

Thursday 1 June 2006

9.00 to 12.00

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HISTORY AND PHILOSOPHY OF SCIENCE (1)

**Classical Traditions in the Sciences**

**Before you begin read these instructions carefully:**

*Answer **four** questions: answer **one** question chosen from **Section A** and **three** questions chosen from **Section B**.*

*Begin each answer on a separate sheet.*

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## Paper 1: Classical Traditions in the Sciences

### SECTION A

- 1 Was paper or print more important to the development of the sciences?
- 2 Did patronage help or hinder scientific discovery and communication?
- 3 How helpful is the notion of 'science' to historians of pre-modern periods?

### SECTION B

- 4 **Either** (a) Who practised science in ancient Mesopotamia and ancient Egypt? What were their motives?  
**Or** (b) 'Ancient investigators were more concerned with prediction than with experimentation'. Discuss, in relation to the study of the heavens in any TWO ancient cultures.
- 5 'The ancient Greek obsession with axiomatic-deductive mathematical demonstration is an historical anomaly'. Do you agree?
- 6 How useful are the terms 'pure' and 'applied' when discussing the sciences in the ancient Mediterranean world?
- 7 Ancient authors employed various styles and formats to present their ideas about the natural world. Did such choices matter?
- 8 **Either** (a) How was ancient science mobilised for political ends by the 'Abbasids and their opponents?  
**Or** (b) To what extent is it meaningful to talk about 'science in the service of Islam'?
- 9 What do the *Rasa'il Ikhwan al-Safa'* (Epistles of the Holy Brethren) tell us about 'popularisation' of the sciences in medieval Islamic civilisation?
- 10 What was the difference, if any, between astronomy and astrology before 1600?
- 11 **Either** (a) In what ways did the 'new philosophers' of the seventeenth century regard their arts of discovery as an improvement on classical traditions of invention?  
**Or** (b) What kinds of mechanisms encouraged the transmission of classical traditions in the sciences in the early modern period?
- 12 Did European natural philosophers study God or Nature?

END OF PAPER

Wednesday 31 May 2006      9.00 to 12.00

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HISTORY AND PHILOSOPHY OF SCIENCE (2)

**Natural Philosophies: Renaissance to Enlightenment**

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## Paper 2: Natural Philosophies: Renaissance to Enlightenment

### SECTION A

- 1 How did natural history change between 1650 and 1800?
- 2 What was the difference between magic and science?
- 3 Did early modern natural philosophers create a new history for the sciences?

### SECTION B

- 4 ‘The most important instruments of the seventeenth and eighteenth centuries were those associated with particular individuals’. Do you agree?
- 5 Compare and contrast the views of the nature and roles of the sciences held by the Jesuit missionaries and by their interlocutors in China.
- 6 Was Newton the last of the magicians?
- 7 Discuss the significance of privacy and publicity in early modern experimental philosophy.
- 8 How did eighteenth-century natural philosophers aim to recruit interest from their audiences?
- 9 ‘A nation of Newtons and Lockes became a nation of Boultons and Watts’. Is this a helpful summary of the sciences in eighteenth-century England?
- 10 What natural objects were most valued by European collectors before 1800? Why?
- 11 **Either** (a) How did the Linnaeans attempt to change natural history? Were they successful?  
**Or** (b) Why were eighteenth-century theories of natural classification developed?
- 12 **Either** (a) Was the magnet an emblem of experimental and occult philosophies?  
**Or** (b) ‘The West Indies [would] never have been discovered if the use of the mariner’s needle had not first been discovered’ (FRANCIS BACON). Why was navigation important for Enlightenment sciences?

END OF PAPER

Friday 2 June 2006 9.00 to 12.00

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HISTORY AND PHILOSOPHY OF SCIENCE (3)

**Science, Industry and Empire**

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### Paper 3: Science, Industry and Empire

#### SECTION A

- 1 How did the laboratory sciences change during the nineteenth century?
- 2 How did nineteenth-century scientists argue for state support of the sciences?
- 3 ‘By one of those familiar conjunctions in which the inanimate world baits the mind of man when he pauses in moments of suspense, opposite Knight’s eyes was an imbedded fossil standing forth in low relief from the rock. It was a creature with eyes. The eyes, dead and turned to stone, were even now regarding him. It was one of the early crustaceans called Trilobites. Separated by millions of years in their lives, Knight and this underling seemed to have met in their death’ (THOMAS HARDY, *A pair of blue eyes*, 1873). Discuss.

