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## BOOK REVIEWS

Technology, Skills and the Pre-Modern Economy in the East and the West. Essays dedicated to the memory of S.R. Epstein. Ed. by Maarten Prak and Jan Luiten van Zanden. [Global Economics History Series, Vol. 10.] Brill, Leiden [etc.] 2013. xi, 353 pp. Ill. € 119.00; \$154.00. doi:10.1017/S0020859014000479

The essays in this volume are “dedicated to the memory of S.R. Epstein”. Epstein died in 2007, and it is perhaps fair to say that in the years that have passed since his untimely demise his work has made a greater impact than when he was alive. He was known for staking out two famous and highly controversial propositions. One was that the early modern nation state, rather than a wasteful and bellicose revenue- and rent-pump, actually helped solve coordination problems, provided public goods, and that therefore its political success determined economic success in the long run.<sup>1</sup> The other is that European craft guilds, rather than being oligopolistic and reactionary organizations dedicated to the crystallization of technology and the preservation of their exclusionary market powers, were in fact far more benign than the traditional literature had supposed and were effective – indeed indispensable – institutions in the intergenerational transmission and spatial diffusion of artisanal techniques.<sup>2</sup>

The present volume contains a very welcome surprise: a long and unpublished essay that Epstein completed before his death and that was found on his website. Its posthumous publication alone makes this volume worth its (outrageously hefty) price. In it, the reader will recognize all the characteristics that made Epstein such an influential scholar: above all a striking originality and a boldness with which he stakes out strong positions, without the customary prudent qualifications and waffling we see so often in economic history. Of course, such boldness does leave him open to criticism, and Epstein would not have it any other way. Basically, his essay is a hymn to the innovative powers of the artisan.<sup>3</sup> He believed that whatever technological change progress occurred before 1800 was the result of small-scale incremental innovations carried out and diffused by skilled artisans, supported by the guild-based institutions that characterized much of the manufacturing world before the Industrial Revolution.

For Epstein, the apprenticeship contract was the foundation on which pre-modern technology rested. For existing knowledge to be reproduced, it had to be passed on from generation to generation, and because the training of sons by their fathers was the exception rather than the rule (as many of the essays in this volume confirm), lads were

1. S.R. Epstein, *Freedom and Growth: Markets and States in Europe, 1300–1750* (London, 2000).

2. *Idem*, “Craft Guilds, Apprenticeship, and Technological Change in Pre-Modern Europe”, *Journal of Economic History*, 53 (1998), pp. 684–713.

3. For similar views, see for example Maxine Berg, “The Genesis of Useful Knowledge”, *History of Science*, 45: 2, no. 148 (2007), pp. 123–134; Liliane Hilaire-Pérez, “Technology as Public Culture”, *History of Science*, 45: 2, no. 148 (2007), pp. 135–153.

apprenticed to non-relatives, with the understanding that they would be taught the skills of the craft. As Epstein points out, this knowledge was entirely tacit: there were no books and no formal classes. The relationship between master and apprentice was the mother of all incomplete contracts: the master promised to teach a poorly described skill; the apprentice vaguely promised to work for the master during and often after the completion. But how were the many details to be specified and enforced? How could the many threats of both sides engaging in shirking or other opportunistic behavior be avoided? Epstein has no doubt on the matter: the enforcement was provided largely, though not solely, by craft guilds (p. 31). Epstein adds that horizontal flows of information between craftsmen was at least as important as vertical flows, and that guilds regarded knowledge as a collective good to be shared. Whether it was primarily shared among members of a local guild (trying to keep foreigners out), or whether it was willingly shared with everyone interested hardly mattered, because the mobility of artisans between cities meant that trade secrets flowed freely over space in any case.

Finally, Epstein curtly dismisses any notions that any kind of formal codified propositional knowledge (including science) may have made much difference to the technological trajectory of Europe. Others may disagree, at least to a degree.<sup>4</sup> One could argue that the two kinds of knowledge were deeply complementary and that one without the other would have led to a dead end. But such compromises were not for Epstein; from the outset he announces that “only a process of small-scale incremental innovation in metallurgy and instrument-making, mining, building [...] can explain the technological and industrial success of steam power” (p. 31), and that “Europe derived its unusual technological momentum from the mobility of labour [...] the acceleration of innovation during the eighteenth century is more likely to have been caused by increasingly mobile and better-informed technicians sharing both propositional and prescriptive knowledge than by an intellectually driven ‘Industrial Enlightenment’” (p. 67). No mealy-mouthed ambiguity here.

But how persuasive is such a fundamentalist position? In 1400 a French master builder, cited by Epstein, already pointed out that mere craft (*ars*) without rigorous knowledge (*scientia*) was useless (p. 43). In the eighteenth century the first signs of scientific breakthroughs with significant industrial applications can be seen not just in steam power but in hydraulics, chemistry, and engineering. While they were still few and far between, they were real enough to make contemporaries adhere stubbornly to a “Baconian program” in which people who knew things communicated with those who made things – and the latter repeatedly sought advice from best-practice science. Had there been no science, the inventions in textiles and iron, mostly made by tinkering craftsmen, would have petered out as earlier technological flowerings had.

Moreover, as the essays in this book abundantly illustrate, skilled artisans were found all over the world, and while practices varied a lot, there seems to be no presumption that European craftsmen were on the whole more skilled and better trained than Indian or Chinese artisans, whose fancy textiles and porcelain Europeans so coveted. So why Europe? If Epstein is right in his bald statement that “the principal source of diminishing returns to technical knowledge seems to have been the cost of communication between

4. For a recent restatement of the centrality of Newtonian science to technological developments on the shopfloor, see Margaret C. Jacob, *The First Knowledge Economy* (Cambridge, 2014).

dispersed craftsmen and engineers, rather than the narrowness of the pre-modern crafts' epistemic base", how can we possibly explain the fact that the European Industrial Revolution occurred hand-in-hand with scientific advances in energy, material science, geology, and chemistry?

