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Review of *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe* by Elizabeth Eisenstein

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The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe. 2 vols. By Elizabeth Eisenstein. New York: Cambridge University Press, 1979. Pp. xxi+794. $49.50.

Elizabeth Eisenstein's thesis is that our conceptualization of modern history is seriously flawed because it has never properly taken account of printing. As a result, some classic debates about the true origins of modernity have been misconceived. In these two volumes Eisenstein seeks to establish the rightful place of the shift from script to print in three historical transformations—the Renaissance, the Reformation, and the rise of modern science. This is a major scholarly contribution and a special triumph for the literature of technology and culture. In spite of a generally felt need to integrate technology into larger historical concerns, studies of "material culture" are frequently no more than alternative histories which blaze no trail back to traditional frameworks. Splendid isolation persists on both sides. In this work the technological and the traditional really meet, and the result is the fertilization of historical understanding it was always imagined that such a combination would produce.

During the last eleven years Professor Eisenstein has published several provocative essays about the significance of printing for the "problem of the Renaissance" and the Reformation. Revised and filled out with a substantial amount of new material, these essays constitute the core of volume 1. Material in volume 2, which tackles the relationship of printing to science, has not appeared before.

Eisenstein begins with an analysis of the treatment of printing before the steam press in the historical literature, and some conjectures about why the importance of the shift from script to print is universally conceded but rarely proved. Historians have been content to assume that the principal effect of the printing press was to accelerate the volume and movement of written communication and to extend its reach. According to this conception, printing stirred up the reagents of change; because of printing, change was more violent and took hold more quickly. Sometimes printing is more dramatically cast as an essential catalyst, but in most scholarship the structure of change remains outside its influence.

The intuitively compelling importance of the shift from script to print has tempted some scholars to fill the gap left by historians with grand theories of print as the monolithic cause of all modernity. The most notorious of these theorists is Marshall McLuhan, but a number of less flamboyant scholars have adopted the same theme. Print is credited with altering personal consciousness either by shifting communicative formats from image to word or by transferring perceptual emphasis from ear to eye. The ways in which restructured consciousnesses rearranged particular societies in particular circumstances are left maddeningly fuzzy in such theories, although this is

just what we want to know in order to take printing seriously as a historical agent.

Eisenstein argues that printing was not simply one of many frequently enumerated factors entering into the complex history of this period—its transformation of the possibilities for intellectual and technical association and progress altered the very parameters of change. Her mission is to demonstrate just how the shift from script to print within the Commonwealth of Learning reoriented cultural and religious development again and again in a kind of chain reaction. In the course of this analysis, Eisenstein takes on not only the postindustrial "prophets," but also a number of well-established, powerful theories advanced by historians from Burckhardt to Weber. She argues, in addition, that a "rising middle class," "secular forces," "emerging nationalism," and a spirit of "rational calculation" are too often no more than vaguely expanding conceptual bubbles filling up the interstices between and within whatever movements in early modern history are under discussion. Concrete explanations derived from an examination of the effects of the communications shift on already educated elites offer greater prospects for illumination than dogmas shaped to size.

Seeking less to dismantle than to rethink received theories, Eisenstein argues, for example, that throughout the Middle Ages periodic revivals of classical interests at different cultural centers were normally ended by war, famine, and other adversities that drew energy and attention back to more pressing problems of survival. The quattrocento Renaissance was not reversed in this way because it was the first such revival to be spared destruction by the fixative powers of print. The regional dimensions of the Italian Renaissance were reoriented by printing and gradually took root elsewhere in Europe.

Scribal culture had set a ceiling on knowledge that the printing press lifted. The desperate struggle to maintain such sources of written knowledge as existed came to an end. Scholars whose talents had been harnessed to preserving fragments and scraps of a variety of traditions scattered in pieces across a continent were freed for creative intellectual work of their own and provided with more and more opportunities to examine complete texts of authorities known to them previously only by reputation. In scribal culture knowledge had to be esoteric, remote, and protected to survive at all. To use it was to endanger it. Widespread notions of hermetic mystery and secret conspiracy owed something both to the elaborate memory systems which preserved knowledge and to tantalizingly incomplete and error-filled manuscripts. Printing arrested and eventually reversed the process of decay, but inescapable limits on the very possibilities for shared knowledge created an imagination which perhaps only seems more mysterious to us than it really was. "An inability to discriminate between Paradise and Atlantis on the one hand, Cathay and Jerusalem on the other, between unicorns and rhinoceroses, the fabulous and the

factual, does seem to separate earlier mentalities from our own in a way that arouses curiosity and requires explanation" (p. 227). But the explanation of the difference owes more to printing, in Eisenstein's view, than to a mysterious spiritual shift in the wind, or to local political circumstances in Italy.

Historians give more generous recognition to printing in accounts of the Reformation, but Eisenstein argues that printing had begun to do its work long before Luther nailed the ninety-five theses to the church door. (The very use of *that* image to evoke the Reformation reflects poorly on our understanding of its relationship to the communications shift.) Printing did proselytize, both for Protestant and Catholic reformers, but only after it had helped Catholic Christendom in a different way. Before printing, the sacred book was a closed system of inherited lore transmitted by copying and the memory arts. By permanently recovering ancient languages, by making collection, comparison, and correction—research, in short—feasible, printing launched a quest for a pure original text uncorrupted by copying and translation errors.