#### SECTION B

- 4 Describe some of the places where nineteenth-century men of science and the public met each other. How was science affected by these encounters?
- 5 ‘Spiritualism must be rescued from the quacks and impostors who have appropriated it’ (WILLIAM CROOKES, 1871). Why did many Victorian scientists consider psychic phenomena important research topics?
- 6 How and why did the sea-side become important to Victorian naturalists?
- 7 **Either** (a) Why did nineteenth-century German universities cultivate scientific research?  
**Or** (b) To what extent did nineteenth-century observatories and laboratories come to resemble factories?
- 8 ‘The study of Nature makes a man at last as remorseless as Nature’ (Dr Moreau, in H.G.WELLS, *The Island of Dr Moreau*, 1896). What does this tell us about the changing public image of the man of science?
- 9 ‘I am not independent, and must not be too proud; if I cannot be a naturalist with a fortune, I must not be too vain to take honourable compensation for my trouble’ (JOSEPH HOOKER writing to WILLIAM HOOKER, 1843). How did the emergence of professional science affect participation in nineteenth-century scientific research?
- 10 What problems have historians faced when studying the pursuit of science under the Nazis?
- 11 ‘The term “scientific instrument” was developed in the nineteenth century by curators, historians, dealers, authors of tariff regulations and officials of exhibitions and patent offices’. Is this important for the understanding of the uses of instruments in that period?
- 12 What was the significance of relativity theory in British physics before 1919?

END OF PAPER

Saturday 3 June 2006 9.00 to 12.00

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HISTORY AND PHILOSOPHY OF SCIENCE (4)

**Metaphysics, Epistemology and the Sciences**

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## Paper 4: Metaphysics, Epistemology and the Sciences

### SECTION A

- 1 'Scientists need philosophy like birds need ornithology'. Discuss.
- 2 Is the structure of scientific explanation the same in all sciences?
- 3 Could the epistemology of science itself be a science?

### SECTION B

- 4 **Either** (a) Does causal over-determination refute the counterfactual analysis of causation?  
**Or** (b) Are laws of nature merely simple and pervasive patterns?
- 5 What are the prospects for a reductionist general justification of testimony?
- 6 Is 'knower' a social status?
- 7 Is adaptive thinking a reliable inferential method?
- 8 **Either** (a) Is the concept of innateness useful in science?  
**Or** (b) Is non-genetic biological inheritance possible?
- 9 'I believe that the positive argument for realism has an analogue in the case of mathematical realism. Here, too, I believe, realism is the only philosophy that doesn't make the success of science a *miracle*' (HILARY PUTNAM). Is Putnam right?
- 10 'Talk about truth is, ultimately, talk about inquiry'. Discuss.
- 11 'An inductive justification of induction is neither possible nor necessary'. Discuss.
- 12 What makes data irrelevant?

END OF PAPER

Wednesday 31 May 2006      1.30 to 4.30

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HISTORY AND PHILOSOPHY OF SCIENCE (5)

**Science and Technology Studies**

**Before you begin read these instructions carefully:**

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## Paper 5: Science and Technology Studies

### SECTION A

- 1 Why should anthropological and sociological studies of science and technology matter to science policy?
- 2 Why do scientists' bodies matter to science and technology studies?
- 3 Why do technology studies matter to science studies?

### SECTION B

- 4 Does constructive technology assessment offer a way of addressing the social and ethical aspects of nanotechnology?
- 5 In making science policy on controversial matters, should we aim to improve the science or improve the politics?
- 6 How has mathematics been used to assert political authority? Draw on examples from at least TWO world cultures in your answer.
- 7 What differences, if any, are there between mathematics and ethnomathematics?
- 8 **Either** (a) Why does Wittgenstein's work on rule-following matter to the sociology of scientific knowledge?  
**Or** (b) Is the "Strong Programme" in the sociology of scientific knowledge refuted by computer discovery and ordinary human reasoning?
- 9 Can social science be value-free?
- 10 What is the difference, if any, between a sociological account of credibility and a sociological account of validity?
- 11 Are technologies frozen social relations?
- 12 Can social entities be reduced to psychological entities?

