

## London Ancient Science Conference 2008 - Abstracts

### **Micah Ross (REHSEIS Research Group, Paris) – Evidence for Macrobius' 'Egyptian' cosmology.**

In his commentary to Cicero's "Dream of Scipio," Macrobius described a planetary cosmology which he attributed to Egyptian astronomers. Scholarly tradition has either followed credulous repetition of the story or skepticism. No other sources, Egyptian or otherwise, explicitly describe the same account. The fact that Macrobius wrote at the beginning of the fifth century has cast doubt on the validity of his portrayal. If Macrobius' "Egyptian cosmology" is adopted as a working hypothesis, handful ancient texts – some currently unpublished – may be better explained. Notwithstanding these correlations, Macrobius remains a difficult source. Whether Macrobius faithfully reported a true cosmology or erroneously preserved a mathematical construct is unclear. Moreover, the ultimate origin of this computational technique remains unclear but the system was repeated in a variety of contexts.

### **John Steele (Brown) – Shadows in Babylonian astronomy.**

The early cuneiform astronomical compendium MUL.APIN contains a section which relates the length of the shadow cast by a gnomon to the time after sunrise. Neugebauer (1947) discovered the mathematical rules underlying this scheme, and proposed that the scheme incorporated a ratio of the length of the longest to the shortest daylength of 3:2. However, this proposal has been criticized by other scholars on the grounds that the 3:2 ratio does not appear until much later in cuneiform sources. In this paper I will reanalyze the shadow scheme in MUL.APIN and compare it with other cuneiform sources that discuss shadow lengths in an attempt to better understand how shadow lengths were treated in Babylonian astronomy.

### **Jennifer Gray (Durham) - Late Babylonian planetary predictions and the changing length of the year.**

Astronomers during the Late Babylonian period developed several methods for predicting future planetary and lunar events. One such method, known as the Goal-Year method, is based on the planets' periodic motions; that is, the fact that planetary events can be observed in patterns which repeat time and time again. This means that, eventually, events observed in one year which related to a particular planet will occur on or around the same dates a certain number of years in the future. The number of years after which events recur (known as a Goal-Year period) can be deduced for each planet, and the events expected to occur in a particular year will then be those which had been observed during the year one Goal-Year period in the past. However, a complication of this method is that Babylonian years are not a constant length. The Babylonian calendar inserts intercalary months into certain years and so Babylonian years can have either 12 or 13 months. So, when employing Goal-Year methods of prediction, it is important to know whether events will take place in the same month in the predictions year as in the observations year, or if events will be expected a month earlier or later due to the positioning of the intercalary months. The talk will use records from the Babylonian astronomical texts, along with theoretical calculations of planetary events, to address two questions:

- i. Looking at theoretical data, how often will the month need to be corrected when making predictions using Goal-Year methods, and what pattern is there to when the corrections are necessary?

ii. What evidence is there from the astronomical texts about how the Babylonian astronomers applied these corrections? Is there any evidence for how they kept track of which months needed correcting and which did not?

**Andrew Gregory (UCL) – The Derveni Papyrus and Early Greek Science.**

The Derveni papyrus was discovered in 1962, as a carbonized scroll in a tomb. It is a treatise on an Orphic poem which deals with the birth of the gods. The papyrus dates to around 340 BCE, the work it contains to around a century earlier. This paper will investigate what the Derveni papyrus has to say about the origins and nature of the cosmos and relate that to the development of Greek thinking about the origin and nature of the cosmos in the fifth and fourth centuries BCE. One interesting issue is whether the Derveni papyrus envisages an end to this cosmos and the creation of a subsequent cosmos.

