easily administered oral polio vaccine was hampered by the fact that Jonas Salk's (AΩA, New York University School of Medicine) killed-virus, injectable vaccine had already been shown effective and approved. A randomized trial of Sabin's vaccine would, therefore, be impossible in the U.S.

Sabin turned to colleagues in the USSR, who at the height of the Cold War, overcame enormous disparities of culture, religion, politics, and world-view to produce, test, and manufacture Sabin's vaccine. That successful collaboration was largely responsible for the global control of polio. Hotez summarizes his position on this topic with a plea to “elevate the role of science and expand vaccine diplomacy as a central element of the alliance between nations.”

Hotez traces the contemporaneous surge of previously localized (and thereby conveniently neglected) tropical diseases like leishmaniasis, schistosomiasis, malaria, hookworm infection, Chagas disease, chikungunya, dengue, Ebola, and the emergence of the novel viruses that cause SARS, MERS, COVID-19. He then compares these to actions of humans on each other and the environment in which we live. He lists the health-detrimental forces pervading our present, Anthropocene Age—war and political instability; displacement of populations, largely into urban mega-cities; poverty and its impediment to resources; climate change; and anti-science sentiments. These forces interact with each other to make disease transmission easier, and prevention or treatment more difficult.

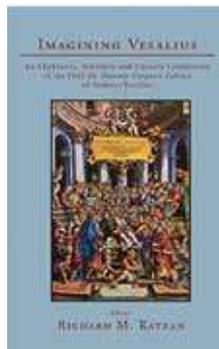
I suspect that Hotez's formulation is correct, but he provides no solutions to these intractable dilemmas. He uses a chapter to point out that it is not even possible to calculate “attributable risk,” the fraction of risk that each of those Anthropocene forces contributes to a given disease outbreak.

Hotez devotes considerable space to a prevalent populist ideology he calls “anti-science,” and its underling, “anti-vaccine.” Although Hotez claims that the anti-science movement is a “new threat to global health security and vaccine diplomacy [that] began as a fringe group in the early 2000s,” vaccination opposition dates back to Edward Jenner's inoculation of James Phipps, and probably long before.

He does make clear the enormous outpouring of personal energy, profound financial support, and skillful use of modern social media that characterize the contemporary face of this movement. How to change the hearts and minds of anti-scientists is far from clear, however. Hotez prescribes domestic vaccine-diplomacy, whereby scientists and those who label themselves as scientists make themselves freely and openly available to television and radio and media hosts (as he surely has), feeling apparently that anti-science and vaccine-denial reflect a deficiency of information, curable by large and frequent infusions of “Vitamin I.” He does not delve at all into the mind-set, motivation, or aspiration of anti-scientists, or offer any clue that merely hearing the truth from the lips of true scientists will result in any change.

Hotez provokes thought about a number of important topics, but the lack of a clear answer to the dark forces of the Anthropocene leaves a lingering aura of *mea culpa*. In the face of pervasive, cumulative human disinterest, greed and self-indulgence, how can we, the guardians, face our daughter Earth, born again tomorrow.

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Imagining Vesalius: An Ekphrastic, Scholarly, and Literary Celebration of the 1543 *De Humani Corporis Fabrica* of Andreas Vesalius

Edited by Richard M. Ratzan
The University of California
Humanities Press, 2020

Reviewed by David A. Bennahum, MD

Two extraordinary books were published in 1543, the first in *Basel* by Andreas Vesalius, and the second by Nicholas Copernicus in Nuremberg, that together ushered in the modern scientific era. Vesalius, working in Padua, published not the first anatomy of the human body, but certainly the most complete and largely correct human anatomy opening up the microcosm to scientific study. The other, and equally important was by the 70-year-old Polish priest Nicholas Copernicus of Crackow, published only

near the end of his life, *On The Revolution of the Heavenly Orbs*. Thus, Copernicus opened up the macrocosm to further exploration as Vesalius had the microcosm.

