Hello!

HHS 130 Introduction to History of Science and Technology

1/30

Review last class

- McClellan & Dorn, *Science and Technology in World History: An Introduction* (3rd ed.), pp. 117-59.
- Questions of historical method mentioned and explored in the reading/critiques of extant histories of science and technology:
  - Overall, centering European civilization while "Othering" (dismissing, exoticizing) other civilizations
  - Pp. 119-20: "In a society where bureaucratic centralization was extreme, support came precisely for encyclopedists, translators, and writers of manuals on subjects useful and mundane. And it is precisely the kind of work that historians intent on detecting theoretical novelty tend to neglect."

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- Questions of historical method mentioned and explored in the reading/critiques of extant histories of science and technology:
  - P. 123: “Islamic scientists established the first truly international scientific community, stretching from Iberia to Central Asia. Yet, despite considerable scholarly attention, medieval Islamic science is sometimes still dismissed as a conduit passively ‘transmitting’ ancient Greek science to the European Middle Ages. A moment’s thought, however, shows how ahistorical it is to evaluate the history of Islamic science only or even largely as a link to European science, or even to subsume Islamic science into the ‘Western tradition.’ Medieval Islam and its science must be judged on their own terms, and those terms are as much Eastern as Western.”

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- Questions of historical method mentioned and explored in the reading/critiques of extant histories of science and technology:
  - P. 123: "Only a small fraction of Islamic scientific texts have been published. Most remain unstudied and in manuscript. Scholarly emphasis to date has been on classic texts, on the 'internal' history of scientific ideas, on biographies, and on 'precursor-it is,' or identifying Arabic scientists who were precursors of ideas that were of later importance to European science. The institutional aspects of Islamic science are only beginning to be studied with scholarly rigor, and nothing like a full historical survey exists for the Islamic case."

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- Questions of historical method mentioned and explored in the reading/critiques of extant histories of science and technology:
  - Pp. 123-24: "Furthermore, the field divides into two divergent interpretative schools. One school argues for a 'marginality' thesis, holding that the secular, rational sciences inherited from Greek civilization—known in Islam as the 'foreign' (*aw'i*l) sciences—never became integrated into Islamic culture, remaining only on the cultural margins, tolerated at best, but never a fundamental part of Islamic society. The 'assimilationist' school, on the other hand, contends that the foreign sciences became woven into the fabric of Islamic life. Neither interpretation quite fits the facts, but the presentation favored here leans toward the assimilationists, especially in tracing the institutional basis of Islamic science and in recognizing a similarity between the social function of science in Islam and in other Eastern civilizations."

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- Questions of historical method mentioned and explored in the reading/critiques of extant histories of science and technology:
  - P. 125: “In the Islamic world the secular sciences were generally not valued for their own sakes, but rather for their utility; secular knowledge was normally not pursued by individualistic natural philosophers as an end in itself as in Hellenic Greece or later in Christian Europe. To this extent, the ‘marginality’ thesis provides a degree of insight into the place of pure science in Islamic society. Nevertheless, such a view slights the ways in which science became patronized and institutionalized in a variety of social niches in Islamic culture. As social History, the ‘assimilationist’ thesis more properly portrays the role and institutionalized character of science and natural knowledge in Islam.”
  - Pp. 131-32: discussion of the decline of Islamic civilization in relation to the theses previously explained

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- Questions of historical method mentioned and explored in the reading/critiques of extant histories of science and technology:
  - Pp. 133-34: critique of the question of "why modern science did not emerge within the context of Islamic civilization…But to undertake to explain in retrospect the absolute myriad of things that *did not* happen in history confounds the enterprise of historians, who have a difficult enough time rendering plausible accounts for what *did* happen…To suggest that science somehow 'ought' to have developed as it did in the West misreads history and imposes chronologically and culturally alien standards on a vibrant medieval civilization."

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- Questions of historical method mentioned and explored in the reading/critiques of extant histories of science and technology:
  - Pp. 140-41: “In considering Chinese technology one must be wary of a tendency to record the priority of the Chinese over other civilizations for this or that invention: the wheelbarrow, the south-pointing chariot, lacquer, gunpowder, porcelain china, the umbrella, the fishing reel, the seed drill, the rotary winnowing fan, the crossbow, suspension bridges, and so on. While such ‘firsts’ are interesting, they are of limited analytical value in historical inquiry. Rather, the starting point for any investigation of Chinese technology must be the realization that the totality of its advanced technologies, regardless of their originality or priority, made China a world leader in technology through the Song era and beyond.”
  - P. 141: “The technology of paper money is significant not as a world historical ‘first,’ but because it facilitated the growth and functioning of Chinese civilization.”

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- Questions of historical method mentioned and explored in the reading/critiques of extant histories of science and technology:
  - Pp. 144-45: “Unlike paper, the magnetic compass was a technology that Chinese civilization could manage without, but along with gunpowder the case illuminates the few ties between science and technology in traditional China…An elaborate naturalistic theory later arose to explain the movement of the compass needle in response to energy currents putatively flowing in and around the earth, an example of how, contrary to conventional wisdom today, technology sometimes fosters speculations about nature rather than the reverse.”
  - P. 145: “Sources fail to attest to the use of the compass as a navigational tool at sea until Song times early in the twelfth century.”

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- Questions of historical method mentioned and explored in the reading/critiques of extant histories of science and technology:
  - P. 146-67: “In approaching the subject of the natural sciences in traditional China, one must avoid the tendency, similar to that already observed with regard to Chinese technology, to place undue emphasis on a search for ‘first’ honors in scientific discovery: first recognizing the nature of fossils, first using Mercator projections in maps and star charts, discovering Pascal’s triangle and the mathematics of binomials, foreshadowing the even-tempered musical scale, or, particularly far-fetched, crediting alternations of yin and yang as anticipations of the ‘wave theory’ of today’s quantum physics. Such claims reflect a perverse judgmentalism and a desire, in the name of multicultural relativism, to inflate the accomplishments of Chinese science while devaluing those of the West. Instead, the present section emphasizes the social history of Chinese science rather than a chronology of discovery, and it strives to show that the relationship between science and society in traditional China parallels the other primary civilizations of the Old World…”

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  - Pp. 156-59, section on “Illicit Questions”
    - P. 156: “…the historian’s job is to explain what happened and not what didn’t happen.”
    - P. 158: “Another notion advanced to explain the so-called failure of Chinese science concerns the felt cultural superiority of the Chinese.”
    - Pp. 158-59: “Each of the preceding explanations of why the Scientific Revolution did not unfold in China doubtless reflects some insight into circumstances in China before the coming of Europeans. However, akin to the previously encountered case of Islamic science, it is crucial to repeat that the negative question of

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  - Pp. 156-59, section on “Illicit Questions”
    - Pp. 158-59: “Each of the preceding explanations of why the Scientific Revolution did not unfold in China doubtless reflects some insight into circumstances in China before the coming of Europeans. However, akin to the previously encountered case of Islamic science, it is crucial to repeat that the negative question of why the Scientific Revolution did not occur in China is foreign to the historical enterprise and not one subject to historical analysis. The number of such negative questions is, of course, infinite. This particular question retrospectively and fallaciously presupposes that somehow China should have produced the Scientific Revolution… Quite the contrary, despite its comparative limitations, science in traditional China functioned perfectly well within its own bureaucratic, state, and social contests. Such is not a moral judgment of the high and ancient civilization of China, just good history.”