

London Ancient Science 2007 – Abstracts.

Session 1 - The Study of the Heavens.

Dr. Dirk Couprie (Independent Researcher)

Firmament or Heavens? The Revolution of Ancient Greek Cosmology

I will present, with many pictures, some of the highlights of a book I am preparing on the transition from the archaic world-picture to the cosmology of the ancient Greeks. I will give some examples of astronomy on a flat earth, such as the riddle of the tilted celestial axis, and I will let you predict Thales' solar eclipse. Anaximander was a pivotal thinker, who originated a new world-picture by blowing up the archaic firmament. The Presocratics, Plato, and Aristotle completed this new picture, but re-introduced the firmament again. We had to wait until 1576 AD, when Thomas Digges broke through this sphere as well by drawing an infinite universe.

Dorian Greenbaum (Warburg Institute)

Astrology as a Stochastic Art

The dictionary definition of 'stochastic' relates it to conjecture, a kind of informed guessing. Modern connotation of 'stochastic' finds it linked to statistics, probability and random values. But the roots of this word show interesting connections to both the art of aiming, and to divination: a stochastes is a diviner. The verb from which 'stochastic' comes, stochazomai, means to aim or shoot at, and so implies the art of archery. Stochastic arts in the ancient world included both medicine and rhetoric. Can we classify astrology as a stochastic art? This paper will explore astrology as an art of aiming and conjecture, and look at evidence of stochastic ways of thinking by ancient astrologers.

Dr. Jonathan Ben-Dov (University of Haifa)

The Dead Sea Scrolls and the History of Astral Sciences

The finds from Qumran on the shores of the Dead Sea (ca. 2nd cent BCE – 1st cent CE) shed light on the history and transmission of astral sciences in Antiquity. Jewish apocalyptic circles have adopted the astronomical teaching of the highly influential Babylonian compendium MUL.APIN and related texts, while adapting it to their ideological needs. Somewhat later texts from Qumran attest to early forms of zodiacal astrology. These texts belong to the Hellenistic tradition but betray signs of the earlier Babylonian tradition. Finally, a sundial found at Qumran does not comply with contemporary Hellenistic sundials, and thus may attest to a different astronomical school. As many efforts are dedicated in recent scholarship to trace the route and methods of transmission of Babylonian science to the west, the Dead Sea scrolls should be taken in consideration. Situated in time between Hipparchus and Ptolemy, the scrolls open a window to the westward transmission of Babylonian science, demonstrating the translation and acculturation of that knowledge.

Session 2 - Near Eastern Science

Dr. Micah Ross (REHSEIS Research Group, Paris)

Theon and Censorinus' discussion of the Egyptian calendar

A comparison of Theon and Censorinus' discussion of the Egyptian calendar with re-evidence.

Dr. Annette Immhausen (Cambridge University & Johannes Gutenberg University)

Transmission of mathematical knowledge from Mesopotamia to Egypt: The case of the pole-against-the-wall-problem.

The pole-against-the-wall-problem is usually cited as proof for the transmission of mathematics from Mesopotamia to Egypt. It occurs in two Mesopotamian mathematical texts and in the Demotic Cairo mathematical papyrus on the back of the Hermopolis legal code. This talk will compare the individual examples of this problem, analyse how the underlying arithmetics may have influenced the procedures, and attempt to place the problem in its respective context.

Jennifer Gray (Durham University)

Late Babylonian Goal Year Texts and their relationship to other Babylonian astronomical texts.

Late Babylonian astronomers made nightly observations of planetary and lunar phenomena. From these observations, methods were developed for predicting future occurrences of the same phenomena by identifying periods, known as Goal Year Periods, over which the phenomena occur on roughly the same date in the Babylonian calendar. The methods of making these predictions are not explained in any Babylonian source. In this talk I will investigate the relationship between the Babylonian astronomers' Goal Year texts and their compilations of predictions through a comparison of records in the various texts, specifically those which record dates of planetary phenomena and distances of planets from stars

Session 3 - Music, Mathematics and Science**Sebastian Moro (Royal Holloway College, London)**

The place of music in Proclus' philosophical system

Since music was considered by the Neoplatonists as one of the four mathematical sciences, in our order of exposition we will follow the derivation of number. The triad, the quaternary and the hebdomad, were considered by Proclus as "demiurgic numbers" and these numbers have musical implications. We shall consider first a triadic classification of music and see how music contains all the levels of reality according to the intermediary status of the mathematical. After that, we will consider the quaternary division of sciences in connection with the derivation of the geometrical dimensions from the unity. The four mathematical disciplines (quadrivium) together with the three disciplines of language (trivium) conform a hebdomad that corresponds to the seven planets. Music has a particular place in this arrangement and also a unifying role in the whole, because it joins all the levels together in the "Harmony of the Spheres" composed of seven musical notes.