Vesalius challenged and corrected anatomy derived from animal dissection by Aristotle, classical Alexandrian anatomists and Galen. Copernicus was a priest and an astronomer who carefully observed and calculated the planetary orbits, but relied on the certainty that all heavenly motion was sacred, and, thus, circular as predicted by Ptolemy. In order to explain that the presumed circular motion of the planets required 80 epicycles if the Earth was the center of the universe, but only 48 epicycles if the sun was the center and the Earth went around the sun. This was imaginative and radical indeed and would not be confirmed until Galileo, with his newly invented telescope, discovered the moons around Jupiter and Kepler, with whom Galileo could not agree, concluded that the seven heavenly orbits were elliptical rather than circular; but what then to do with heaven and hell? A mighty challenge to the Catholic Church at the time of the Protestant Reformation.

The definition of ekphrastic is “a literary description of or commentary on a visual work of art.” Examples of ekphrasis in poetry are Homer’s description of the Shield of Achilles or Keats’s poem *Ode on a Grecian Urn*.

But why Ekphrastic? Richard Ratzan is a physician and medical humanist who had the benefit, like Anthony Fauci (AΩA, Weill Cornell Medical College, 1965) and Edmund Pellegrino (AΩA, New York University School of Medicine, 1944) of a classical education in high school and college. He writes in his forward:

I have been interested in Ekphrastic since high school when, in Gil Feldman’s class at Poly Prep Brooklyn, I first read the ekphrastic description of the shield of Aeneas in Virgil’s book 8. When I next encountered it, by reading about the shield of Achilles in James Notropoulos’s Homer class as a classics major in Trinity College here in Hartford, I was hooked on the marriage of art and words.^{p.xi}

As the author writes, *Imagining Vesalius* is an ekphrastic, scholarly, and literary celebration. He has invited four dozen, by my count, poets, writers, and scholars to write about their individual responses to the images in the fabrica. The drawings were largely done by artists in Titian’s studio, the best remembered being Calcar. The front piece shows Vesalius himself, his hand in the open abdominal cavity as though to argue that the anatomist must do the actual dissection, and around and above him in the university amphitheater is a crowd of students and surgeons

eager to see the secrets of the human body.

Courtney Davis responds to the image of the man with the shovel, imagining what he must have thought:

I am alone on this hill—they
fled when they saw all that I have
suffered, heard wind through this body Vesalius pierced
and stripped of flesh. The ravens and crows wait, my
cries fall on arid gullies and mountains, on these empty
hands and useless shovel. Pity my anguish, and help me
dig what will be my own grave.^{p.77}

For me the same image of the skeleton with a shovel too easily brings distressing memories of the killing fields of Eastern Europe, Cambodia, Rwanda and too many other places in our lifetimes.

Jenna Hale finds in the skeleton pensively pondering a skull the meaning of her turn from artist to physician:

And so I grew up to be
a doctor instead, but struggled
to find my niche until I heard
(like the voice of that skew-scribbled
bird) the field of radiology
chirp my name.^{p.83}

Vesalius was widely and rapidly disseminated in Europe. It is thought that even Shakespeare was influenced by the images in the folio, as the scene of Hamlet in the Churchyard contemplating the skull of the King’s jester Yorick suggests. Act V, Scene I, Taking the skull, Hamlet speaks:

Alas! poor Yorick. I knew him, Horatio; a fellow of infinite jest, of most excellent fancy; he hath borne me on his back a thousand times; and now, how abhorred in my imagination it is! My gorge rises at it. Here hung those lips that I have kissed I know not how oft. Where be your gibes now? Your gambols? Your songs? Your flashes of merriment, that were wont to set the table on a roar? Not one now, to mock your own grinning? quite crestfallen? Now get you to my lady’s chamber, and tell her, let her paint an inch thick, to this favor she must come; make her laugh at that. Prithee, Horatio, tell me one thing.

What’s that my lord?

Dost thou think Alexander looked o’ this fashion i’ the earth?

