

Ptolemy And The Foundations Of Ancient Mathematical Optics A Guided Study

This historical survey covers 3 centuries from the invasion of Egypt by Alexander the Great to the death of Cleopatra VII (320-30 BC). From their base in Egypt, the Ptolemies created the most powerful empire in the eastern Mediterranean.

This is a collection of essays examining the period of transition between Persian and Greek rule of Judah, ca. 400-200 BCE. Subjects covered include the archaeology of Maresha/Marisa, Jewish identity, Hellenization/Hellenism, Ptolemaic administration in Judah, biblical and Jewish literature of the early Greek period, the size and status of Jerusalem, the Samaritans in the transition period, and Greek foundations in Palestine.

Describes how astronomers through the ages came to discover different aspects and properties of the universe, from Ptolemy to the discovery of dark matter in the 1930s, and how modern scientists are still exploring it.

Smith was translating Ptolemy's Optics into English when the idea arose to create a general, text-based study of Greek mathematical optics, and so he used the first as a springboard for the second. He argues that though the Greek procedures for studying light, especially reflection and refraction, seem similar to the modern ones, the ancient ray theory is very different in conceptual and methodological foundations and fundamental aims. Annotation copyrighted by Book News, Inc., Portland, OR

Ptolemy was the creator of the longest lasting of the Hellenistic kingdoms. He created a state

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whose cultural importance was unparalleled until the coming of Rome. He encouraged the erection of the Pharos Lighthouse, one of the seven wonders of the ancient world, as well as creating a library which eventually contained the greatest collection of books until relatively recent times. Ptolemy's institution of higher learning, the Museum, gave birth to the greatest advancements in science before the seventeenth century of our own era. In this work, the first biography of Ptolemy in any language, Professor Ellis charts Ptolemy's extraordinary achievements in and beyond Egypt in the context of the fragmentation of Alexander's enormous empire and the creation of the Hellenistic state.

Recurrent questions about space have dogged philosophers since ancient times. Can an ordinary person draw from his or her perceptions to say what space is? Or is it rather a technical concept that is only within the grasp of experts? Can geometry characterize the world in which we live? What is God's relation to space? In Ancient Greece, Euclid set out to define space by devising a codified set of axioms and associated theorems that were then passed down for centuries, thought by many philosophers to be the only sensible way of trying to fathom space. Centuries later, when Newton transformed the 'natural philosophy' of the seventeenth century into the physics of the eighteenth century, he placed the mathematical analysis of space, time, and motion at the center of his work. When Kant began to explore modern notions of 'idealism' and 'realism,' space played a central role. But the study of space was transformed forever when, in 1915, Einstein published his general theory of relativity, explaining that the world is not Euclidean after all. This volume chronicles the development of philosophical conceptions of space from early antiquity through the medieval period to the early modern era. The chapters describe the interactions at different moments in history

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between philosophy and various other disciplines, especially geometry, optics, and natural science more generally. Fascinating central figures from the history of mathematics, science and philosophy are discussed, including Euclid, Plato, Aristotle, Proclus, Ibn al-Haytham, Nicole Oresme, Kepler, Descartes, Newton, Leibniz, Berkeley, and Kant. As with other books in the series, shorter essays, or Reflections, enrich the volume by characterizing perspectives on space found in various disciplines including ecology, mathematics, sculpture, neuroscience, cultural geography, art history, and the history of science.

The Islamic scientific tradition has been described many times in accounts of Islamic civilization and general histories of science, with most authors tracing its beginnings to the appropriation of ideas from other ancient civilizations--the Greeks in particular. In this thought-provoking and original book, George Saliba argues that, contrary to the generally accepted view, the foundations of Islamic scientific thought were laid well before Greek sources were formally translated into Arabic in the ninth century. Drawing on an account by the tenth-century intellectual historian Ibn al-Nadim [macron over i] that is ignored by most modern scholars, Saliba suggests that early translations from mainly Persian and Greek sources outlining elementary scientific ideas for the use of government departments were the impetus for the development of the Islamic scientific tradition. He argues further that there was an organic relationship between the Islamic scientific thought that developed in the later centuries and the science

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that came into being in Europe during the Renaissance. Saliba outlines the conventional accounts of Islamic science, then discusses their shortcomings and proposes an alternate narrative. Using astronomy as a template for tracing the progress of science in Islamic civilization, Saliba demonstrates the originality of Islamic scientific thought. He details the innovations (including new mathematical tools) made by the Islamic astronomers from the thirteenth to sixteenth centuries, and offers evidence that Copernicus could have known of and drawn on their work. Rather than viewing the rise and fall of Islamic science from the often-narrated perspectives of politics and religion, Saliba focuses on the scientific production itself and the complex social, economic, and intellectual conditions that made it possible.

