

Friday 31 May 2002 9 to 12

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HISTORY AND PHILOSOPHY OF SCIENCE (1)

**Classical Traditions in the Sciences**

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

SECTION A

- 1 What roles did patronage play in the investigations of nature before 1600?
- 2 What did pre-1600 natural philosophy have to do with God?
- 3 Were there scientific communities before 1600?

SECTION B

- 4 EITHER (a) Were experiments performed in antiquity?  
OR (b) How useful are such terms as 'pure' and 'applied' when discussing the sciences in antiquity?
- 5 EITHER (a) Of what use was natural philosophy in the medieval university?  
OR (b) Discuss the relationship of Greek natural philosophy and mathematics to classical Arabic scholarship.
- 6 'It was no more possible to be an illiterate alchemist than to be a blind astronomer'. Discuss.
- 7 Can the printed book be considered a species of scientific instrument?
- 8 EITHER (a) How and why did the aims of astronomy change in the course of the sixteenth century?  
OR (b) Was early-modern mechanics a practical subject or a theoretical one?
- 9 EITHER (a) 'The great forward movements of the renaissance all derive from looking backwards.' Discuss.  
OR (b) Why did pre-modern natural philosophers find it important to articulate doctrines of 'method'?

END OF PAPER

HISTORY AND PHILOSOPHY OF SCIENCE (2)

**Natural and Moral Philosophies**

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

SECTION A

- 1 What types of people practised natural philosophy between 1600 and 1800?
- 2 'A Frenchman who arrives in London will find Philosophy, like everything else, very much changed there' (VOLTAIRE, 1734). Were there different national styles in the ways Europeans produced natural knowledge in the seventeenth and eighteenth centuries?
- 3 Did natural knowledge in seventeenth- and eighteenth-century Europe undermine or reinforce religious faith?

SECTION B

- 4 'Occult qualities could be detected experimentally, but not studied scientifically.' Does this view accurately reflect the attitudes of seventeenth-century natural philosophers to astrology, alchemy and magic?
- 5 EITHER (a) Discuss how visual imagery was used to promote science and its heroes during the eighteenth century.  
OR (b) What is the significance of the collaborative nature of publication in early-modern natural philosophy?
- 6 EITHER (a) What are the problems of Locke's theory of the identity of the self?  
OR (b) Assess Berkeley's arguments against the existence of matter.
- 7 EITHER (a) Why were techniques for 'dividing the circle' so important to seventeenth-century instrument-makers?  
OR (b) How did the use of instruments affect the development of experimental philosophy in the eighteenth century?

8 EITHER (a) How and why did the aims of natural history change in the eighteenth century?

OR (b) Discuss the roles of travelling **and** collecting in eighteenth-century natural history.

9 Was Kant a realist about nature?

END OF PAPER

HISTORY AND PHILOSOPHY OF SCIENCE (3)

**Science, Industry and Empire**

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

SECTION A

- 1 Is it inevitable that the history of nineteenth-century science be primarily about men?
- 2 'Faraday considered the scientific investigator as a high priest of God, and quite as sacred and noble an office as the priest of revealed religion' (WILLIAM BARRETT, 1911). What was the relation between natural science and revealed religion in the nineteenth century?
- 3 'What is a man's eye but a machine for the little creature that sits behind in his brain to look through?' (SAMUEL BUTLER, *Erewhon*, 1872). How did scientists claim to be objective observers in the nineteenth century?

SECTION B

- 4 EITHER (a) Did Darwin believe in progress? What led him to take the views he did on this issue?  
OR (b) How did the concept of natural selection contribute to Darwin's success in convincing men of science that species had evolved?
- 5 The growth of empire is often identified as the single most important feature of European history during the nineteenth century. How far does this claim apply to the development of the sciences?
- 6 EITHER (a) 'An instrument embodies an approach to nature, as well as a means for constructing knowledge.' Discuss with reference to the use of scientific instruments during the nineteenth century.  
OR (b) 'The camera never lies.' How did scientists use photography during the nineteenth century?

7 EITHER (a) 'Physics has come to its rich resources through its interaction with cultural development, according to the modern principle, that one must risk capital in an enterprise that promises to be of use' (FRIEDRICH KOHLRAUSCH, 1896). Compare the resources available for German physics before 1871 and under the Empire.

OR (b) What was the commercial significance of Victorian research in electricity and magnetism?

8 EITHER (a) What place, if any, does George Combe deserve in the history of evolution?

OR (b) Did Victorian astronomy provide evidence for or against evolutionism?

9 Towards the end of World War II, Allied countries imported people and equipment from laboratories in Nazi Germany. How does this fact fit with the existing assessments of Nazi science?

