

Labour, science and technology
in France, 1500–1620

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Introduction

Bernard Palissy is the hero of the final chapter of *The Conquest of Poverty: The Calvinist Revolt in Sixteenth Century France* which I published in 1986.¹ In that book I represented Palissy as an isolated figure who, while appalled by the tragedy of the onset of civil war, was nevertheless unique in his understanding of the economic and social problems which had helped to provoke the crisis. While retreating into a religious vision in the face of an increasingly uncertain future, Palissy nevertheless singled out the agrarian problem as a key to France's troubles. Under-investment in agriculture, responsible for the grain shortages and the high cost of food, was at the heart of the difficulties which were exacerbating the political and religious crisis into which France had fallen.

I portrayed Palissy as more or less a lone voice and saw his proposed remedy of an agrarian capitalism as utopian in the French context. As I depicted it, the ongoing strength of seigneurialism and the absorption of the middle class into the ranks of the notables of the expanding state, foreclosed the possibility of a capitalist breakthrough in agriculture and a resolution of France's economic problems.

At a certain level there continues to be a certain truth to this view of France in the *ancien régime*. However, in pursuing my research on the wars of religion, I began to have doubts as to whether Palissy was quite the isolated figure I had imagined him to have been. By the middle of the sixteenth century France was on the threshold of a deep crisis. Were there not perhaps other Frenchmen beside Palissy who perceived the need to improve the productivity of French agriculture?² Were there not possibly others, who, confronted by shrinking profit margins in industry, might have cast about for fresh answers? It seemed inconceivable that the monarchy, itself increasingly hard-pressed financially, would not have seen the need to promote economic innovation as a way out of its crisis.

These questions did not come to me out of a vacuum, I must hasten to add. Already in the 1970s I had been much affected by reading Charles Webster's *Great Instauration*, which demonstrated the close tie between English Puritanism,

¹ Leiden.

² See additional evidence of a concern with agricultural improvement in Heller, *Iron and Blood: Civil Wars in Sixteenth Century France* (Montreal, 1991), pp. 52-3.

the desire for social and economic improvement and the rising interest in Baconian science.³ If seventeenth-century Calvinists in England had made these connections, was it not possible that similar ideas might have surfaced in France during its period of political and religious turmoil in the latter half of the sixteenth century? Likewise in that decade, I was influenced by Joan Thirsk's *Economic Policy and Projects*.⁴ In that work Thirsk showed that the English government, in the face of the negative economic conjuncture of the later half of the sixteenth century, pursued a policy of economic protectionism, patents, monopolies and subsidies to stimulate the English economy. It was already well known that the government of Henri IV did likewise in the aftermath of the religious wars and growing English and Dutch economic success. It occurred to me that this kind of economic intervention might have begun even earlier in France and have its own history. It was with these questions in mind that I set off for a summer's research in 1989 into the Bibliothèque Nationale and Archives Nationales. On that first trip I was able to turn up a good deal of interesting material. But the highlight was certainly microfilm manuscript 63 of the Collection Lenain in the Archives Nationales. Among other things this manuscript contained a list of inventions patented by the crown during the wars of religion and in its immediate aftermath. This find revealed that the French crown during the reign of Charles IX, like the English government under Elizabeth, was, indeed, pursuing a policy of state-supported economic development in the face of the negative economic conjuncture of the late sixteenth century.

Most striking about the Lenain manuscript was the number of patents for new machines or processes in both agriculture and industry. Naturally, we connected this inventory of new patents with the mechanical inventions to be found in Jacques Besson's ground-breaking *Théâtre des machines*, a manuscript of which was presented to Charles IX in 1569. Besson's work was the first in a series of technological treatises published during the wars of religion. What was the reason for this notable interest in new inventions at this time? In part a concern with improvements in military technology could account for it. But, as a matter of fact, in Besson's work or in that of his nearest rival, Agostino Ramelli, military machines play an entirely secondary role. Most of the machines conceived by these two inventors were designed to do productive work.

My interest in Renaissance technology dates back to the days I sat in the history of science seminar of Henry Guerlac in graduate school at Cornell University. I remember the fascination I felt looking at the engravings of early modern machinery in the books I was then reading. What struck me at the time was the cleverness of these machines, which seemed to be the product of a creative impulse which was barely to be distinguished from the aesthetic inspiration of the

³ *The Great Instauration: Science, Medicine and Reform, 1626–1660* (London, 1975).

⁴ *Economic Policy and Projects: The Development of a Consumer Society in Early Modern England* (Oxford, 1978).

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artists of the period. Both these marvellous machines and the idealized paintings of the Renaissance masters appeared to be inspired by a similar attempt to escape from the limitations of common existence. On the other hand, the specifically economic motivation behind the invention of such machinery, while it continued to fascinate, escaped me.

However, the economic interest in new machines in the context of the religious wars now seemed perfectly evident as I continued my archival research in subsequent trips to France. The introduction of machinery could be one way of cheapening the cost of labour and enhancing profitability. It was one possible path out of a situation of economic stagnation which characterized the second half of the sixteenth century. Whether such technological initiatives could lead to such an issue in the concrete circumstances of the French economy at this juncture is another matter. Indeed, I came to the realization that the reorganization of the workforce or forcing it to work longer or harder might serve as an alternative or complement to the introduction of new technology as a way of enhancing profitability. Nevertheless, the idea of linking up the history of technology and economic history after all these years was an enthralling one.

