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Technology and innovation in context: the Roman background to mediaeval and later developments

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“ ... the errors go round and round, becoming ever more eccentric.”¹

1. Background

A major conference, *Medieval Europe 1992*, was held at York in England in September 1992. Publicity circulated well over a year in advance advertised that one theme for which papers were invited was *Technology and innovation*. The author seized the opportunity to learn from experts in an adjacent period, and offered a background paper on Graeco-Roman technology — notably its context in the wider economy. When the detailed programme for this session was published, it transpired that authorities on water-mills, building construction, pottery, glass or metals were clustered together into specialist sessions, while papers offered by the author and one mediaevalist were appended to a plenary ‘keynote address’ on Villard de Honnecourt by Jean Gimpel. Significantly, our papers had incorporated the words ‘technology’ and ‘innovation’ into their titles — few of the other 45 participants had mentioned either. Since this tendency to evade the basic conceptual issues about the nature and rôle of technology was already familiar to me from the Roman period, the present article is offered to the readers of *JRA* to illustrate the potential of a broad chronological approach to the subject.

Seen from the Roman side of the chronological fence, the study of mediaeval technology had appeared to be a fertile field, producing interesting ideas of broad historical significance backed up by forms of detailed literary and artistic evidence sadly lacking from earlier periods. This impression probably resulted from the existence of a few charismatic writers of the 1950s-1970s — notably L. White Jr, and including J. Gimpel — who had, in the tradition of Lefebvre de Noëttes,² made bold claims for the historical and social implications of technology. Lynn White Jr raised the stakes in 1962³ by tracing much of Europe’s political and economic development from improved utilisation of horses for riding and traction by means of stirrups, iron shoes and heavy collars. When associated with wheeled ploughs, they were considered to have allowed profound agricultural developments following their initial military advantages. Gimpel went even further,⁴ and used his assessment of the growth, maturation and decline of mediaeval France’s technology to predict the deterioration and eventual failure of the United States and in consequence the economy of the western world.

Few non-specialists would even be able to *name* a single writer on Graeco-Roman technology; even if they could (K. D. White is the most likely candidate), they would be unable to attribute any ‘big ideas’ to them. Unlike the ancient economy, technology has not had its Rostovtzeff, Finley or Hopkins. Finley’s opinions probably made an impact on other branches of classical scholarship and archaeology because he already enjoyed an established reputation. Finley was also one of the few writers on the ancient economy to pay serious attention to

1 R. Holt, “Milling technology in the Middle Ages: the direction of recent research,” *Industrial Archaeology Review* 13.1 (1990) 51.

2 Lefebvre des Noëttes, *L’attelage, le cheval de selle à travers les âges* (Paris 1931).

3 L. T. White, *Medieval technology and social change* (Oxford 1962).

4 J. Gimpel, *La révolution industrielle du Moyen Âge / The medieval machine: the industrial revolution of the Middle Ages* (New York 1976).