From its inception in Greek antiquity, the science of optics was aimed primarily at explaining sight and accounting for why things look as they do. By the end of the seventeenth century, however, the analytic focus of optics had shifted to light: its fundamental properties and such physical behaviors as reflection, refraction, and diffraction. This dramatic shift—which A. Mark Smith characterizes as the “Keplerian turn”—lies at the heart of this fascinating and pioneering study. Breaking from previous scholarship that sees Johannes Kepler as the culmination of a long-evolving optical tradition that traced back to Greek antiquity

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via the Muslim Middle Ages, Smith presents Kepler instead as marking a rupture with this tradition, arguing that his theory of retinal imaging, which was published in 1604, was instrumental in prompting the turn from sight to light. Kepler's new theory of sight, Smith reveals, thus takes on true historical significance: by treating the eye as a mere light-focusing device rather than an image-producing instrument—as traditionally understood—Kepler's account of retinal imaging helped spur the shift in analytic focus that eventually led to modern optics. A sweeping survey, *From Sight to Light* is poised to become the standard reference for historians of optics as well as those interested more broadly in the history of science, the history of art, and cultural and intellectual history.

Unlike the Seleukid's the Ptolemies did not at first glance create numerous eye-catching cities.

Ptolemy II Philadelphus, second Macedonian king of Egypt (282-246BC), captured intellectual high ground by founding the Alexandrian Library and Museum, and cemented celebrity status by bankrolling his courtesans' endeavours in Olympic chariot-racing. In this book scholars analyse a range of key aspects of Philadelphus' world.

A timely examination of the ways in which sixteenth-century understandings of the world were framed by classical theory.

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Geography of Claudius Ptolemy, originally titled Geographia and written in the second century, is a depiction of the geography of the Roman Empire at the time. Though inaccurate due to Ptolemy's varying methods of measurement and use of outdated data, Geography of Claudius Ptolemy is nonetheless an excellent example of ancient geographical study and scientific method. This edition contains more than 40 maps and illustrations, reproduced based on Ptolemy's original manuscript. It remains a fascinating read for students of scientific history and Greek influence. CLAUDIUS PTOLEMY (A.D. 90- A.D. 168) was a poet, mathematician, astronomer, astrologer, and geographer who wrote in Greek, though he was a Roman citizen. He is most well-known for three scientific treatises he wrote on astronomy, astrology, and geography, respectively titled Almagest, Apotelesmatika, and Geographia. His work influenced early Islamic and European studies, which in turn influenced much of the modern world. Ptolemy died in Alexandria as a member of Greek society.

Studies the interrelation of sight, touch, and the imagination in ancient and medieval Greek theories of perception and cognition.

A new reconstruction and edition of the Placita of Aëtius (ca. 50 CE), arguably the most important work of ancient doxography covering the entire field of natural philosophy. Accompanied by a full commentary, it replaces the seminal edition of Herman Diels

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(1879).

Claudius Ptolemy, one of the greatest scientists of all time, probably lived in Alexandria in the second century A.D. His writings dominated astronomy and cosmology in medieval times. The replacement of his Earth-centered cosmology by the Sun-centered cosmology of Copernicus is the most celebrated event in the history of science. Yet, although there has been much scholarly discussion of the mathematical aspects of Ptolemy's astronomy, little attention has been paid to the philosophical, and particularly the ethical, ideas which animate the astronomy. Ptolemy's Universe is the first modern examination of Ptolemy's thought as a whole, and its place in Greek intellectual culture. This easy-to-follow book offers a statistico-geometrical approach for dating ancient star catalogs. The authors' scientific methods reveal statistical properties of ancient catalogs and overcome the difficulties of their dating originated by the low accuracy of these catalogs. Methods are tested on reliably dated medieval star catalogs and applied to the star catalog of the Almagest. Here, the dating of Ptolemy's famous star catalog is reconsidered and recalculated using modern mathematical techniques. The text provides necessary information from astronomy and astrometry. It also covers the history of observational equipment and methods for measuring coordinates of stars. Many chapters are devoted to the Almagest, from a preliminary analysis to a global statistical processing of the catalog and its basic parts. Mathematics are simplified in this book for easy reading. This book will prove invaluable for mathematicians,