END OF PAPER

NATURAL SCIENCES TRIPOS Part II

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Thursday 30 May 2002 1.30 to 4.30

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HISTORY AND PHILOSOPHY OF SCIENCE (4)

Metaphysics, Epistemology and the Sciences

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

SECTION A

- 1 What does the philosophy of science have to contribute to science?
- 2 Is there such a thing as progress in the philosophy of science?
- 3 'Insofar as there is a Scientific Method, it is just the method of refined common sense.' Discuss.

SECTION B

- 4 EITHER (a) Was early twentieth-century philosophy of science the creation of late nineteenth-century science?  
OR (b) 'All evolutionary change can be understood as the result of a struggle between selfish genes.' Is this claim false, vacuous, or neither?
- 5 EITHER (a) 'I... could not, when examining the membership of scientific communities, retrieve enough shared rules to account for the group's unproblematic conduct of research. Shared examples of successful practice could, I next concluded, provide what the group lacked in rules' (THOMAS KUHN). What are the implications of Kuhn's conclusion for the philosophy of science?  
OR (b) Does legal reasoning have anything to teach us about reasoning in general?
- 6 EITHER (a) 'The probability that life once existed on Mars is 10%.' Is this use of probabilistic language legitimate?  
OR (b) 'Any system that satisfies the probability axioms is a valid interpretation of probability theory. Which interpretation we use in a given area of investigation is just a question of convenience.' Discuss.
- 7 EITHER (a) 'If you imagine a world consisting solely of events and the patterns they form, you are imagining a world without laws.' Discuss.  
OR (b) Are natural kinds mind-independent categories of things in nature?

8 EITHER (a) Can inductive methods be tested inductively?

OR (b) When is 'All observed Fs are G' a reason to believe that the next F will be G?

9 EITHER (a) How do theoretical terms get their meanings?

OR (b) 'Most scientific theories would be predictively unsuccessful, but what counts is that the most predictively successful theories would be false.' Does this undermine the miracle argument for scientific realism?

END OF PAPER

HISTORY AND PHILOSOPHY OF SCIENCE (5)

**Science and Technology Studies**

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

SECTION A

- 1 Why should anyone believe scientists?
- 2 Do scientists and mathematicians need histories of their disciplines?
- 3 'Any science as successful as ours would inevitably have developed in something like our way.' Discuss.

SECTION B

- 4 EITHER (a) Is the ethics of science reducible to the consequences of science?  
OR (b) What does the history of women in science teach us about the objectivity of scientific knowledge?
- 5 EITHER (a) 'Because science is an esoteric activity pursued by experts, science communication is primarily a process of diffusion.' Do you agree?  
OR (b) 'Nothing is more likely than science to become the subject of an heroic tale or a mythic fantasy.' Discuss with reference to the presentation of science in the mass media.
- 6 EITHER (a) 'The large amount of time spent by students in their practical courses shows how greatly sciences rely on the transmission of skills from master to apprentice. It offers an impressive demonstration of the extent to which the art of knowing has remained unspicifiable at the very heart of science' (MICHAEL POLANYI). Does skill transmission matter for a sociology of scientific knowledge?  
OR (b) 'Scientists know so much about the natural world by knowing so much about whom they can trust' (STEVEN SHAPIN). Do you agree?

7 EITHER (a) ‘Nobody will doubt that some problems about a mathematical theory can only be approached after it has been formalised, just as some problems about human beings (say concerning their anatomy) can only be approached after their death. But few will infer from this that human beings are “suitable for scientific investigation” only when they are “presented in ‘dead’ form”...’ (IMRE LAKATOS). What can we learn about mathematical theories by studying them ‘alive’?

OR (b) How has the computer changed mathematics?

8 EITHER (a) What is anachronism? How far can and should the historian of science avoid it?

OR (b) Should the history of the sciences be dispassionate and scientifically objective?

9 EITHER (a) If, according to the social constructionist position, bodies are ‘made’ rather than ‘born’, are reproductive technologies the true parents in modern society?

OR (b) Was World War II a mere interruption of the normal course of science?

END OF PAPER

HISTORY AND PHILOSOPHY OF SCIENCE (6)

**History and Philosophy of Mind**

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

SECTION A

- 1 Is the philosophy of mind just armchair psychology?
- 2 How, if at all, would the history of psychology have differed if psychologists had as little interest in intervening in human affairs as astronomers have in intervening in stellar affairs?
- 3 Is the unconscious mind a scientific notion?