Dr. Massimo Raffa (Liceo Classico "Impallomeni", Milazzo)

Music and Astronomy in Ptolemy's Harmonica

As is very well known, music theory and astronomy are closely linked to each other in ancient scientific thought. This paper aims at analysing how such a closeness is accounted for in Claudius Ptolemy's Harmonica, perhaps the most important and complete source on ancient Greek music theory. Particular attention is paid on one hand to the relationship between Ptolemy's treatise and Plato's influential work, on the other hand to some technical aspects of the analogies and parallels Ptolemy draws between astronomical patterns and musical systems in the third book of his Harmonica.

Denise Sumpter (Imperial College London)

Theon Of Alexandria, Mathematics and Virtue In Late Antiquity.

Overall, ancient mathematicians did not comment at length regarding their perceptions of and approaches to their work – for example, Euclid. However, we do have sources from which much can be learnt about ancient perceptions of mathematics — both those of the general populace, and of the specialist. The introductory chapter to Theon's Commentary on Ptolemy's Almagest can tell us much about how mathematics and astronomy were approached and perceived in late antiquity; it illustrates something of how commentators viewed their work, their audiences, and reasons for pursuing their studies. This discussion will focus upon Theon's understanding of mathematics as a means to virtue. The extent to which Theon viewed mathematical study as necessary for virtue on various levels, and in differing ways, will be explored, along with how his perception relates to other late antique presentations.

Session 4 - Aristotle and Epicurus.

Alex Bellamy (London School of Economics)

Aristotle's laws of inertia and of gravity

"In 1962 the publication of one of Newton's previously unpublished scientific papers revealed he held Aristotle affirmed his first law of motion. If correct, this overturns the traditional history of Newton's alleged anti-Aristotelian inertial-dynamics revolution, the Scientific Revolution. I argue Newton was essentially right, that traditional proofs that Aristotle denied the law of inertia are all logically mistaken, and that the traditional thesis that Aristotle held bodies have a 'natural' resistance to all motion mistakes his virtually omni-directional gravitational resistance of sublunar bodies to 'violent' motion for some non-gravitational 'inertial' resistance of all bodies to all motion. This 'Newtonian' analysis of Aristotle's dynamics enables reconstructing the emergence of Newton's as a two millennial evolution of Aristotelian dynamics, contrary to traditional revolutionist and Kuhnian methodological accounts of its emergence that at worst telescope it into the 17th century, attributing it wholly to physicists such as Kepler, Galileo, Descartes and Newton himself, or at most into the preceding three centuries

Prof. Heleen Pott (Erasmus University, Rotterdam)

Aristotle's Theory of Emotions Revisited

Aristotle's Rhetoric contains the first detailed analysis of a number of individual emotions in Greek philosophy. In his account, appraisals and evaluations play an important role. 'Emotions such as anger, pity, fear, ...change people with respect to their judgments' according to Aristotle (1378a19-22). Quite a number of emotion theorists - among them Nussbaum, Sorabji, Sherman -

claim him as the first philosopher to support a cognition-first approach in emotion theory. In my paper I will argue that this claim is one-sided and that Aristotle's discussion of the cognitive emotions cannot be regarded as providing us with his final view on the subject.

Attila Németh (Royal Holloway College London)

Epicurus on self-awareness

Epicurean hedonism, in spite of the criticism aimed at Socrates by many prominent Epicureans, seems to have had something importantly common with Socratic ethical intellectualism: self-knowledge as the condition for proper moral conduct. According to Epicurus, “the natural source of virtues”, *phronesis*, is a cognitive state by which we can understand the real characteristics of our desires and, hence, obtain pleasures by the satisfaction of our natural-necessary desires which are good *simpliciter*. As rational, autonomous agents, we also pay attention to our *pathe*, and we acquire such information that primarily only serve as signs for further inference, awaiting further witnessing or counter-witnessing by subsequent evidence, by our *prolepseis* and general knowledge. But we do not only register our *pathe* to sort out our desires and calculate the consequences of their satisfaction according to their immediate utility, but we also take into account long-time effects and further consequences concerning ourselves. In this sense, *pathe* do not necessarily provide us only with, so to say, automatic impetus for choice and avoidance, but are also the things, which ignite us to become aware of ourselves, and to understand ourselves. There is strong evidence that Epicurus entertained the idea of self-awareness and the awareness of the external realm within the framework of one's *pathe* in Book 25 of *On Nature*, and although the evidence is very fragmentary, I attempt to reconstruct his explanation.