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Syllabus for Philosophy of Science 414 (Year Course)

"Philosophy of Science," as we will interpret this phrase, might better be called "**metaphysics and epistemology** of science" - - a paraphrase which conspicuously leaves open, it turn, what "**science**" is.

The word itself evolved through French from the Latin **scientia**, which simply meant "**knowledge**" (compare the German word "**Wissenschaft**," whose scope is much broader than what anglophones usually call "science") -- which returns us to the usual demesne of epistemology.

And this, in turn, prompts consideration of a wide range of thoroughly traditional epistemological questions.

What, for example, makes us (or at least makes **me**) bridle when someone talks about "scientific creationism," though I consider myself a skeptic about the unicity, canonicity and even coherence of "scientific truth?"

Roughly, for what it is worth, the answer in my case is this. I am **committed** to a kind of meta-level principle, which I might state as follows (with apologies to Orwell): all our hypotheses may be unverifiable, given the relatively meager evidence we have, but some are (drastically) more unverifiable than others.

Most of you presumably share some sort of conviction that an ideal -- evolving and processive, perhaps -- of **rationality** hovers at the edge of our inquiries, though you might express in very different (probabbly stronger) language. In my view, at least, such a principle is little more that what Immanuel Kant called a "**regulative ideal**" (many distinguished philosophers would emphatically disagree).

Nevertheless I would argue that such an "ideal" is grotesquely abused by Christian fundamentalist dialecticians I have heard, who talk like Paul Feyerabend (perhaps the field's most extravagant skeptic) about **evolution**, but like the early theologian, who believed **quia absurdum est** ("because it is absurd"), about "**scripture**."

Well, fine. But what **is** this "regulative ideal?"

Ay, what indeed? That is where the spirits divide, as the Germans say. And that, therefore, is also what most of this course will be about. There may not be much more unanimity in your answers at course's end, I'm afraid, but our disunity should be fairly well-informed (if I earn my pay).

My basic bent in choosing texts and issues for a course such as this is historical, in part for reasons I associate with the skepticism I alluded to above. On the most persuasive evidence we have, notions of science, **scientia** and rationality **have** evolved quite a bit, in the two-and-a-half millenia since some near-eastern and Greek sages wrote speculations that have been partially preserved about the 'the' ultimate constituents of φύσις ("nature")

What is to say, therefore, that these notions won't evolve quite a bit **more**, in the **next** two-and-a-half millenia? (Remember what Hamlet said about "philosophy" to Horatio.)

In any case, we will begin with one of the best accounts of Greek science, and devote most of the first term to a diachronic account of speculations about "natural philosophy" (as science used to be called), from these earlier Ionian precursors, to Kuhn,

Laudan, van Fraassen, the afore-mentioned Feyerabend and others.

After this, we will look during the second term into a very urbane and readable survey of recent physical science by Toraldo di Francia, and devote our last readings to feminist critiques of science, as a closed, overwhelmingly male collegium of hypercompetitive intellectuals, who have often impoverished and distorted the spirit of the "ideal" mentioned above, even as they claimed to enforce its letter.

I will base your mark on three eight-to-ten page essays, or one eight-to-ten page and one sixteen-to-twenty page essay each term, with a further premium (especially in borderline cases) for steady attendance and class participation. Informed discussions will be essential if we are to stay alert during two long back-to-back sessions each Tuesday evening. I hope your own varied backgrounds and views, and the occasionally controversial nature of the topics themselves, will help provide them.

The texts for the course -- listed briefly, and roughly in the order in which we will read them -- are as follows.

- 1 Sambursky, **The Physical World of the Greeks**, Princeton
- 2 Losee, **A Historixcal Introduction to the Philosophy of Science**, Oxford
- 3 Oldroyd, **The Arch of Knowledge**, Methuen
- 4 Lindberg, **Science in the Middle Ages**, Chicago
- 5 Koyré, **From the Closed World to the Infinite Universe**, Johns Hopkins
- 6 Toraldo di Francia, **The Investigation of the Physical World**, Cambridge
- 7 Kuhn, **The Structure of Scientific Revolutions**, Chicago
- 8 Cartwright, **How the Laws of Physics Lie**, Oxford
- 9 van Fraassen, **Laws and Symmetry**, Oxford
- 10 Harding, **The Science Question if Feminism**, Oxford