END OF PAPER

Wednesday 31 May 2006 9.00 to 12.00

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HISTORY AND PHILOSOPHY OF SCIENCE (6)

**History and Philosophy of Mind**

**Before you begin read these instructions carefully:**

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## Paper 6: History and Philosophy of Mind

### SECTION A

- 1 Two metaphors have dominated much of Western theorising about the mind: the metaphor of the mind as a machine and the metaphor of the mind as a miniature society. What are the strengths and weaknesses of each of these metaphors?
- 2 Is the study of the mind different from the study of the body?
- 3 Should psychoanalysis and psychiatry matter to the philosophy of mind?

### SECTION B

- 4 **Either** (a) What implications, if any, does cognitive science have for philosophy?  
**Or** (b) 'The possibility of a Martian with a different physiology, but a mental life just like ours, shows that mental states cannot be brain states'. Discuss.
- 5 Why did machine intelligence become a priority project in the twentieth century?
- 6 Can a materialist admit that there could have been mental states that were not physical states?
- 7 Can computers have representational states?
- 8 Has Freud fundamentally changed the way we dream and the way we interpret our dreams?
- 9 'The reasoning on which Freud based his entire psychoanalytic theory was fundamentally flawed, even if the validity of his clinical evidence were not in question. [However] the clinical data are themselves suspect; more often than not, they may be the patient's responses to the suggestions and expectations of the analyst' (GRUNBAUM). Discuss.
- 10 Define 'clinical psychiatry' and 'descriptive psychopathology'. Discuss their historical origin and relationship.
- 11 What influence did eugenic ideas have on the development of the psychological sciences in Britain after 1869?
- 12 Is reductive semantic dispositionalism a satisfactory answer to meaning-scepticism?

END OF PAPER

Saturday 3 June 2006 9.00 to 12.00

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HISTORY AND PHILOSOPHY OF SCIENCE (7)

**Medicine from Antiquity to the Enlightenment**

**Before you begin read these instructions carefully:**

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## Paper 7: Medicine from Antiquity to the Enlightenment

### SECTION A

- 1 'The subject of physic has a certain inbred power, whereby assisted by the physician's help, it doth for the most part, of its own accord, tend to health.' Which groups of medical practitioners from antiquity to the enlightenment would have accepted this view of the relative powers of the art of medicine and the natural abilities of the body? Why?
- 2 'The history of medicine begins with the Black Death'. Discuss.
- 3 Is the history of medicine from Antiquity to Enlightenment a history of ideas and of institutions?

### SECTION B

- 4 What theoretical underpinnings, if any, were there to Mesopotamian therapeutic practices?
- 5 How did the medical treatment you asked for, or received, in Greco-Roman antiquity vary depending upon whether you were rich or poor, male or female?
- 6 **Either** (a) How confused were ancient patients likely to have been by the discourse of 'purification' that different traditions of Greek medicine employed?  
**Or** (b) How did hospitals develop in the Eastern Roman Empire? Were there any earlier institutions that could be called hospitals?
- 7 'The coming of print had a great impact on medical education and controversy, but little on healing practices.' Discuss.
- 8 Was anatomy during the Renaissance conservative or innovative?
- 9 'I have heard him say, that after his book of Circulation of the Blood came out, that he fell mightily in his practice, and that 'twas believed by the vulgar that he was crack-brained; and all the physicians were against his opinion' (JOHN AUBREY on William Harvey). What was controversial about Harvey's discovery of the circulation of the blood?
- 10 **Either** (a) How influential were religious ideas in medieval and early modern healing?  
**Or** (b) 'If there were no poor, the greater part of your sins would not be remedied; they are the healers of your wounds' (ST CHRYSOSTOM). Discuss with relation to the founding and functioning of medieval and early modern hospitals.
- 11 Is it useful to talk of a 'medical marketplace' in the period between 1250 and 1650?
- 12 **Either** (a) Where did the general practitioner come from?  
**Or** (b) How did eighteenth-century people treat their mad folk, and why?

