

The Origins of Modern Science

The Origins of Modern Science is the first synthetic account of the history of science from Antiquity through the Scientific Revolution in many decades. Providing readers of all backgrounds and students of all disciplines with the tools to study science like a historian, Ofer Gal covers everything from Pythagorean mathematics to Newton's *Principia*, through Islamic medicine, medieval architecture, global commerce and magic. Richly illustrated throughout, scientific reasoning and practices are introduced in accessible and engaging ways with an emphasis on the complex relationships between institutions, beliefs and political structures and practices. Readers gain valuable new insights into the role played by science both in history and in the world today, placing the crucial challenges to science and technology of our time within their historical and cultural context.

Ofer Gal is Professor of History and Philosophy of Science at the University of Sydney and has been teaching the history of science for over a quarter century. He has won numerous prizes and has published monographs, edited volumes and articles, especially about early modern physical sciences, but also on global knowledge, eighteenth-century chemistry and various philosophical issues.

Cambridge University Press
978-1-316-51030-8 — The Origins of Modern Science
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The Origins of Modern Science

From Antiquity to the Scientific Revolution

Ofer Gal University of Sydney



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University Printing House, Cambridge CB2 8BS, United Kingdom
One Liberty Plaza, 20th Floor, New York, NY 10006, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi – 110025, India
79 Anson Road, #06–04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781316510308

DOI: 10.1017/9781108225205

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First published 2021

Printed in the United Kingdom by TJ Books Limited, Padstow Cornwall

A catalogue record for this publication is available from the British Library.

ISBN 978-1-316-51030-8 Hardback

ISBN 978-1-316-64970-1 Paperback

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Note from the Publisher

This book attempts to introduce to its readers major chapters in the history of science. It tries to present science as a human endeavor – a great achievement, and all the more human for it. In place of the story of progress and its obstacles or a parade of truths revealed, this book stresses the contingent and historical nature of scientific knowledge. Knowledge, science included, is always developed by real people, within communities, answering immediate needs and challenges shaped by place, culture and historical events with resources drawn from their present and past.

Chronologically, this book spans from Pythagorean mathematics to Newton's *Principia*. The book starts in the High Middle Ages and proceeds to introduce the readers to the historian's way of inquiry. At the center of this introduction is the Gothic Cathedral – a grand achievement of human knowledge, rooted in a complex cultural context and a powerful metaphor for science. The book alternates thematic chapters with chapters concentrating on an era. Yet it attempts to integrate discussion of all different aspects of the making of knowledge: social and cultural settings, challenges and opportunities; intellectual motivations and worries; epistemological assumptions and technical ideas; instruments and procedures. The cathedral metaphor is evoked intermittently throughout, to tie the many themes discussed to the main lesson: that the complex set of beliefs, practices and institutions we call science is a particular, contingent human phenomenon.

The wide scope and varied audience of this book required sacrificing footnotes for the sake of fluency – not without some professional anxiety – and I provide exact references only for direct quotations. The place of referencing within the text is taken by a list of Suggested Readings at the end of each chapter, and the book's main resources are in the "Secondary Sources" part of these. For any factual error I bear full responsibility. The "Primary Texts" listed in the Suggested Readings are easily accessible, English translations of sources from the period or theme discussed. For the instructor, they should serve as suggestions for tutorial readings; for the student, they present an exercise in the interpretation of texts remote in place and time. The discussion questions are offered to help the instructor in preparing for tutorials, and the reader may find in them clues to the main insights that the story attempts to convey.

Acknowledgements

This book is a tribute to the intellectual value of university teaching, and in that, indebted to almost everyone whose classroom I attended over the years – formally or informally, literally or figuratively. This assembly of scholars far too large to reconvene here, so beyond the authors of the works populating the book’s reading lists, I will have to directly thank only those from whose scholarship I have benefited directly, as my immediate teachers or colleagues: Rivka Feldhay, Sabbetay Unguru, J. E. McGuire, Peter Machamer, Bernard Goldstein and the late Marcelo Dascal belong to the former category; Alan Chalmers, John Schuster, Hanan Yoran, Ohad Parnes, Daniela Helbig, Dominic Murphy, Victor Boantza, Snait Gissis and especially Raz Chen-Morris – to the latter. Victor volunteered to serve as a scientific editor at the very last stage of writing, saved me some serious factual embarrassments and forced me to shorten sentences and sharpen arguments.

With some scholars I have not had an opportunity to study in an official setting, but still consider my teachers: Hal Cook, Ben Elman, Dan Garber, Tony Grafton, Simon Schaffer and the late Sam Schweber. For the very idea of a bold yet careful account of *science*, wide ranging but rich with details, I am the venerating disciple of the people who first taught me such courses: the late Amos Funkenstein and Yehuda Elkana. I am still in awe at their erudition, depth and intellectual courage.

Blessed as I have been with the intellectual support for this book, for which Hagar and Yi provided an essential (if sometimes unwitting) foundation, it would still not have come into being without the professional and dedicated help of the people at Cambridge University Press: Lucy Rhymer, Lisa Pinto, Maggie Jeffers, Sophie Rosinke and Charlie Howell, to whom I am deeply grateful. Many librarians went out of their way to help assemble the book’s images, and among those I owe special thanks to Tom Goodfellow of Sydney University Library and Urte Brauckmann and her team at the Max Planck Institute for the History of Science in Berlin.

But first and foremost, this book is indebted to the graduate students who have served as my tutors throughout the years in Sydney. The weekly meeting with them has always been the most intellectually exciting hour of the week. Alan Salter taught me history of medicine, and Ian Wills the history of

technology. James Ley is my teacher of classical thought and many matters pedagogical, and Kiran Krishna of all things medieval. Jennifer Tomlinson, who helped me tremendously by editing early versions and gathering exciting images, also forced me to find the voice of women – especially that of Jane Sharp. Sahar Tavakoli joined her with instruction about early modern midwives and Megan Baumhammer about the power and mysteries of the visual. To Ian Lawson I owe my understanding of the delicate balance of instruments and their environs and to Claire Kennedy – the fascination with maps. Arin Harman, a visitor from better rooted disciplines, was my master of pedagogical smooth sailing, and Nick Bozic contributed a powerful philosophical mind. Paddy Holt taught me all I know about the Royal Society; to Laura Sumrall I owe whatever insight I have into magic and Cindy Hodoba-Eric retaught me early modern natural philosophy. Cindy also contributed skills, intelligence and passion without which the book would never have been completed: editing for style and content; gathering images and copyrights; designing and drawing complicated diagrams.

It is the joy of working with my tutors that I try to capture in this book, and it is dedicated to them.

Cambridge University Press
978-1-316-51030-8 — The Origins of Modern Science
Ofer Gal
Frontmatter
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