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Dupré, S.

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OPTICS AND THE RISE OF PERSPECTIVE: A STUDY IN NETWORK KNOWLEDGE DIFFUSION

**Dominique RAYNAUD, Oxford : the
Bardwell Press, 2014**

SVEN DUPRE

Optics and the Rise of Perspective is a remarkable book for its interdisciplinarity. Its author, Dominique Raynaud, a historian of science and a sociologist, has brought together three fields of study in this book, which have rarely intersected; at least not all three, more typically, two of these disciplines have fruitfully come together. The first field is the history of science, or more specifically, the history of perspective, an interdisciplinary field in itself, which following Erwin Panofsky's *Perspective as Symbolic Form* (1927), attracted historians of science and art historians, among other disciplines, over the course of the last century. The second discipline is the history of universities. Raynaud builds upon the flourishing prosopographical studies focusing on the mobility of students and lecturers in this field. Finally, as a sociologist, Raynaud adopts network analysis, which as applied to historical studies of knowledge diffusion, has been on the rise mainly due to digital humanities.

One of the key issues in the history of perspective is the question of the invention (or discovery or re-discovery, depending upon your point of view) of linear perspective in the fifteenth century. Associated with Filippo Brunelleschi's panel and peephole experiments in front of the Baptistery and the Palazzo Vecchio in Florence at the beginning of the fifteenth century, historians have heavily debated the how and why of the invention, including the truthfulness and relevance of the account of Brunelleschi's experiments. In the past two decades Raynaud has contributed to studies in the history of perspective in numerous publications, most significantly to the question of the origins of perspective in *L'Hypothèse d'Oxford* (1998). In this book, he attributes the highest importance to optics, a well-developed discipline in the Middle Ages, in the hands of the Franciscans Robert Grosseteste, Roger Bacon and John Pecham as a body of knowledge available to the artisans and craftsmen inventing linear perspective.

This 'hypothesis' leaves open two questions, which Raynaud seeks to answer in this new book *Optics and the Rise of Perspective*.

The first question derives from the historical insight that the science of optics which the Franciscans developed and distributed was largely based on the major contributions to optics in the medieval Islamic world. If this knowledge was already available in Arabic, written up by scholars such as al-Kindi and Ibn al-Haytham, then the question arises: why did perspective not emerge in the medieval Islamic world? The question has haunted historians of perspective for quite a while, and has recently been the focus of the German art historian Hans Belting's *Florence and Baghdad: Renaissance Art and Arab Science* (2011). Raynaud devotes the first part of his book to a response of his own to this question. It will not come as a complete surprise to most readers that he identifies the overt antirealism in medieval Islamic culture as the most important obstacle to the rise of linear perspective.

The second, much larger part of the book is devoted to another open question, which can be considered as the book's core concern, and for which, in order to respond to it, Raynaud brings together the three fields of study mentioned above. Why did linear perspective emerge in Florence, or more widely, central Italy? The question is particularly apt given that Oxford was the first center of optics in medieval Europe, and that the Franciscans, considered the main agents of optical knowledge development and diffusion, had a network of universities, *studia* and libraries across Europe. In formulating his response, Raynaud adopts insights from sociology: firstly, that a scientific innovation can be partly explained by the diffusion of relevant knowledge, and secondly, that the more cosmopolitan a social environment is, the more it tends to adopt innovations. Applying network analysis, Raynaud convincingly shows that the university of Bologna was more cosmopolitan than any other university, especially Oxford and Paris, two other nodes in the Franciscan network of diffusion; that is, members of the university of Bologna had more opportunities to contact other universities and the university was in a better position to attract foreign lecturers. Therefore, Raynaud concludes that "central Italian universities were in a position of power and autonomy so that they could appropriate resources from all other centres, and keep certain resources other centres did not have access to" (p. 136). These universities thus accumulated optical knowledge, diffused through the pan-European Franciscan network, and therefore, central Italy was a region prone to the development of linear perspective.

Not only does this book make a convincing argument about knowledge diffusion, it also supports Raynaud's thesis on the importance of Franciscan optics to the rise of linear perspective, first developed in *L'Hypothèse d'Oxford*. As the latter book is only available in French, the new book *Optics and the Rise of Perspective* could possibly make this thesis better known in the English speaking academic world. It certainly deserves to be so.

Sven DUPRE

Utrecht University & University of Amsterdam
