Science, reading, and Renaissance literature is a good book of its kind, but its title and conclusion suggest interdisciplinary ambitions which it does not realize. Despite its concluding words, it is certainly unlikely to lead science into healthy ways of learning from other disciplines, and despite the claims of its introduction, it may not even convince all social historians of science to turn from the “limited” and “narrow” work in which they presently engage to the “crucially different” approach which it takes. However, it has interesting material to offer to literary scholars as they think about the scientific texts which are such an important and attractive feature of the high culture of early modern England.

JOHN CONSIDINE, *University of Alberta*

Wolfgang Lefèvre, ed. *Picturing Machines 1400–1700*. Cambridge, Mass. and London: MIT Press, 2004. Pp. vi, 347.

This book is a collection of essays from a conference held at the Max Planck Institute for the History of Science, Berlin, in the summer of 2004. Organized into five different areas, the book presents an overview of recent research focusing on the representation of machines in the early modern period. This book should appeal to a broad range of scholars: not only historians of technology but those interested in cartography as well as historians of architecture and art. Although there are excellent papers dealing with the Middle Ages and Northern Europe, the emphasis is on Italian material between the mid-fifteenth-century Sienese engineer Mariano Taccola (1382–1458?) and the mid-sixteenth-century architect Antonio da Sangallo the Younger (1483–1546): this is when standards were developed and principles established. To cushion the reader, the editor has provided introductory comments to highlight general issues.

For a historian of architecture, like myself, the special virtue of the history of technology as a field has always been its indifference to issues of hierarchy. To theorize from the ground up, from the habits and practices of doing and making rather than from academic categories, gives the best work in the history of technology the quality of a fresh breeze on a humid summer's day. At the beginning of this volume the editor, Wolfgang Lefèvre, poses big questions of this sort. After noting the sudden explosion of drawings in the Renaissance, Lefèvre asks: “Why did they produce drawings? For whom and for what purposes? What were the prerequisites for this drawing practice, what were the contexts, and what were the consequences? In short, how did drawing shape the practice...of the early modern engineers?” (1). Architectural historians, who typically investigate the role of a drawing as part of a teleological process culminating in a completed building, have rarely, if ever, asked why drawing itself developed. We, at least, should turn avidly to this volume.

What sort of answers do we find? A number of the authors take up the “social context” for drawing. Can one determine, based on the image, for whom it was

drawn or what purpose it might have served? Marcus Popplow lays out a series of possible contexts: drawings to present devices to a broader public, drawings for engineers' private archives, drawings for theoretical purposes. Popplow concludes that a study of pictorial means can lead to a better understanding of the social conditions that shaped the design and manufacture of machines, and that further understanding of those conditions will lead to greater insight into drawing style.

David McGee raises similar issues in an essay about the origins of early modern machine design. He proposes that design should be considered as a form of "doing" rather than a form of "thinking." If the drawings of early European engineers such as Villard de Honnecourt, Guido da Vigevano, and Konrad Keyser were perfectly adequate for making the object in actuality, he asks us to reflect on the context that would make that true. McGee argues that one of the critical developments had to do with the creation of a representational style that could be read by a patron as well as a professional. He identified Taccola as the first engineer to meet those conditions. Questions about social context yield fruitful results.

But how much can the drawing alone tell us? Pamela O. Long, in an essay on Francesco di Giorgio and Leonardo, accepts the idea of a scholarly Francesco di Giorgio and the result is a sudden detachment from social context. What if, rather than working alone, a humanist adviser aided Francesco di Giorgio, as Howard Burns and others have proposed? The answer to that kind of question would go a long way towards answering questions about the purpose of his treatises and towards creating their social context. Long effectively analyses what the drawings show, but skirts the question of purpose that rests at the heart of social context.

Mary Henninger-Voss's interest in the conversations around military design opens a fruitful path. Field commanders were constantly in touch with their superiors by letter and large scale-models were sometimes built to enable the hometown warriors to direct operations in the field. Here is a social context that has left a valuable paper trail. Henninger-Voss cites Giulio Savorgnano's violent critique of the work of the Florentine architect-engineer Bonaiuto Lorini in the 1580s at Bergamo: "I would have [Lorini] castrated, as they do unmanageable horses, who become good once they are castrated" (157). That explosion comes within the context of a violent rant on Lorini's sexual proclivities not mentioned by Henninger-Voss (he has the "vizio Fiorentino," i.e., he is a homosexual), something that suggests that the social context for this debate is going to include not only the politics of the professions but sexual politics as well.

Three essays address specific technical aspects of drawing. Filippo Camerota provides an overview of Renaissance descriptive geometry, Lefèvre discusses the development of combined orthographic projection from the Middle Ages to the High Renaissance, and Jeanne Peiffer highlights the technique of projection developed by Albrecht Dürer in *Underweysung der Messung* (1525). The final paper, by Michael Mahoney, is a masterly summary of the relationship of Renaissance mechanical drawing to the development of the science of mechanics in the seventeenth century. Using the example of Christiaan Huygens and the clockmaker Isaac Thuret,

Mahoney underlines the conclusion of other authors that the drawing alone is rarely sufficient for the construction of the machine. More importantly, he shows that Huygens stands at the beginning of the tradition of mathematical physics, a field in which drawing would have only a limited role.

The volume opens interesting issues. Sadly, these have been vitiated by some laborious English translations and in one case translations from Italian sources so risible as to cast doubt on the essay as a whole. Perhaps this is the new norm in book publishing, but it is a long way from MIT's usual standards.

NICHOLAS ADAMS, *Vassar College*

Steven W. May and William A. Ringler, Jr. *Elizabethan Poetry: A Bibliography and First-line Index of English Verse, 1559–1603*. 3 vols. London and New York: Thoemmes Continuum, 2004. Pp. xx + 2337.

If Tudor men and women felt a subject was important, they wrote poems about it. Their poetry is not only or always primarily of value in a literary sense, but can be of inestimable value in the study of the social, economic, and political aspects of Tudor life. Tudor poems are found collected in volumes, included in miscellanies, embedded in drama and prose works, and inscribed in more unusual places, such as on monuments and within paintings. The problem is finding, organizing, and navigating around a corpus of which parts may be found almost anywhere. The original impulse behind several related indexes of English verse was to create reference works that would assist researchers in locating all the textual witnesses to a particular work. That is still their primary function. The subject indexes of this work also provide, in Steven May's words, an "analytical overview of the age's poetry with cross-checking that makes possible significant interdisciplinary research" (xii), since researchers can become aware of previously overlooked sources on particular subjects. The number and proportion of poems on different subjects provide hints to the preoccupations of the age.

Elizabethan Poetry: A Bibliography and First-line Index of English Verse, 1559–1603 is a considerable achievement, providing an essential complement to and continuation of the work done in earlier decades by William A. Ringler, Jr., in his *Bibliography and Index of English Verse Printed 1476–1558* and *Bibliography and Index of English Verse in Manuscript 1501–1558*. It is a formidable companion to these volumes, with some 32,500 entries in its current form. Although it is hardly portable, the sturdy binding and good quality paper of the three-volume set ensure a readable and durable resource that should withstand the wear and tear of the regular consultation it will surely see. The *Elizabethan Poetry Index* is an authoritative, indispensable reference work for all students of English Renaissance literature and its importance for other scholarly pursuits beyond literature cannot be underestimated.