**Javier Beneitez (Cambridge) – Logos, Otherness and Theory of Homonymy in Aristotle.**

I would like to elucidate some controversies on the **Aristotelian theory of homonymy** in connection with my own research about Otherness (differences between human beings: man/woman, Greek/barbarian) as first step to study Aristotelian issues about *logos* (thinking) and *psyche* (soul). The theory of homonymy is present when Aristotle discusses the relation between individual and the city, the *polis*. In accordance with this, in *Politics* I, Aristotle says that a man is not a man if he is not a part of a *polis*. A man that is not a citizen or does not act as a citizen (for instance, because he has been enslaved) is only man by homonymy. The citizen is only part of a whole, the *polis*, and the citizen when he has opportunity to be a citizen, that is to say, acting like such citizen, is an instrument, tool or function of his own *polis*. Aristotle has the same instrumental conception in relation with slaves. In *Eudemian Ethics* he writes that a tool is a sort of inanimate slave. Slaves provide a proper Aristotelian instrumental concept thanks to the fact that a slave is a sort of animate tool. Christopher Shields has recently discussed on these Aristotelian speculations in his book *Aristotle* (Routledge, 2007). This researcher has suggested that the form of homonymy appealed to here requires that a human being not in a polis is not really a human being at all. Here we come to the nub of the problem Aristotle's view of strict or proper humanity. Shields' argument seems perverse in this respect that Aristotle never draws an ontological point of view. Aristotle admits that someone who does not belong to a polis is more like a beast or a god, but that means that he still exists as a living being. The touchstone in that sense is the famous passage in Aristotle's *Politics* I, in which the Greek word *logos* is linked not only with speech but also with thought and morality.

**Alex Bellamy (LSE) – Aristotle's law of inertia: a reply to critics.**

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 paper replies to some questions raised about this issue in the previous London Ancient Science Conference.

**Paul Ranford (UCL) – From Celestial Commentaries to Medieval Dynamics.**

Using relatively new and accessible material drawn from Richard Sorabji's 'Philosophy of the Commentators' project, this presentation undertakes a re-examination of the theories of sublunar dynamics that arose from John Philoponus' attacks on Aristotle's theory of the aether. It also re-assesses (1) accepted historical conclusions on the likely pathways of transmission of Philoponus'

theories to medieval Latin Europe, and (2) the extent to which Philoponus' extension of sublunar dynamical theories to the celestial sphere influenced the development of supralunar physics by medieval and early modern thinkers.

### **Michael Champion (KCL) – Christians and Neoplatonists on the Eternity of the World: Creation out of Gaza**

Proclus' (c. 410-85) arguments for the eternity of the world sparked a debate in late-antique Neoplatonism and Christianity on cosmology. Novel ideas about matter, the uniformity of physical laws, the concept of infinity and the contingency or necessity of the world were explored. This paper analyses the little-studied contribution of three late fifth-century Gazan Christians. By insisting on God's freedom and sovereignty, they argue for passive matter and the contingency and uniformity of the cosmos. They introduce themes later developed by Philoponus (in e.g. *Contra Proclum*) and provide evidence for how Christian conceptions of nature helped to change ancient science, drawing on accepted Neoplatonic arguments.

### **Lydia Wilson (Cambridge) – Genres of Galenic Pedagogical Texts.**

This paper explores ideas of genre in using, teaching and translating Galenic material. Specifically, I look at the effect of the summaries of Galen, made by the medical professors of Alexandria in Late Antiquity, on a wider Arabic philosophical tradition. The method of learning by summaries versus learning from their originals was debated for centuries, with implications for the teaching of other subjects and consequently also the production of many texts from other disciplines. And so I ask: what are the implications of the translation of *genres*, rather than *content*, on intellectual activity? The example of Galen in exploring these issues is exemplary for many reasons: the summaries were widespread; there are varying accounts of their origins in Alexandria, their role and their transfer to the Arabic tradition; finally, they came to be seen not only as medical textbooks but also as "summaries", i.e. examples of a generic form. I suggest a possible link between the Galenic summaries of Late Antiquity and a 10th century philosophical text, *The Enumeration of the Sciences*, by Al-Farabi: how Farabi read Galen, I argue, affected how he wrote philosophy.