Epstein's scholarly legacy is well illustrated by this volume. By being provocative and putting forward strong positions, his work stimulated so much good research among his many admirers (and a few skeptics), some of whom have contributed to the learned and fascinating case studies in this book. These other essays, then, take the Epstein challenges seriously and look for evidence for the vertical and horizontal transmission of tacit useful knowledge, for the mobility and open-mindedness of artisans, and for a benign, technology-fostering role of the guilds. The studies are mostly case studies of areas or specific and well-defined industries. What is unusually attractive about these essays is their explicit attempt to do *global* history: every one of them looks at the issues of the transmission of useful knowledge in both European and non-Western societies: there are two essays about China (one by Kenneth Pomeranz) that look at the guild structure there, and one about India. The various industry studies do the same: Maarten Prak's wonderful essay on the knowledge involved in the construction of religious buildings; Karel Davids's deeply informed essay on machine-makers; and above all Richard W. Unger's magisterial *tour d'horizon* on shipbuilding in East and West; all explicitly look at the issues across the Eurasian continent but in the process provide a great deal of fascinating comparative economic history. A special treat is a long essay by Gijs Kessler and Jan Lucassen on the production of bricks, in which they are able to include Russian techniques of brick-making (a country usually left out of the economic history of technology).

Do these studies confirm Epstein's assertions? At times they do; at times they do not. Davids, for instance, finds that in the Netherlands "guilds normally did not intervene in the conditions, registration, or supervision of [apprenticeship] contracts" (p. 217). Unger, after a meticulous survey, must conclude that the "precise role of guilds in the long term evolution of shipbuilding technology remains unclear" (p. 203). He also directly contradicts Epstein by pointing to the importance to shipbuilding of books about it as well as mathematics (pp. 189–190). Christine Moll-Murata, an expert on Chinese guilds, in a sharply drawn comparison of the porcelain industry in the Netherlands and China, retreats to a position that "contrasting the 'guild-rehabilitationist' [Epstein's] and the 'guild-critical' positions is difficult to defend [...] we find arguments supporting both propositions" (p. 256). An essay by Jan Luiten van Zanden, that usefully summarizes his research on the quantitative dimensions of publishing in Europe and China is also suggestive. One cannot help but wonder whether the meteoric growth of publishing in Europe after Gutenberg may have had something to do with the growth and dissemination of useful knowledge in certain areas of production, as Unger's and Davids's essays point out.

What should the reader take away from this book on the present state of the debate? Craft guilds were a ubiquitous phenomenon: skilled workers banded together for many reasons. They spanned many hundred of urban centers, dozens of industries, and at least six centuries. No wonder no single assessment comes out of this literature without counter-examples. What Epstein has taught us is that the notion of guilds as rent-seeking and conservative bodies was not always and everywhere true. But the generation and dissemination of useful artisanal knowledge was a multifaceted thing: tacit and codifiable, practical and theoretical, technical and market-oriented – there was a lot to know and many ways to find out.

The new institutional economic history, with its crucial distinctions between extractive and inclusive institutions, wealth-creating and wealth-redistributing groups, cooperative and competitive behavior, and formal vs informal institutions, offers a great deal to this literature. The political environment in which guilds found themselves obviously helped determine how they played the game. Epstein, sadly, did not live long enough to see Daron Acemoglu and James Robinson's seminal *Why Nations Fail*.<sup>5</sup> One can only imagine how, as an opinionated and sometimes feisty scholar, he would have engaged them. Now, that would have been a sight to see.

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PESANTE, MARIA LUISA. *Come servi. Figure del lavoro salariato dal diritto naturale all'economia politica.* [Storia/Studi e ricerche.] FrancoAngeli, Milan 2013. 362 pp. € 44.00. doi:10.1017/S0020859014000480

Since the publication of Robert Steinfeld's *The Invention of Free Labor*<sup>1</sup> in 1991, a number of historians and scholars of legal history have questioned, investigated, or reinvestigated the rise of free labour and the connections between free and unfree labour. Their studies have shown that, on the one hand, "pure" free labour has been quite exceptional in a long-term historical perspective and that, on the other, boundaries between freedom and coercion were not so clearly defined. The shift from forced labour to "free" wage labour was not linear; free wage labour advanced and then rapidly declined at several points in history; and multiple types of labour relations could coexist at the same time and in the same place, even within the capitalist market economy.

Pesante's *Come servi* is an important contribution to the field. Her book is an intellectual history of wage-earners, with a focus on England during the seventeenth and eighteenth centuries. The author investigates the process of labour commodification, addressing in particular the question of whether labour can be considered a commodity not subject to social norms and governed only by market forces such as labour supply and labour demand. To answer this question, Pesante reconstructs the genesis of the idea of the work of freemen as a commodity. This process was not, as is often assumed, rooted in the political economy of the eighteenth and nineteenth centuries, but in the natural jurisprudence of seventeenth-century Protestantism. The transition from the juridical to the economic sphere would have enduring consequences for workers, in legal as well as anthropological terms. The author analyses the transition and its consequences in four stages, examining the idea of a labour

5. Daron Acemoglu and James A. Robinson, *Why Nations Fail: The Origins of Power, Prosperity and Poverty* (London, 2012).

1. Robert Steinfeld, *The Invention of Free Labor: The Employment Relation in English and American Law and Culture, 1350–1870* (Chapel Hill, NC [etc.], 1991).