E'en so.

And smelt so? Pah!²

(Hamlet Act V Scene I, 200. The Oxford Shakespeare. Complete Works. Page 902)

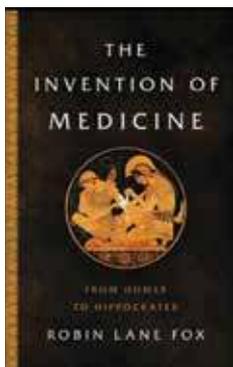
The richness of the book and the poetic and prose responses are stimulating.

If anyone is worried about the state of the humanities in medical education one has only to turn to Ratzan's book to find reassurance of the richness to be found in the medical humanities literature.

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The Invention of Medicine: From Homer to Hippocrates

Robin Lane Fox
Basic Books, New York, 2020
432 pages
ISBN: 978-0465093441

Reviewed by Jack Coulehan,
MD (AQA, University of
Pittsburgh, 1969)

The Invention of Medicine is a fascinating scholarly history of early Greek medicine, and a compelling mystery story. Robin Lane Fox gives his book the subtitle, *From Homer to Hippocrates*, which is true but somewhat misleading. Hippocrates enters the arena by page 72, and the remaining 210 pages of text are primarily devoted to him, the books attributed to him, and the practice of Hippocratic medicine. The highlight is the author's step-by-step construction of his argument that the historical Hippocrates is, in fact, the author of books 1 and 3 of *Epidemics*, based on case histories from four years of his practice on the northern Aegean island of Thasos.

The early chapters form a prologue to the dawn of Hippocratic medicine. Fox discusses doctors in the *Iliad*, who tend war wounds rather than everyday illness. He recounts that Hesiod attributed the origin of illness to Pandora (a woman, of course!) who, "took the lid off her jar and out flew countless diseases..."^{p30} And he draws the reader's attention to bits and pieces of textual and archeological evidence of early Greek medical practice; for example, in Herodotus' *Histories*, the story of Democedes, a physician from southern Italy active at the court of the Persian emperor Darius sometime after 520 BCE.

The Greek classical era is said to begin around 480 BCE, at the end of the Persian Wars. Historians, both ancient and modern, identify two major centers of medicine during this period: Cos, an Aegean island close to the shore of Ionia, or modern Turkey, and Cnidus, a polis located on a mainland peninsula very close to Cos. Physicians from these centers were called Asclepiads, and they practiced a naturalistic form of medicine that focused on the human body and its relationship with nature, rather than supernatural intervention. They also were the earliest Greek physicians to write books about the theories and practices of their profession.

Only one of these books, *On the Nature of Man*, presents the complete "four humors" theory of illness, but many others express the belief that internal "juices and fluids" influence health.^{p104} In addition, several books include explicit ethical guidelines or rules. For example, in *Precepts*, we find, "But whenever there is an occasion for ministering to someone who is a stranger and without means, particularly assist such people. For whenever love of man is present there is also love of the craft."^{p105}

Who wrote these texts and when? As a group, they have been associated with Hippocrates of Cos, at least since the scholar Baccheios of Alexandria, writing in the 280s BCE, attributed them to him. The Roman physician Galen (circa 170 CE) considered them products of a Hippocratic "school," but believed they were written by many different authors, including in some cases, the great Hippocrates himself. Scholars today accept this general framework, specifying, based on the evidence, that none were written earlier than 450 BCE or later than 300 BCE.

Robin Lane Fox singles out the *Epidemics* for special consideration, as did the ancient commentators. Seven of the nine books in the *Epidemics* contain case histories, mostly of patients from Thessaly, northern Greece, or Macedonia. In four of these books, the patients almost all reside in Thasos, a northern Greek island in the Aegean. Although the ancients agreed that the texts described medical practice according to Hippocratic principles, their

physician-authors traveled from polis to polis, practicing for a time in each place, rather than settling down, but none practiced anywhere near Cos. In the mid-second century CE, on the basis of style and content, Galen divided the seven books into three clusters written at different times by different physician-authors, a scheme still largely accepted by modern scholars.

