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Review

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Toby E. Huff. *The Rise of Early Modern Science: Islam, China and the West*. Cambridge: Cambridge University Press, 1993. Hardcover \$54.95, ISBN 0-521-43496-3. Paperback (1995) \$18.95, ISBN 0-521-49833-3.

Modern science, as we are frequently reminded, is a uniquely Western product, but to what extent is it a product of Western culture? To acknowledge that modern science did, as a matter of fact, come into being in Europe does not yet commit one to any kind of cultural relativism, for if it were simply a matter of contingent historical fact, modern science might equally have emerged in one of the Islamic states, in China, or in Japan. Moreover, even staunch opponents of cultural relativism will allow that there are social, political, economic, and intellectual conditions under which modern science cannot flourish. In other words, there are cultural conditions for the possibility of modern science. When intellectual innovation is forbidden and punishable by death or imprisonment, when there is no educational infrastructure, no financial or institutional support for the conduct of inquiries concerning the natural world, and where critical rationality and free inquiry are discouraged there will not be anything resembling modern science.

Much of the burden of Toby Huff's book is to argue that in neither the Islamic states nor in China were these minimal social conditions for the emergence of a continued flourishing of modern science present, despite the early emergence of individual thinkers of great brilliance and sophistication. Huff regards such social conditions as external conditions necessary for the emergence and practice of science, while nonetheless believing in the universal appeal of the content of science.

He shares this non-relativist position with Joseph Needham, and thus he, like Needham, thinks that there should be an answer to the question "Why didn't modern science develop in China (or in any of the Islamic states)?" The presupposition underlying this question is that science has such a universal appeal that any rational people, from whatever culture, would want to pursue scientific inquiries (p. 362). In this he disagrees sharply with Nathan Sivin, who has dismissed Needham's question by likening it to asking why the house next door did not catch fire yesterday (p. 246). This last is a question we would only ask, or think it worthwhile to pursue, if we had a reason for thinking that the house should have caught fire, although, contrary to expectation, it did not. Sivin is much less willing than Huff to draw the distinction between external and internal conditions for the development of science, and thus is less willing to treat sociological conditions as purely external conditions, ones which have no impact on the nature of the content of the science produced. As Sivin points out, one of the difficulties with the whole area of inquiry is that we still do not fully understand the hows and whys of the development of modern science in Western Europe; we do not

know which of the multitude of actual historical conditions were crucial and which were not. Indeed, he suggests that one of the benefits of engaging in cross-cultural comparison in intellectual history in general and in science in particular is the light this can throw on corresponding aspects of Western history even in virtue of the questions it prompts us to ask and the new perspectives it compels us to adopt.

Huff's book bears this out. His introductory chapter raises methodological issues concerning the comparative study of science. It concludes by linking the emergence of modern science to that of an "open society." He argues that the path to modern science is the path to free and open discourse. This means that much of his subsequent discussion is devoted to tracing that path. So there follow some two hundred pages devoted to a comparative discussion of Islam and the West whose primary focus is on religious, educational, and legal institutions, together with the conceptions of rationality implicitly contained in them. The actual development of science receives relatively little attention. The section on Chinese science and culture occupies only about seventy pages and thus is somewhat lacking in depth and detail.

These comparisons lead Huff to go beyond the claim that the rise of modern science is the result of the development of a uniquely humanistic culture, one that "protected and promoted those heretical and innovative ideas that ran counter to the grain of accepted religious and theological teachings." He argues in addition that "critical elements of the scientific world view were surreptitiously encoded in the religious and legal presuppositions of the European West" (p. 11). He stresses the role of Western legal institutions in framing conceptions of human rationality, of rational discourse, and of universally applicable natural law and in creating autonomous corporate entities within which free inquiry could be pursued. In particular, he points to the legal reforms of the twelfth century, which followed the rise of Bologna as a center for the study of Roman and canon law following Gratian's monumental work of synthesis and systematization. These reforms provided a legal framework within which it was possible to establish autonomous corporate entities and thus, he suggests, made it possible for European universities to have a kind of legal autonomy. Within these autonomous corporate entities spaces could come into being that were free from external religious or political control and within which the kind of critical, intellectual inquiry that was to lead to modern science could be encouraged.

