
Science in the Medieval Hebrew and Arabic Traditions by Gad Freudenthal

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This book is a collection of 16 articles that appeared in the period 1986–2002 and were written by Gad Freudenthal, Senior Researcher of the Centre National de la Recherche Scientifique (CNRS). He has worked for 23 years in Paris-Villejuif at the Centre d’Histoire des Sciences et des Philosophies Arabes et Médiévales, once directed by the well known scholar of Medieval Arabic science Roshdi Rashed and now by Régis Morelon. Freudenthal is also the founding editor of *Aleph: Historical Studies in Science and Judaism*, the first journal devoted to all aspects of the history of Jewish science from Antiquity to the 20th century.¹

These articles collected in this volume have appeared in various languages: 11 in English, three in French, and two in Hebrew—the last two are here translated into English by the author himself. Some of the articles have been published in well known journals specifically devoted to the history of science (*History of Science, Arabic Sciences and Philosophy*, and *Micrologus*). Some appeared first in collections of essays mostly concerning the history of Medieval Jewish science: a volume on physics, cosmology, and astronomy from 1300 to 1700 [Unguru 1991]; a collection of studies on Levi ben Gershom edited by Freudenthal himself [1992]; a volume on Maimonides as a physician, scientist, and philosopher [Rosner and Kottek 1993]; and a book on Medieval Hebrew encyclopaedias of sciences and philosophy [Harvey 2000]. Other articles have been published in journals and volumes generally devoted to Jewish studies: the proceedings of the Tenth

¹ The fifth volume [2005], published by the Hebrew University of Jerusalem and the Indiana University Press, has just appeared.

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World Congress of Jewish Studies held in Jerusalem in 1989 (published in 1990), the Israeli journal *Qiryat sefer*, and the French journal *Revue des études juives* (where the articles by Freudenthal were printed in the period 1989–1991). Finally, four articles have appeared previously in volumes and journals generally concerning philosophy and history of philosophy in general and do not involve directly either the history of science or Jewish culture: the proceedings of the Eighth International Congress of Medieval Philosophy, organized by the Société Internationale pour l'Étude de la Philosophie Médiévale (SIEPM) in Helsinki in 1987, the two-volume *Routledge History of Islamic Philosophy* [Nasr and Leaman 1996], and the journals *Phronesis* and *Revue de métaphysique et de morale*.

The authors whose doctrines about science and, more generally, philosophy are mentioned and discussed in these articles occupy a wide range of space (from Iraq to Egypt, Greece, Spain, France, and even Germany) and time (from early Antiquity to the late Middle Ages). Among them there are, in approximately chronological order: the Greek philosopher Anaximander, who lived in the sixth century BC;² the Medieval Islamic philosophers Abū Naṣr al-Fārābī (870–950), Avicenna (980–1037), and Averroes (1126–1198); the 10th-century Jewish theologian Saadia Gaon (882–942) and the better known 12th-century Jewish philosopher Moses Maimonides (1138–1204); the 14th-century Provençal Jewish ‘philosopher-scientist’ Levi ben Gershom (Gersonides, 1288–1344), who is sometimes connected to a number of other minor Jewish authors active in the same period and milieu; the Spanish Jew Shem Tov Ibn Falaquera (1225–*ca* 1295) and the Provençal Jew Levi ben Abraham ben Ḥayyim (1240–*ca* 1315), authors of some of the best known Medieval Hebrew encyclopaedias of science and philosophy;³ two Castilian Jewish philosopher and scientists, Avner of Burgos (first half of the 14th century) and the lesser known Joseph Ibn Naḥmias (15th century) who was the author of an astrological work, *Light of the World*.

² This article is the only one not devoted to the Medieval Arabic and Hebrew scientific traditions.

³ The section of Levi ben Abraham’s encyclopaedia devoted to cosmology and creation was published recently in an annotated critical edition by Howard Kreisel [2004].

The various articles here collected by Freudenthal fall into three groups. The first two articles are devoted to ‘socio-cultural considerations’ about Medieval Jewish science: Why and how in the 13th to 15th centuries European Jews, active in Spain, Provence, and Italy, studied such sciences as logic, astronomy, mathematics, and physics, but—according to Freudenthal—were apparently not so interested in subjects like alchemy? Why did some Jewish authors, who saw themselves as the defenders of the Jewish religious tradition, oppose the study of sciences? In articles 3–10, the author concentrates on some of the above mentioned Medieval Jewish authors of scientific works, in particular on Gersonides: he has cleverly seen him as a ‘solitary genius’ of 14th-century Jewish philosophy, who gave to it a new scientific basis (physics, instead of theology) and anticipated some aspects of modern science—he even proposed a sort of proto-microscope, the first in European science [348]). Finally, articles 11–16 are devoted to an issue much studied by Freudenthal, the Greek theory of matter in pre-Socratic philosophy, in Aristotle’s works [see also Freudenthal 1995], and after Aristotle (e.g., in Stoicism), as this theory was interpreted in its various ‘reverberations’ in Medieval Arabic and Jewish authors such as Saadia Gaon, Avicenna, Averroes, and others.

As should be clear from the above outline, this collection is a very impressive piece of learning; and I recommend it to all readers of *Aestimatio* interested in the history of science in general, and the study of different scientific themes in Medieval Arabic and Jewish sciences in particular. The articles published in this book are but a selection of the papers that Gad Freudenthal has devoted to these themes. Between 1976 and 2005, he has published 57 articles (in some cases in collaboration with other scholars and researchers), eight collections of essays, and two books, covering *ca* 1800 pages—to list only his works devoted to different aspects and authors of the history of science from ancient Greece to contemporary Europe. Of course, readers who find this volume of interest should also consult these papers—and this might also stimulate the author to prepare a new collection of his papers which do not appear here.

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