Books 2, 4, and 6 were written by a physician who practiced in northern Greece during the tumultuous final decade of the Peloponnesian War, 414 BCE to 404 BCE. Galen believed that books 5 and 7 were composed much later by a physician named Hippocrates (not the real one) who served in Alexander's army from 327 BCE to 310 BCE. However, modern scholars place their composition in the 350s BCE.

According to Fox, books 1 and 3 of the *Epidemics* provide us with our closest glimpse of Hippocrates himself. The texts exhibit a number of unifying features. They present illness as a seasonal phenomenon related to climate and the weather. The case histories rely on precise observation, rarely include treatment, and often specify a "critical" day on which the outcome depends. They include probable cases of mumps, tuberculosis, malaria, typhoid, and liver cancer, as well as many conditions like "burning heat" difficult to retro-diagnose. The texts present mental symptoms as part of patients' syndrome on a par with physical signs. The physician-author never mentions the gods or their possible intervention in episodes of illness. Finally, their author writes in the first person "I" throughout. While some of these features appear elsewhere in the Hippocratic corpus, nowhere do they appear so prominently, and all together.

The author presents case histories of patients he cared for over a period of four years, primarily on the island of Thasos. But which four years? Based on textual references confirmed by history and/or archeology, Fox presents a sophisticated argument that the cases occurred between 471 BCE and 467 BCE, which is about a half century earlier than the more orthodox view. Fox then proposes that the writer of books 1 and 3 may well have been Hippocrates himself.

Our only reasonably secure dates in Hippocrates' life are references to him in two of Plato's dialogs. In a conversation that took place in the 430s BCE, Plato indicates that Hippocrates is from Cos and "someone could go to him and pay him a fee and learn medicine from him."^{p73} A fictitious biography of Hippocrates by an unknown first century CE author claims that the physician was born on a specific date in 460 BCE, but many aspects of the text are fanciful and there is no reason to accept the birth year as accurate. If, instead, Hippocrates was born in 500 BCE or the following

decade, it is quite possible that the young physician could have practiced on Thasos in the 460s BCE, wrote *Epidemics* 1 and 3, and by the mid-430s had retired to teach on Cos.

Continuing his focus on *Epidemics* 1 and 3, Fox explores contemporary medical practice (i.e. mid-5th century BCE) throughout the Greek world and the influence of these seminal texts at the time and later. The conclusion in a nutshell: there is some awareness of Hippocratic medicine, but not much. The great tragedians consistently portray healing as a function of divine intervention. The historian Herodotus, who would have been in his twenties when the writer of *Epidemics* 1 and 3 was practicing on Thasos, shows no evidence of familiarity with Hippocratic texts, but Thucydides, writing a generation or two later, may have encountered them. Unlike Herodotus, he never attributes illness or healing to the gods, is familiar with the concepts of contagion and acquired immunity, and presents his political case histories with the same concision and detail that appear in the medical histories of *Epidemics* 1 and 3. Subsequently, "The vast majority of Greek doctors...continued on their erratic way, refusing to read and preferring to propose impressive, but useless, remedies. Nonetheless, there are traces of influence from the *Epidemics*"^{p291} in various documents and inscriptions.

Fox has written a compelling history of early Greek medicine. Its highpoint is the author's carefully reasoned hypothesis that Hippocrates wrote the texts we now know as books 1 and 3 of the *Epidemics*, based on his practice experience in Thasos between 471 BCE and 467 BCE. Other parts of the *Epidemics* were written by physicians up to several generations later who emulated Hippocrates' naturalistic approach. The works identified as the "Hippocratic corpus" were grouped together as early as the 280s BCE as representing the school of Hippocrates because of their naturalistic, pragmatic, and ethical contents, even though they sometimes promoted contradictory theories. Hence, we have the famous School of Cos. Hence, we have a fascinating book.

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