

The Birth of Scientific Controversies: some epistemological and logical consequences

Hassan Tahiri

(Department of Philosophy, Université de Lille 3, France)

By using the latest results in nonmonotonic logic and in the history of science, this paper is aiming to make the three following points:

1. Historical: to challenge the received view concerning the history of astronomy according to which the Copernican revolution is the starting point of the scientific revolution. Recent researches in the history of astronomy, however, linked the Copernican system to the works of the 13 and 14th centuries Arabic eastern astronomers known as the Maragha school whose aim was to find countermodels to the Ptolemaic system.
2. Epistemological: new historical facts show that the development of astronomy is due to controversies originated in the Arabic tradition indicating a major shift in scientific practice. In a previous paper, I showed that the elements on which the models of the Maragha astronomers were built were provided by the work of the eleventh century Arabic physician and mathematician Ibn al-Haytham. Furthermore Ibn al-Haytham's epistemological work */al-Shukuk/* (or */Doubts about Ptolemy/*), in which he challenges the underlying assumptions of the */Almagest/*, inaugurates a new way of doing science since it represents the first controversy in the history of science. The analysis of a */miniature/-example* will illustrate the structure of Ibn al-Haytham exposition of the controversy, this follows the style of what later has been formalized as disputations or obligations with Ptolemy as a proponent and Ibn al-Haytham as an Opponent. More generally, scientific controversies can be seen as the driving force behind the development of science.
3. Logical: to introduce some formal concepts, based on the fundamental idea of nonmonotony, for the general treatment of scientific controversies. The aim is to develop a logical framework to be used as an instrument in understanding the development of scientific theories by refining the analysis of the different levels of argumentation.