Michael Gordin  
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Tuesdays, 1:30-4:20

History 495:  
The Soviet Science System

The Soviet Union (1917-1991) comprised a mighty political, ideological, military, and cultural system. There is little doubt that the Soviet system was completely embedded in science and technology. In fact, some of the most lasting legacies of the collapse of Communism relate to the scientific infrastructure erected by the Bolshevik regime. This course explores features of the Soviet science system — the only significant alternative to the American-led Western science system — emphasizing three primary strands of ideology, institutions, and gigantomania.

Course Requirements (Undergraduate):

Class participation: 40%

Two 10-page papers: 30% each
(see following page for description of assignments; graduate students are required to produce three 10-page papers)

Prerequisites: None. No previous background in science or Soviet history is required, although either might prove useful. Readings are all in English, although supplementary readings in Russian will be provided upon request.

Required Books: (available at the U-Store)


[Readings marked with an asterisk (*) are to available in the printed Coursepack.]

**Assignments:**

**Participation:** Each week’s meeting focuses in depth on a particular episode of the history of Soviet science. Active and thoughtful engagement with the material in the readings and the contributions of other students to class discussion is essential. In addition, each student must email the instructor (mgordin@princeton.edu) eight (8) response papers by 6pm on the evening before the seminar meets. These papers should be five-hundred (500) words long, single-spaced, critically reflecting on one or several of that week’s readings. Since the course meets eleven times after the introductory meeting, this means that each student can select any three weeks in which she or he would prefer not to submit a response. Completion of the eight total one-page papers is an important component of your class participation grade.

**Topic Papers:** This course requires **two** (2) 10-page papers from undergraduates [three (3) from graduate students], on topics selected from the list below. Each paper requires some degree of limited historical research, and must argue a coherent historical thesis, backed up by evidence. The first paper is due in Meeting 8 of the course, on **11 November 2008**, and the second one is due on **Dean’s Date (Tuesday, 13 January 2009)**. Topics can be selected without consultation, except where indicated, and can be handed in at either date regardless of where the topic falls chronologically in the course. It is strongly recommended that students not write on a topic until it has been covered in class. In addition, topics #6 and #7 cannot both be chosen; if one of these is done, the other is by fiat excluded. Rough drafts are strongly encouraged.

1. Examine, through a collection of primary (translations of course permitted) and secondary sources a case of dialectical materialist discussion about the validity and proper course of a scientific development, *not including genetics*. Examples include: the origin of life, general relativity, quantum mechanics, cybernetics, chemical structures, and psychology. After outlining the arguments and the course of the historical debate, discuss whether your instance replicates or contradicts the model of the genetics controversy.

2. Collect at least five contemporary accounts (from journals, newspapers, or monographs) documenting the non-Soviet reaction to **one** of the following three milestones in Soviet science: a) the 1948 VASKhNIL meeting on genetics; b) the detonation of the first Soviet atomic bomb; or c) the launch of Sputnik I. What features do these accounts share? How do they differ? How would you characterize the attitude toward Soviet science?

3. Select a Soviet-era biography of a **pre-Soviet Russian** scientist, in consultation with the instructor. (Available in translation, for example, are Dmitrii Mendeleev, Nikolai Lobachevskii, Ivan Pavlov, Mikhail Lomonosov. This list is, of course, incomplete.) How does the historian situate the scientist to argue for a continuity or discontinuity in a scientific tradition? How do they discuss, if at all, the scientist’s relation to dialectical materialist
thought? What can you infer about the contemporary situation of Soviet science by how the historian characterizes Tsarist science?

4. Compare science under the regime of Joseph Stalin to science in Adolf Hitler’s Third Reich. How are Nazi and Stalinist science similar? How do they differ? Which is more important: the ideology or the repressive structure of the state?

5. To explore the issue of politics “interfering” with science, take the case of Andrei Sakharov or Nikolai Vavilov, and compare his history with that of one of three American scientists to whom both are often compared: Linus Pauling, J. Robert Oppenheimer, or David Bohm. What do these cases have in common? How do they differ? How does that difference matter to our understanding of either Soviet or American science?

