

Scientia Sinesis

Thomas S. Mullaney

Why was Europe the birthplace of modern science, and not China? In *A Cultural History of Modern Science in China*, Benjamin Elman boldly revisits this well-trod ground and attempts to survey it anew. As he announces in the book's introduction, Elman (professor of East Asian history at Princeton University) wishes to reposition the classically Eurocentric account of modern science. He aims to overturn the "failure narrative" that is typically invoked when trying to explain why China did not develop the fields of modern physics, chemistry, statistics, advanced mathematics, and so forth.

In this slender monograph, which doubles as the abridged version of Elman's much larger *On Their Own Terms: Science in China, 1550–1900 (I)*, the author mounts an empirically rich argument detailing a three-part process of transmission, mediation, and incorporation that shaped China's encounter with European science. In each of these three stages, a complex interplay of historical and cultural factors resulted more often than not in a checkered and turbulent transmission of scientific information from the West to China. For Elman, this choppiness partially explains the uneven development of modern science in China as compared with in Europe.

Elman's study focuses on two groups, Jesuit advisers and Protestant missionaries, whom he identifies as the primary transmitters of modern scientific knowledge from Europe to China prior to 1900. Starting in the early 1600s, the Jesuits made inroads into the imperial court by drawing on their astronomical and cartographic knowledge to answer the emperor's calls for a more accurate calendrical system and more precise maps of the empire. Protestant missionaries arrived some two centuries later, responding to the growing demand among Chinese reformers for advanced industrial and military technologies—a demand that, as Elman notes, was itself prompted by China's defeat at the hands of the British in the Opium Wars.

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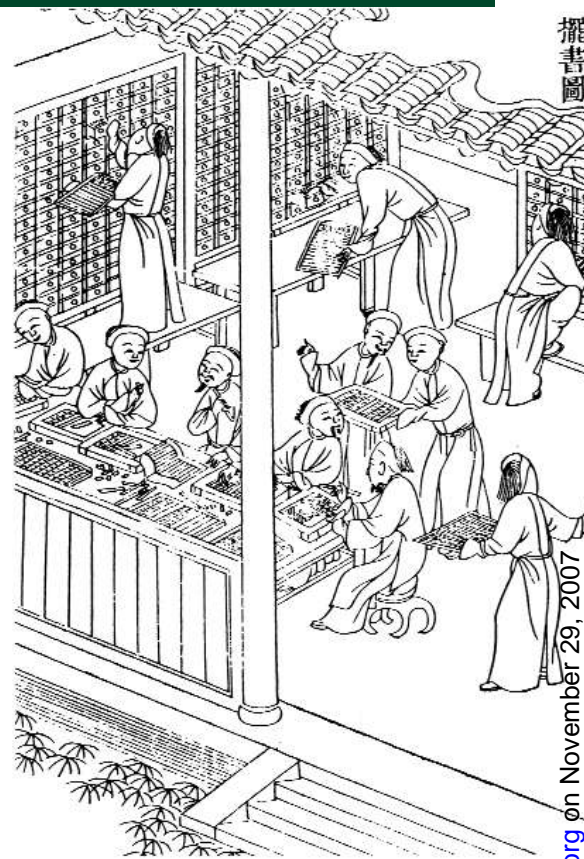
A Cultural History of Modern Science in China

by Benjamin A. Elman

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ISBN 9780674023062.

These 300 years exposed Chinese intellectual circles to many of the key elements of Western science. Many of the most important theories and principles, however, did not make the journey. Channels of transmission were frequently filtered or obstructed by powerful mediating forces, particularly the religious commitments of the Jesuits and Protestants themselves. In deciding which scientific theories to convey and how to portray them, these representatives of Christianity sometimes delayed or prevented many of the most critical components of the scientific revolution from ever reaching China. As committed Aristotelians, for example, the Jesuits were remiss when it came to introducing the principles of Newtonianism, a factor that delayed the full translation of the *Principia* by over a century. Similarly, Protestant missionaries were highly selective in their portrayal of Darwinism, shaping Chinese understanding of the theory so that it would correspond as much as possible with their own creationist orientation. In other cases, the Jesuits and Protestants in China had simply lost touch with contemporaneous developments taking place back home, resulting in the not-infrequent transmission of obsolete or disproved theories, which the Chinese then mistook for cutting-edge Western science.

