

## History of Science Preliminary Examination

Fall 1999

ANSWER THREE OF THE FOLLOWING QUESTIONS:

QUESTIONS 1.

Thomas Kuhn's The Structure of Scientific Revolutions has since its publication in 1962 been a focus for extended debate about the nature of scientific change. Examine the basic argument of Thomas Kuhn's Structure of Scientific Revolutions, the ways in which Kuhn's book has influenced the writing of the history of science, and ways in which more recent approaches to the history of science have asked different sorts of questions than Kuhn asked (or have given different sorts of answers to questions Kuhn was posing).

QUESTION 2.

How important has the concept of *The Scientific Revolution of the 17th century* been for the development of the history of science as a discipline? What are (or have been) considered to be the constituents of this major shift? In what ways have scholars working on the history of 17th-century science challenged or otherwise qualified the concept of "The Scientific Revolution."

QUESTION 3. A common image of the naturalist, particularly of the field naturalist in an exotic clime, is that of a semi-addled individual with a butterfly net and collecting jars who bears little relation to the power-brokers of world affairs. Extensive government sponsorship of naturalist expeditions in the 18th and 19th centuries indicates, however, that various countries had high hopes of what the findings of naturalists could do for the countries' wealth and power. With reference to particular naturalist voyages and specific ways that scholars have conceived of such enterprises, comment on how the aims of naturalists and the aims of their sponsoring institutions and governments intersected with each other (whether in mutually reinforcing or in less than entirely compatible ways).

(questions continued on the next page)

QUESTION 4. In the 19th and 20th centuries the understanding of what is biological and what is social have continually informed (or, as some would have it, *misinformed*) each other. Darwin allowed that he gained his insight into the primary mechanism of evolutionary change by reading Malthus' Essay on the Principle of Population (a work that was addressed primarily to social issues). Marx and Engels, while approving Darwin's naturalistic approach, were nonetheless disposed to complain that Darwin's view of organic nature partook too much of the character of British society. The German biologists Rudolf Virchow and Ernst Haeckel debated one another over the social implications of Darwinian theory. Organic analogies abounded in British and German thinking about social change well before the Nazi's notorious efforts to biologize the state. For this essay you are asked to discuss the following:

- (1.) the basic structure of Darwin's theory of evolution by natural selection;
- (2.) the ways in which Darwin's thinking (in The Descent of Man as well as the Origin of Species) reflected Darwin to be a man situated within a specific historical context;
- (3.) the roles that biological ideas played in social thought in Britain and Germany in the late 19th and early 20th centuries.

QUESTION 5. Suppose you were offered a job in the Department of History at a small, liberal arts college of high quality in the Midwest, and that in addition to teaching a course on Western Civilization and a course on the History of Europe since 1789 you were asked to give a one-semester course on the history of science since 1600. What themes would you use to guide your choice of topics? What books or other readings would you select for your student assignments? What ideas would you want your students to gain from your course?

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