But this notion of enhancing the productivity of labour led me towards another aspect of the problem. If there was an increasing interest in new technology in this period, this somehow must have been related to the growing availability of labour which could work such machines. Looking at the engravings of Renaissance machinery in graduate school, I recall staring at the anonymous little men pictured at work around these machines, asking myself how one could ever get at the history of such obscure figures. Gradually, as I came to think more about the dispossession of the peasantry during the religious wars, I came to realize the probable connection between the rising interest in technology and the growing availability of wage labour.

For one of the striking things about the period of the religious wars is that, despite their destructiveness, the bourgeoisie actually seems to have become stronger rather than weaker as the conflict proceeded. How can this have been in the context of so much material destruction? As my research unfolded it occurred to me that, despite the devastation of the wars, it was not only the acquisition of land through the dispossession of the peasantry, but also the increasing availability of pools of exploitable labour which might help, among other factors, to explain the phenomenon of growing bourgeois strength. Underneath the apparent archaism of seigneurial reaction, the period of the religious wars was in fact a period of real capitalist advance.

In order to study the development of wage labour in the sixteenth century I determined to concentrate on its development in the city of Paris and the surrounding Ile-de-France. The Ile-de-France was the site of a major transfer of property out of the hands of subsistence peasants into the possession of an urban and rural bourgeoisie. The Parisian bourgeoisie was able to acquire a good deal of

this property and to extend the tentacles of its economic activity over not only the Paris region but over a large part of the rest of France as well. The economic history of this region in this period has been much advanced by the work of Bezard, Fourquin and, especially, Jacquart.⁵ More to the point, the history of skilled labour could be illuminated by study of the hundreds of employment and apprenticeship contracts to be found in Coyecque's collection of Parisian notarial documents for the first part of the sixteenth century.⁶ But more broadly the police ordonnances to be found in the Collection Dupré in the Bibliothèque Nationale and the Collection Lamoignon at the Archives de la Préfecture de Police could be of inestimable value in reconstructing the history of both the skilled and unskilled workforce in both Paris and the Ile-de-France.

The manuscript which has emerged begins with a study of the role of Parisian merchant capital in the French economy in the sixteenth century. It proceeds to an examination of the Parisian labour force in the same period. It then investigates both public and private responses to the mid-century economic crisis. In the course of doing so it explores the growing interest in technology and the emergence of a concern with a new empirical approach to scientific investigation in the reign of Charles IX. It next studies the period of the religious wars linking the upheavals of that period with a partial proletarianization of the rural population and a continuing preoccupation with new technology. Finally, it deals with the economic recovery of the reign of Henri IV, tying together the economic programme of the crown with the further development of a wage-earning population and the rising interest in science and technology.

Reinterpreting the period of the religious wars by viewing it as a period which was much more economically vibrant than had previously been thought seemed to be a major gain of this research. It appeared to me that my study of the development of capitalism within the tissues of the *ancien régime* of France also made a fascinating contrast with the more successful models of capitalist development characteristic of Holland and England. Finally, my work seemed to throw some light on the French background to the Scientific Revolution of the seventeenth century.

But as I proceeded with this work it seemed especially important to me that my findings overall were at variance with the model of French history that I had imbibed as a graduate student and young university teacher who had been awestruck by the achievements of Braudel and Le Roy Ladurie. What did my research – with its preoccupation with technology, science, state intervention,

⁵ Yvonne Bezard, *La vie rurale dans le sud de la région parisienne de 1450 à 1660* (Paris, 1929); Guy Fourquin, *Les campagnes de la région parisienne à la fin du moyen âge* (Paris, 1964); Jean Jacquart, *La crise rurale en Ile-de-France, 1550–1670* (Paris, 1974); Jacquart, *Paris et Ile-de-France au temps des paysans* (Paris, 1990). See now the work of Jacquart's student J.M. Moriceau, *Les fermiers de l'Ile-de-France, XV^e–XVIII^e siècle* (Paris 1994).

⁶ Ernest Coyecque, *Recueil d'actes notariés relatifs à l'histoire de Paris et de ses environs au XVI^e siècle*, 2 vols. (Paris, 1905).

Introduction

proto-industrialization, proletarianization, and class conflict – have to do with their *longue durée*? The determinism of their approach seemed sharply at odds with the importance in my research of individual and collective volition.

At this point serendipity intervened. A friend of mine, Marie-Hélène Choisy, gave me a copy of a recent history of the *Annales* called *L'histoire en miettes* published by a young colleague of hers named François Dosse at the Lycée Jacques Prévert in Boulogne-Billancourt.⁷ This *tour de force* brilliantly revealed the conservative prejudices which lay behind the environmental and Malthusian determinism of these two historians. Dosse's work helped to give me the intellectual and moral force to carry through my work, turning the last chapter of this book into a challenge to their stagnationist view of the *ancien régime*.

⁷ *L'histoire en miettes. Des Annales à la 'nouvelle histoire'* (Paris, 1987). This work has since been translated into English under the somewhat misleading title *New History in France: The Triumph of the Annales*, tr. Peter V. Conroy Jr (Urbana, Chicago, 1994).