The impulse to restore had quite unexpected results. Trilingual studies revealed more and more of the complexity and diversity of the textual tradition and finally cast into doubt the existence of a single infallible text. The cosmopolitan fellowship of Latin Bible printing promoted heterodoxy and intellectual tolerance among collaborating scholars and printers, while vernacular Bible reading in Protestant countries which broke with Rome encouraged dogmatism and a narrow fundamentalist piety cultivated by linguistic barriers. Religious divisions fostered by print were also manifested in other ways. The emergence of witchcraft mania, Eisenstein argues, was part of a struggle between new religious cultures legitimated by printing and enabled by it to mount proselytizing missions, and resistant folk cultures defending traditions handed down orally through generations.

Printing encouraged tolerance and intensified dogmatism among both Catholics and Protestants; it strengthened secular and religious commitments simultaneously, not least through mutual contact. Far from tracing a straight secular path from the Renaissance to the Enlightenment, the legacy of the Reformation was enormously complicated by printing. If the transforming powers of print seem to render superfluous scholarly squabbles about which cultural revival or nation gave birth to an elusively defined "modern" spirit, a reconsideration of printing also shows that contradictory, incompatible tendencies thrived side by side during the Reformation. It is an unnecessary distortion to declare the triumph of one over another, or to designate one as truly real and all others illusory.

For scientists from anatomists to astronomers, and for skilled virtuosi from physicians to mapmakers, printing offered the same release of intellectual effort from mechanical copying and the same new possibilities for perusing complete texts that it did for humanist schol-

ars and theologians. Scientific data collection was born with printing, which made it possible to share an increasing range and quantity of information collected by many observers and to make new contributions part of a permanent accumulation no longer subject to the cycle of rapid decay and loss. New generations of scientists and virtuosi did not have to begin again from the beginning. Their efforts turned to corrective feedback and amplification.

Eisenstein specifically rejects a Kuhnian model for the 16th-century Copernican revolution. There was no normal science to overthrow, since "normal" science implies a reliably transmitted tradition which, she is at great pains to show, cannot be said to have existed in science before printing. She also challenges the view that Catholic censorship in southern Europe exercised no significant obstacle to scientific communication and progress. While the work of northern printers (which among other things rescued Galileo's work) imparted vitality to northern science, Mediterranean science, for the most part, languished.

In a short space it is hard to do justice to the detail and development of the arguments Eisenstein has offered, to the range of evidence upon which they draw, or to the force that a skillful combination of all these elements lends to this work. Specialists in many different areas will have to judge whether specific interpretations are well-founded. Cross-examination will be easy because this work is as carefully documented as one could wish. One of the real pleasures of these books is the energetic way their author has engaged her scholarly sources in dialogue as if all of them were conducting a lively history seminar together. Her conversation with them is spirited, and it is possible to imagine that she is occasionally, but elegantly, laughing up her sleeve at the impossible situation many of them are in because of their neglect of the communications shift. The organization of this study is, in fact, a model of the special advantages of the printed word. It gathers (and thoroughly catalogs in expansive footnotes and a carefully indexed bibliography) diverse and authoritative sources, discursively compares and evaluates them, and in good Baconian fashion arrives at a new synthesis.

If there is any significant weakness in this work, I believe it is in the attempt to suggest how new forms of printed communication and new habits and environments of reading may have contributed to a sense of personal and class "individualism"—like modernity, a shifting category. The scholar-prophets she has taken to task for the sin of speculation may cry foul when they discover that she has come to many of their own conclusions in exactly the same way. These speculations come mostly in a section which relates printing to the development of capitalist enterprise. This latter topic does not receive the treatment it deserves, but the whole matter is likely to be elaborated at greater length in a sequel study Eisenstein has promised us on the relationship of printing to the political transformation of early modern

Europe. In the meantime, her conclusions about the relationship between printing and individualism are intriguing, but distinctly tentative. They may be offered as a trial balloon, but she has not presented truly convincing evidence for them as she has for so much else, and they detract from the strength of the rest of her work.

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The Growth of British Industry. By A. E. Musson. New York: Holmes & Meier, 1978. Pp. 396. $29.50.

To write an account of British industry between 1500 and 1939 is an immense task, though Professor Musson brings long experience and great expertise to it. He has written extensively about science, technology, and the industrial revolution; he is an authority on the printing, engineering, and chemical industries; he has written about trade unionism with objectivity; he has contributed to the controversy on the Great Depression.

The main value of the book for which we must be grateful (though, in view of Musson's record, we would expect no less) is that there is more solid and sustained description of the fortunes of industry in Britain, over the whole period in which industry has been a really important sector of the economy, than can be obtained between two covers elsewhere. This is going to be a much-used reference work, and it is a great pity that the publishers have reduced the value of it by giving it a skeletal rather than a really full index. There has been a real attempt to keep the whole industrial spectrum in view, and it is good to have a general work which does not forget chemicals, glass, knitwear and lace, or small-scale-metal industries.

There are, however, great problems of policy and plan in writing a book of this kind, and the author's solutions to these cannot and will not please everybody. The coverage of the period from 1500 to 1700 is really very much of an introduction and not in the detail of the later part of the book. Naturally, Musson has to deal with the massive contribution of Nef, and like most recent scholars he does not accept many of his wider conclusions, though he is more generous than most in recognizing the lasting importance of that pioneering scholarship and in making clear that the quantitative and qualitative significance of coal for technology and economy is great from the 17th century onward.

Another difficult decision is how far to describe growth and changes in organization, and how far to explain them. For the coming of the industrial revolution, for instance, there is an enormous litera-

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