In addition to religious mediations such as these, the passage of modern scientific knowledge from Europe to China was further filtered and obstructed by members of the imperial court. Because the Chinese court maintained a de facto monopoly on interactions with European visitors, any given theory or technology first had to appeal to the court's sense of utility before it could be incorporated into the larger infrastructure of sanctioned knowledge. Consequently, the influx of Western science was subject to a continual litmus test of applicability, a process that favored those imports that could expeditiously resolve pressing problems of the day. Areas of abstract research, such as Leibniz's mathematical notation, received comparatively scant attention, a factor that in this case delayed China's appreciation and incorporation of the calculus.



Setting movable type in the Qianlong Imperial Printing Office (late 18th century) (2).

Cultural sensibilities also played a role. As Elman explains, Chinese officials were allergic to self-satisfied Western claims of scientific superiority and universality. As a check on Western arrogance, sciences such as physics, chemistry, and so forth were officially categorized under the rubric of "Western learning," in much the same way that the Western world now diminishes non-Euro-American intellectual and artistic output by dubbing it "Eastern philosophy," "world music," "traditional Chinese medicine," and so forth. In later years, the imperial court stepped up these efforts, commissioning Chinese elites to comb through the ancient classics in an attempt to prove that all the great theories of Western science were in fact merely derivative corroborations of prior Chinese discoveries.

As a whole, Elman's study is a tremendous achievement, both in its analytical insight and empirical depth. Nonetheless, it is not altogether clear whether Elman succeeds in disrupting existing historiographic frameworks. Even with his rich and nuanced analysis of Chinese scholarship, for example, his portrayal of China remains rather consistent with the classical account of modern science: China continues to function as the recipient of Western knowledge; the only questions being how speedily such knowledge was transmitted,

how faithfully it was mediated, and how readily it was incorporated. Whereas Elman's account certainly expands the failure narrative to include European intermediaries such as the Jesuits and the Protestants, it does not fundamentally disrupt this narrative or provide a viable counternarrative. This observation is not so much a critique of *A Cultural History of Modern Science* as of the limitations of our collective definition of "modern science" itself—which is so firmly and uncritically tied to European intellectual output that writing anything but a Eurocentric history of it is perhaps impossible. To recenter the history of modern science, it would seem, the very concept would have to be redefined along more catholic lines.

References

1. B. A. Elman, *On Their Own Terms: Science in China, 1550–1900* (Harvard Univ. Press, Cambridge, MA, 2005).
2. This illustration originally appeared in *Qinding Wuying dian juzhen ban chengshi* (Beijing, 1776).

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SOCIOLOGY

Bringing Down the House to Add a (Nice) Room

Saskia Sassen

Ivan Light's *Deflecting Immigration* makes a valuable contribution, one that illuminates various trends either overlooked or left unaddressed in the standard scholarship about immigration in the United States. Where much of that scholarship sees a lineal progression, Light (a sociologist at the University of California, Los Angeles) identifies a discontinuous process, which he renders as a two-stage model: demand-driven immigration becomes supply-driven. He incorporates into his model variables, such as local policy, that are usually considered exogenous to the immigration process. In so doing, Light makes a second contribution: he shows that once immigration enters the supply-driven stage, it gets redirected to other, secondary destinations.