END OF PAPER

Friday 2 June 2006 1.30 to 4.30

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HISTORY AND PHILOSOPHY OF SCIENCE (8)

**Modern Medicine and Biomedical Sciences**

**Before you begin read these instructions carefully:**

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## Paper 8: Modern Medicine and Biomedical Sciences

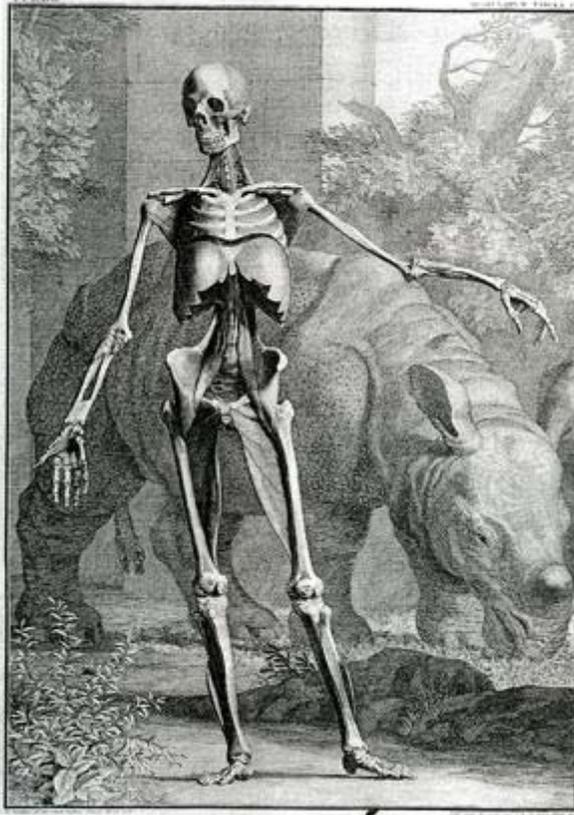
### SECTION A

- 1 'The body is a natural/biological entity that has no history'. Draw on your knowledge of the history of medicine and related sciences to assess this claim.
- 2 Is it inevitable that every innovation in medical practice or thinking be contested? Discuss with historical examples.
- 3 'Western medicine is essentially imperialistic'. Do you agree?