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astronomers, astrophysicists, specialists in natural sciences, historians interested in mathematical and statistical methods, and second-year mathematics students. Features:

The Greco-Roman mathematician Claudius Ptolemy is one of the most significant figures in the history of science. He is remembered today for his astronomy, but his philosophy is almost entirely lost to history. This groundbreaking book is the first to reconstruct Ptolemy's general philosophical system—including his metaphysics, epistemology, and ethics—and to explore its relationship to astronomy, harmonics, element theory, astrology, cosmology, psychology, and theology. In this stimulating intellectual history, Jacqueline Feke uncovers references to a complex and sophisticated philosophical agenda scattered among Ptolemy's technical studies in the physical and mathematical sciences. She shows how he developed a philosophy that was radical and even subversive, appropriating ideas and turning them against the very philosophers from whom he drew influence. Feke reveals how Ptolemy's unique system is at once a critique of prevailing philosophical trends and a conception of the world in which mathematics reigns supreme. A compelling work of scholarship, Ptolemy's Philosophy demonstrates how Ptolemy situated mathematics at the very foundation of all philosophy—theoretical and practical—and advanced the mathematical way of life as the true path to human perfection.

Claudius Ptolemy (c.100 - c.178 AD), of Alexandria, was one of the greatest

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philosopher/scientists of the ancient world. Among his books are the Almagest, Geography, Optics, Planispherium and Tetrabiblos. The earliest surviving version of Tetrabiblos is the paraphrase attributed to Proclus the Philosopher (412-485). Tetrabiblos (literally, "four books") was long thought to be a complete survey of Greek astrology. Recent research suggests this not to be the case, but Ptolemy's work remains the foundation of western astrology. In particular, his persuasive use of the Tropical Zodiac, rather than the Sidereal, changed western astrology forever. Book 1 of Tetrabiblos defines various technical terms and supplies other information needed by the astrologer. Chapters 9, 10 and 11 detail the influence of fixed stars in various constellations. Book 2 is the astrology of nations and their rulers. Books 3 & 4 are devoted to Natal Astrology. Book 3, chapter 2, explains Ptolemy's method of rectifying the Ascendant. Chapter 10 gives a method for determining life expectancy. Book 4 deals with wealth, rank, employment, marriage, children, death, etc. Published editions of Tetrabiblos traditionally include extracts from the Almagest (a compendium of Greek astronomy), as well as "Ptolemy's Centiloquy," a list of aphorisms, the authorship of which is disputed. Many of the 100 deal with horary astrology. They have been studied by astrologers for centuries. Translations: Gardner (1911) lists four English translations of Tetrabiblos. The first was by John Walley, 1701. The second was Walley's translation, edited by Sibley and Brown, 1786, which is said to be worthless. The third, by James Wilson (author of the famous Dictionary of Astrology), was published in 1820.

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The fourth (this one, by far the best), was by J.M. Ashmand, 1822. A fifth translation was made in 1940 by F.E. Robbins. Of these several translators, only Ashmand could claim to be both a Greek and Latin scholar as well as an experienced astrologer. We are honored to present Ashmand's translation to a new generation of students. Ashmand's dedication is to Sir Walter Scott (1771-1832), author of *Waverley*, an historical novel about the Scots rebellion of 1745. To Ptolemy's text, Ashmand adds his own preface, as well as a note on Mr. Ranger's Zodiacal Planisphere. Every serious astrologer, from the 3rd century to the present, has studied the *Tetrabiblos*. With the current revival of traditional astrology, it remains essential reading.

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The Ptolemaic and Seleucid empires are usually studied separately, or else included in broader examinations of the Hellenistic world. This book provides a systematic comparison of the roles of local elites and local populations in the construction, negotiation, and adaptation of political, economic, military and ideological power within

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these states in formation. The two states, conceived as multi-ethnic empires, are sufficiently similar to make comparisons valid, while the process of comparison highlights and better explains differences. Regions that were successively incorporated into the Ptolemaic and then Seleucid state receive particular attention, and are understood within the broader picture of the ruling strategies of both empires. The book focusses on forms of communication through coins, inscriptions and visual culture; settlement policies and the relationship between local and immigrant populations; and the forms of collaboration with and resistance of local elites against immigrant populations and government institutions.