Within Islamic states, however, law always remained religious law, was always particularistic, applying to the individual and the individual case, and was never unified into a single system. In other words, law was not itself conceived as universalistic, something that should have a single, consistent formulation suitable for general application. In China, too, law was never conceived as something to be formulated as a set of universal principles. Good governance depended on morally upright governors and on their sagacious judgment—not, as in Roman

law, on a body of explicitly formulated principles. In neither kind of state was there any institution resembling the European university, and in neither was there any significant movement toward the development of modern science. In fact, in both cases, after the achievement of relatively high points in scientific and technological development, there was a subsequent decline rather than a continued building upon past achievements.

Huff is surely right to draw our attention to the significance of legal institutions, and the triangular comparison that he makes serves to highlight the extensive sociocultural role of legal institutions, legal concepts, and the study of law and consequently the cultural differences entailed by the presence of differing legal systems. But none of this, of course, can establish the claim that the systematization of Roman law and the recognition within the law of corporate entities was itself sufficient or even necessary for the development of modern science.

One of the problems here is the concept of "modern science." What exactly is meant by this? How does it differ from ancient science (Greek or Arabic)? As Huff is aware, there are no non-contentious answers to such questions. Historians and philosophers of science disagree among themselves. Some count the transition to modern science as being marked by the mathematization of nature, the development of mathematized theories beginning with those of terrestrial and celestial mechanics of Galileo and Newton. Others stress the importance of the experimental method. Yet others would say that modern science only comes into being when mathematization and experimental methods come fruitfully together, and with the professionalization of science (during the nineteenth century). Still others would argue that the transition to modern science is marked by a concern to pursue knowledge for the sake of possible worldly applications rather than for moral or religious improvement or the salvation of one's soul.

Huff seems to take the view that modern science begins with Copernicus, Kepler, and Galileo. He downplays the significance both of experiment and of the connections between science and technology. Thus, science is for him the disinterested pursuit of knowledge of the natural world. He says little about what would differentiate between modern scientific knowledge and that of the ancients beyond the difference in content. This makes problematic any claims to be able to trace the origins of modern science in intellectual movements going back to the twelfth century and the founding of the European universities. One might equally claim that modern science has its origins in Greek science, or in the distinctive contribution made by Arabic modifications to that tradition, modifications through which Western Europe first became acquainted with many of the works of Greek natural philosophers. These are all strands which have made a historical contribution to Western science as we now know it, and clearly Western science would never have developed in China in part because of the absence of exactly

these strands. But might there not have been other available routes to something like science as we now have it?

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Michael H. Hunt and Niu Jun. *Toward a History of Chinese Communist Foreign Relations, 1920s–1960s: Personalities and Interpretive Approaches*. Washington, D.C.: Woodrow Wilson International Center for Scholars, Asia Program, 1995. xvi, 194 pp. Paperback.

It is really very encouraging to read that both Chinese and Western academicians are reexamining and rethinking the foreign relations of the Chinese Communist Party from the 1920s to the 1960s. All of this is taking place in the light of new documents now available in the People's Republic of China and of newer, fresher, and more natural interpretations by researchers concerned with the events of those decades.

This book is a compilation of seven papers presented at an international conference organized by the Wilson Center's Asia Program, "The CCP's Approach to the Outside World from the 1920s into the 1960's," held in Washington, D.C., 7–9 July 1992. These papers are organized in two parts. In the first, we find papers written by Chinese authors, including Niu Jun, He Di, Zhang Baijia, and Chen Xiaolu, on the leaders who participated in the foreign policy decision-making process during the period under discussion. In the second, Odd Arne Westad, Jurgen Osterhammel, and Michael Hunt examine the state of affairs of this very theme and the need to evaluate it in a different way, taking the historical and comparative methods into account.

In the first part, Niu Jun discusses Mao Zedong's thought on international affairs from his youth to the foundation of the People's Republic of China. He Di draws attention to Mao's perceptions of the United States, emphasizing the importance of his educational formation as well as his personal life experiences. On these matters, He Di notes that Mao never had any contact with Western political philosophy or the Western way of life. Zhang Baijia discusses the evolution of Zhou Enlai's diplomatic and political thinking during the 1940s and 1950s, and he