

Agar, Jon, *Science in the Twentieth Century and Beyond*

Cambridge: Polity Press, 2012. Hardcover; 256 pages;

RRP AUD\$57.95; ISBN 978-0-745-63469-2

The pre-eminent scientist, Carl Sagan once said; “somewhere, something incredible is waiting to be known.” These words ring true when one thinks about modern science and the great advancements we have made for humanity over the twentieth and twenty-first centuries. Jon Agar’s book, *Science in the Twentieth Century and Beyond* has been touted as the book historians of modern science have been waiting for. Agar offers a broad and insightful overview of the vast historical literature on twentieth and early twenty-first century contemporary science, and at the core of Agar’s thesis is the importance of warfare and the United States in the development of modern science. Agar’s work attempts to lay out the evolution of science during a very hectic century and, no doubt, he would have had difficulty in selecting what to include and what to exclude.

Agar has written a clear and comprehensive work and he acts as an invaluable and informative guide throughout the, often complex, journey of scientific evolution. Agar is very ambitious, covering a period of over a hundred years in which the growth of science has been exponential. So much has happened in the sciences over the past 112 years. Penicillin, for example, was not available to civilians until after the Second World War. Quantum mechanics, the Big Bang Theory, the special theory of relativity, radiocarbon dating and the publication of the human genome sequence are all a part of twentieth century science.

Agar has taken on a huge task in researching and disseminating the science of the twentieth century and he does so skilfully and engagingly. Agar's central argument is that science solves the problems of working worlds. He suggests that working worlds are arenas of human projects that generate problems. Written in chronological order and broken into five parts, Agar commences by looking at the continuity between the nineteenth and twentieth centuries. At the core of this book is the reminder that science is a way of approaching problems, questioning areas surrounding these problems and applying reason to get some understanding of the problem so that we can begin to explain it. Agar very aptly argues that the power of science lies in its ability to abstract and manipulate representations relevant to working world problems.

Agar takes his reader on an exciting journey through the decades, starting with the development of physics; Rontgen's x-rays, Curie's radioactivity and Planck and Einstein's theories of relativity. Mendel's theory of inheritance is argued to have been 'rediscovered' by the problem of eugenic good breeding and the need for improvements in agricultural productivity. Agar delves into the world of psychology and psychoanalysis, adeptly drawing parallels between the working worlds of human science, which he argues led to the administration of institutions, such as the asylum, schools and the army. The need to fight infection was also increasingly important in the twentieth century and Agar argues that immunology developed out of the bacteriology of the nineteenth century, allowing science to move beyond the laboratory to more practical solutions.

Agar spends a large part of the book surveying the science of a world in conflict. Agar shows, with great skill and expertise, that the great problem-posing processes of the 20th century were its wars. The two world wars and the cold war increased spending on science, changing its organisational basis, its political setting and its subject matter: Nazi science, Soviet science and post-war science are all discussed in great detail. The Cold War, according to Agar, shaped scientific agendas in specialties as diverse as physics, oceanography, computer science and psychology. Agar also makes a connection between the working world problems of imperial and colonial nations, such as tropical medicine and ecology, and he further highlights the shifting of power from Europe to the United States in discussing Hubble's observations and by stressing the importance of scientist-entrepreneurs.

One could gather that with countries such as China and India spending more on research and development that they will have a different set of priorities compared to the United States. If we employ Agar's argument then their very different priorities will likely help to shape the direction of science in the coming years. A history of a subject as big, broad and diverse as twentieth-century science is a major achievement. Agar has expertly arranged the relevant research and made it accessible to the public. This book should be required reading for all students of the sciences.

Louise Baker
Monash University