Oxford Studies in Ancient Philosophy is a volume of original articles on all aspects of ancient philosophy. The articles may be of substantial length, and include critical notices of major books. OSAP is now published twice yearly, in both hardback and paperback. 'The serial Oxford Studies in Ancient Philosophy (OSAP) is fairly regarded as the leading venue for publication in ancient philosophy. It is where one looks to find the state-of-the-art. That the serial, which presents itself more as an anthology than as a journal, has traditionally allowed space for lengthier studies, has tended only to add to its prestige; it is as if OSAP thus declares that, since it allows as much space as the merits of the subject require, it can be more entirely devoted to the best and most serious scholarship.' Michael Pakaluk, Bryn Mawr Classical Review

This edited book collects papers on latest research conducted in the Red Sea area

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within the wider context of the Mediterranean and the Indian Ocean connection from prehistory to the contemporary era

When Rome defeated the forces of Antony and Cleopatra and annexed Egypt, the rule of the longest-lived of the Hellenistic dynasties and one of the most illustrious in Egyptian history came to an end. For nearly three hundred years, the Macedonian dynasty known as the Ptolemaic had controlled Egypt and its mixed population of Egyptians, Greeks, Macedonians, and Jews. The founder of this dynasty, Ptolemy I (367-283/2 BC), was a boyhood friend and eventually personal bodyguard of Alexander the Great, who fought alongside Alexander in the epic battles that toppled the Persian Empire, and brought about a Macedonian Empire stretching from Greece to India. After Alexander's death, his senior staff carved up his vast empire, with Ptolemy gaining control of Egypt. There he built up his power base in Egypt, introduced administrative and economic reforms that made his family fabulously wealthy, and by extending Egypt's possessions overseas founded an Egyptian Empire. In addition to his political and military prowess, Ptolemy was an intellectual, who patronized the mathematician Euclid, wrote an important account of Alexander's campaign in Asia, and established the famous Library and Museum at Alexandria, which were the cultural heart of the entire Hellenistic Age. Ptolemy ruled Egypt until he died of natural causes in his early eighties. Ian Worthington's *Ptolemy I*--the first full-length biography of its kind in English--traces the life of Ptolemy from his boyhood to his reign as king and pharaoh of

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Egypt. Throughout, he highlights the achievements that profoundly shaped both Egypt's history and that of the early Hellenistic world. He argues that Ptolemy was by far the greatest of Alexander's Successors, and that he was a conscious imperialist who even boldly attempted to seize Greece and Macedonia, and be a second Alexander.

This is the first systematic presentation of Hellenistic astrology to the modern astrological world, and as such it uncovers rigorous techniques that have been lost to us for centuries. How exactly did ancient astrologers assess a chart for fame, career, and parents, love, and happiness? This book surveys ancient depictions of planets, affiliations between the planets and the zodiac, lots, houses or places, aspects, orientality, and fixed stars. The final chapters survey predictive systems used by ancient astrologers. Ancient natal and predictive techniques are applied to the charts and lives of over forty well-known historical and contemporary figures. Students and professional astrologers will find this book a treasure of astrological insight, technique, and new interpretative possibilities. Not only will you gain knowledge of how ancient astrologers practiced their trade, but you will also have new tools that apply to modern life.

Richard A. Fazzini has inspired and mentored many scholars of Egyptology through his tireless efforts as curator and then chairman of the Brooklyn Museum's Department of Egyptian, Classical and Ancient Middle Eastern Art (ECAMEA); field archaeologist of the Pricinct of Mut at Karnak; scholar; and teacher, The 35 contributions to this volume in his honor represent the

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variety of Professor Fazzini's own research interests namely in ancient Egyptian art, religious iconography, and archaeology, particularly of the New Kingdom, Third Intermediate Period, and Late Period. Reflections on Professor Fazzini's scholarship and teaching are accompanied by an extensive bibliography of his works.

Ptolemy's *Almagest* is one of the most influential scientific works in history. A masterpiece of technical exposition, it was the basic textbook of astronomy for more than a thousand years, and still is the main source for our knowledge of ancient astronomy. This translation, based on the standard Greek text of Heiberg, makes the work accessible to English readers in an intelligible and reliable form. It contains numerous corrections derived from medieval Arabic translations and extensive footnotes that take account of the great progress in understanding the work made in this century, due to the discovery of Babylonian records and other researches. It is designed to stand by itself as an interpretation of the original, but it will also be useful as an aid to reading the Greek text.

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