6. Consider three (3) movies about science in the Soviet Union (only one of which can be Solaris) that form a coherent set (by criteria to be discussed with and approved by the instructor). Write an analytical review of these movies: What is their position on the character of Soviet science? Is Soviet science part of universal science or uniquely Soviet?

7. Alternatively, ask the same questions as in the above assignment of two (2) novels about Soviet science or Soviet scientists. These novels must also form a coherent set as determined in consultation with the instructor.

8. Examine a Soviet environmental catastrophe that was linked to scientific or technological developments (examples include the Mayak disaster, the Dniepstroii canal, any mining industry, and so on), but not Chernobyl. After describing the history of the incident, compare and contrast the case with that of the Chernobyl nuclear disaster. Which features do the two incidents share? To what do you attribute the commonalities and the differences?

9. Read John Krige’s book American Hegemony and the Postwar Reconstruction of Science in Europe (Cambridge, MA: MIT Press, 2006). Describe Krige’s account of how the United States rebuilt European science in its image. Which features were most salient? Now, taking the readings from Week #8 and some additional research, discuss whether Krige’s framework is applicable to the case of the Soviet reconstruction of science systems abroad. How was this similar to the American case, and how did it differ, and why?

10. Based on additional research beyond the readings assigned in the course, discuss the history of Russian (or other post-socialist nations’) science in the over two decades since Mikhail Gorbachev’s perestroika reforms that eventually led to the dissolution of the Soviet bloc. Is the general trend decline or revival? Which factors are most important in determining the recovery of disintegration of Soviet science?
Schedule of Meetings:

Meeting 1, 16 September:  Introduction:  What Is a Science System?
Readings (to be distributed and read in class):

Meeting 2, 23 September:  Ideology I:  To Vanquish Empiriocriticism!
Readings:
Graham, *Science in Russia and the Soviet Union*, 99-120, 137-155. [41]

Meeting 3, 30 September:  Institutions I:  The Communization of the Academy
Readings:
Graham, *Science in Russia and the Soviet Union*, 79-98, 156-196. [59]
Karl Hall, “Between Chaos and a Plan’:  Western Scientists View the Soviet Experiment,” in *GHK*.

Meeting 4, 7 October:  Ideology II:  The Sorry Case of Soviet Genetics
Readings:
Graham, *Science in Russia and the Soviet Union*, 121-134. [14]

Meeting 5, 14 October:  Gigantomania I:  Atomic-Powered Communism
Readings:

**Meeting 6, 21 October:** Gigantomania II: Cosmonautics  
**Readings:**  
Slava Gerovitch, “Stalin’s Rocket Designers’ Leap into Space: The Technbical Intelligentsia Faces the Thaw,” in *GHK.*

**Meeting 7, 4 November:** Ideology III: Science Fictions  
**Readings:**  
Bogdanov, *Red Star.*  
Bulgakov, *Heart of a Dog.*  
FILM SCREENING: Andrei Tarkovskii’s *Solaris* (1972). [Date and time to be announced.]

**Meeting 8, 11 November:** Institutions II: Empire of Knowledge  
*[PAPER 1 DUE THIS WEEK!]*  
**Readings:**  

**Meeting 9, 18 November:** Gigantomania III: Wormwood in Ukraine  
**Readings:**  
Sonja Schmid, “Technical Intelligentsia and Professional Identities in the Soviet Nuclear Industry,” in *GHK.*  
Marple, *Chernobyl and Nuclear Power in the USSR,* 1-35, 95-180. [122]  
Meeting 10, 25 November: Ideology IV: Dissidence and Accommodation
Readings:
Gorelik with Bouis, *The World of Andrei Sakharov*, 208-359. [152]

Meeting 11, 2 December: Gigantomania IV: Ecocide
Readings:
Peterson, *Troubled Lands*, 1-23, 159-258. [124]

Meeting 12, 9 December: Institutions III: The Post-Soviet Science System
Readings:
Graham and Dezhina, *Science in the New Russia*, [pages to be announced].