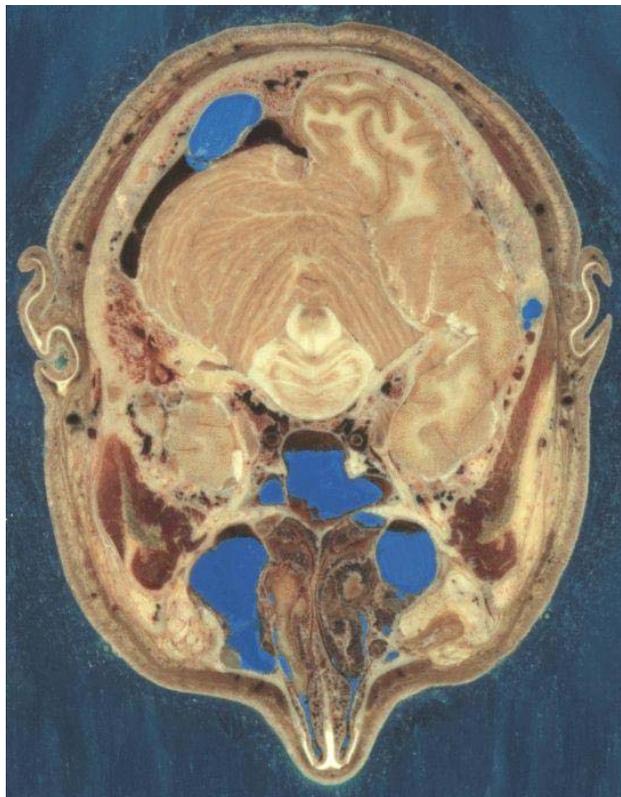
### SECTION B

- 4 '*Ancien Régime* medicine disappeared when the *Ancien Régime* fell'. Discuss.
- 5 What new diseases most affected early industrial society? How were they dealt with?
- 6 'Dead anatomy teaches nothing: it merely leans on what experimental physiology teaches' (CLAUDE BERNARD, 1865). Discuss this statement in the light of the disciplinary changes in medicine in the nineteenth century.
- 7 Was there a laboratory revolution in medicine in the nineteenth century?
- 8 Discuss how psychological and biological approaches to insanity were related to different psychiatric therapies, spaces and practices.
- 9 What were the reasons for the rise of 'alternative' medicine in the nineteenth century? Discuss with reference to one or two of its major systems.
- 10 **Either** (a) Discuss how the theory of degeneration helped late nineteenth-century doctors explain insanity as well as their general failure to cure it.  
**Or** (b) How powerful was the eugenics movement in Britain? What effect did it have on social policy and medicine?
- 11 The 1950s and 1960s are sometimes described as the 'golden age' of medicine. Is this an appropriate description?
- 12 How and why have anatomical images changed between the eighteenth and the twentieth centuries? Discuss, using the two images which follow.
  - (a) Muscle man, by Bernhard Albinus (Leiden, 1747).
  - (b) Section through the Visible Human Male: head including the cerebellum, cerebral cortex, brain stem and nasal passages.

TURN OVER/



(a) Muscle man, by Bernhard Albinus (Leiden, 1747)



(b) Section through the Visible Human Male: head including the cerebellum, cerebral cortex, brain stem and nasal passages.

END OF PAPER

Thursday 1 June 2006 9.00 to 12.00

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HISTORY AND PHILOSOPHY OF SCIENCE (9)

**Images of the Sciences**

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## Paper 9: Images of the Sciences

### SECTION A

- 1 Does science progress?
- 2 'Non-scientific means of persuasion have little place in science'. Discuss.
- 3 In what sense have philosophies of nature and of science functioned as ideologies?

### SECTION B

- 4 What was logical positivism?
- 5 'Mill and Whewell held diametrically opposed conceptions of science'. Discuss.
- 6 Should historians of science avoid the use of categories not available to the people they study?
- 7 **Either** (a) Discuss the concept of a 'visual language'.  
**Or** (b) Is it important for historians of science to learn about printing technologies?
- 8 Why did Koyré think that the historian of science should also study the history of philosophy and of religious ideas?
- 9 Is it correct to describe Berkeley as a precursor of positivism?
- 10 In what sense was Hume a sceptic? Discuss with reference to one of the following: cause and effect; personal identity; or the existence of the external world.
- 11 Discuss Popper's critique of Kuhn.
- 12 **Either** (a) How did Kant think it possible for us to have knowledge of nature ?  
**Or** (b) 'Everything that happens... presupposes something upon which it follows according to a rule' (KANT). Discuss

END OF PAPER

Thursday 1 June 2006 1.30 to 4.30

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HISTORY AND PHILOSOPHY OF SCIENCE (10)

**Science and Technology from the First World War**

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## Paper 10: Science and Technology from the First World War

### SECTION A

- 1 Is money or freedom more important for science?
- 2 Should paper 10 be retitled 'the American paper'?
- 3 Have technologies created new kinds of risk in the twentieth century?

### SECTION B

- 4 Should ideal deliberators play a role in deciding issues of science policy?
- 5 How has science been mobilised for war in Iraq during the last fifty years?
- 6 'The end of the Cold War was the most important factor behind the cancellation of the Superconducting Supercollider (SSC)'. Discuss.
- 7 **Either** (a) How did the Manhattan project and radar projects shape post-war science?  
**Or** (b) How and why did biology present itself as a 'science of life'?
- 8 Critically compare and assess Paul Forman's accounts of pre- and post-Second World War physical science.
- 9 'I believe that our basic information, our 'software', should be free and open for everyone to play with, to compete with, to try and make products from. I do not believe it should be under the control of one person. But that is what Celera are trying to do as far as they can' (JOHN SULSTON, quote in *The Guardian*, 6 May 2000). Discuss.
- 10 Was the modern evolutionary synthesis inevitable?
- 11 Is interwar ecology best understood as an imperial science?
- 12 Is all risk assessment always value-laden? What are the implications for democratic policy making?

END OF PAPER