Empirically focusing on Los Angeles (and especially on Latino immigration), Light offers a functional analysis of how worsening economic and housing conditions for low-

wage immigrants in major cities lead to intolerance of poverty on the part of the receiving community. This development of poverty intolerance depends crucially on political reasons; insofar as the receiving community does not tolerate misery and degradation beyond a certain point, local authorities' enforcement of existing housing and workplace regulations begins to reduce the housing and work opportunities of migrants. This in turn leads to outmigration and the geographic dispersal of migrants to other cities.

Deflection is what Light names the process by which supply-driven immigration leads to the geographic dispersal of immigrants. A very interesting and useful category, deflection functions in multiple ways, most of which are wired into the social, civic, economic, and political fabric of cities. In this view then, intolerance of the more severely disadvantaged immigrants, police harassment of informal vendors, and inspections targeting poor immigrants in informal housing are not anomalous or deviant. They are instead part of a more complex de facto policy that ensures the departure of those migrants whose access to housing and jobs is seriously compromised by the lack of opportunities (demand).

Deflection is functional because, by redistributing these migrants (who represent an excess supply from the perspective of a city's tolerance for poverty), it ensures a better survival for the departing (or expelled) migrants. It also sets a limit to the increase of poverty, misery, extreme survival economies, and informal housing in the expelling city; thus it has the additional effect of raising the chances of reasonable livelihoods for the immigrants who remain. Light estimates that in the 1990s, 1 million immigrants were deflected from Los Angeles to lower-traffic destinations where the rent-to-wages ratio was more favorable.

I found less persuasive, and actually rather incomprehensible, the somewhat unnecessary combat that Light unleashes on globalization scholars who have addressed the question of immigration—a relatively rare, albeit growing, minority. Given the small size of this group and the recurrent references, I felt directly addressed. Light begins this attack nicely enough. He posits that a policy argument of sequential absorption and deflection appears "superficially to support the globalization arguments critiqued in chapter 1" that demand drives immigration. The author then argues that, notwithstanding

appearances, the globalization crowd has it wrong. He makes four rejoinders.

To support his argument, Light has to attribute some rather extreme arguments to what he identifies as the globalization view: He claims that globalization theorists expect low-wage immigrants not to move and to stay in world cities. World, or more precisely, global cities are strategic spaces for the corporate global economy; one of their key features is a growing stratum of high-income professionals, a growing stratum of low-wage jobs, and the resulting increased inequality. Immigrants have filled many of the low-wage jobs. Light supposes that globalization theorists believe that if immigrants were to be deflected to another city, that would be because those secondary destinations were or were

becoming world cities. Second, Light asserts that these theorists posit that these immigrants' only jobs are household jobs for rich professionals and that they cannot find employment in manufacturing or other such fields. Third, Light writes that "the 'optimist' globalization scenario" posits that immigrants would never "exhaust" the gardening, nanny, etc. jobs for affluent professionals. Fourth, and as a result of the former, immigrants would never push cities into poverty intolerance.

In an example that captures the tone of his complaint, Light proclaims, "This indictment convicts the globalization theorists of having peddled an optimistic and saccharine expectation that developed countries could expect eternally painless immigration from the Third World. They promised a party that would never end." Although I function as exhibit number one in this series of statements, I do not recognize myself in this description. Anyone who has read my work knows that I am a critic of corporate economic globalization. I have spent much effort showing that the development of global cities has brought about increased inequality and much misery (1) and that politics (including at the city level) is part of good immigration policy (2). Light could have extracted a couple of good insights, even variables for analysis, from this globalization research. That would have added to the strengths of *Deflecting Immigration*.

References

1. S. Sassen, *The Global City: New York, London, Tokyo* (Princeton Univ. Press, Princeton, NJ, ed. 2, 2001).
2. S. Sassen, *Territory, Authority, Rights: From Medieval to Global Assemblages* (Princeton Univ. Press, Princeton, NJ, 2006), chap. 6.

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Deflecting Immigration Networks, Markets, and Regulation in Los Angeles

by Ivan Light

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New York, 2006. 262 pp. \$35.
ISBN 9780871545381.

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