SECTION B

- 4 EITHER (a) Explain and assess Frank Jackson's Knowledge Argument for dualism.  
OR (b) Can dispositions explain how there can be general concepts with determinate content?
- 5 EITHER (a) In what sense are unconscious psychological states *mental*?  
OR (b) How do theorists' beliefs about mental order play a role in justifying their ascription of unconscious mental states?
- 6 EITHER (a) To what extent was—and is—psychoanalysis hostile or friendly to the biological sciences?  
OR (b) 'I read the other day in a newspaper ... that Freud was a kind of charlatan or something worse. This great, tragic poet, our Sophocles!' (PHILIP ROTH, 2000). 'Freud is... the Darwin of the mind' (ERNEST JONES, 1913). Which is the more accurate portrayal of Freud: charlatan, 'our Sophocles', 'Darwin of the mind'—or something worse?
- 7 EITHER (a) To what extent is Cyril Burt's work representative of British psychology from 1908 to 1970?  
OR (b) To what extent do hereditarian ideas inform psychological theories of development?

- 8 EITHER (a) What do Milgram's 'obedience experiments' tell us about obedience?  
OR (b) Several social psychologists have argued that the use of deception is often necessary to engage the subject's psychological mechanism effectively. Do you agree?
- 9 Are psychotropic drugs an enhancement technology?

END OF PAPER

Saturday 1 June 2002

9 to 12

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HISTORY AND PHILOSOPHY OF SCIENCE (7)  
HISTORY OF MEDICINE (1)

**History of Medicine from Antiquity to the Enlightenment**

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

SECTION A

- 1 'Women's health is women's business.' Was this true before 1750?
- 2 Where did healing take place before 1750?
- 3 To what extent did medical practitioners before 1750 need natural philosophy?

SECTION B

4 EITHER (a) 'Medicine was divided into three parts, so that there would be one which cures through diet, another through remedies, and a third by the hand' (CELSUS, *De medicina*). Does this accurately describe Greek **and/or** Roman medicine?

OR (b) Discuss how medical expertise was defined in one of the following: classical antiquity, medieval Europe, early-modern Europe.

5 EITHER (a) Why did medical men before 1750 construct a system of medical ethics?

OR (b) 'In exposing the true malefactor, and at the same time absolving the innocent, [legal medicine] protects society and the individual, and provides a more equitable, more effective and more humane jurisdiction' (E. ACKERKNECHT, 1950). Does this passage accurately describe the goals of early-modern medical legal practitioners?

6 'Changes in medical practices came not from new scientific theories but from commercial developments in the market.' Does this apply in early-modern Europe?

7 EITHER (a) 'Between 1200 and 1750 surgery ceased to be a trade and became a profession.' Discuss.

OR (b) What were the differences between an anatomical dissection and an autopsy in early-modern Europe?

- 8 EITHER (a) Did magical remedies work better than herbal remedies?  
OR (b) 'In medieval Europe, surgery was both the last resort, and the treatment with the most certain outcome.' Explain this paradox.
- 9 EITHER (a) Who wrote plague treatises and why?  
OR (b) 'When the plague arrives, you should pray God and flee the city.'  
Would all medieval and early-modern medical practitioners have agreed?

END OF PAPER

NATURAL SCIENCES TRIPOS Part II  
MEDICAL AND VETERINARY SCIENCES TRIPOS Part II

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Thursday 30 May 2002

9 to 12

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HISTORY AND PHILOSOPHY OF SCIENCE (8)  
HISTORY OF MEDICINE (2)

**Modern Medicine and Biomedical Sciences**

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

SECTION A

- 1 'The history of modern medicine is the history of the war on diseases.' Do you agree?
- 2 What roles did medical problems play in the shaping of modern scientific disciplines?
- 3 'Over the course of the nineteenth and twentieth centuries, the role of the doctor changed from ministering to the individual body to ministering to the social body.' Did it?

SECTION B

- 4 Discuss the formation of the biomedical complex and its meaning for post-war medicine.
- 5 EITHER (a) 'Psychiatry will always be distinct from the rest of medicine because it deals with disorders of the mind rather than the body.' Does the history of psychiatry bear this out?  
OR (b) What are the main differences between the concept of 'Neuroses' in William Cullen (*circa* 1770) and early twentieth-century definitions of 'Neuroses'?
- 6 'The rise of the hospital is the rise of the surgeon.' Is it?
- 7 'Outside their laboratories, the physicist and the chemist are like unarmed soldiers on the battlefield' (LOUIS PASTEUR). Discuss Pasteur's role in making the laboratory central to medicine.
- 8 At what point and to what extent can we consider biomedicine as indigenous to Asia or Africa?
- 9 Why is the body seen differently in different societies? Discuss with reference to investigators in Europe 1700-1850.

END OF PAPER