Book Review

Ingrid Alexander-Skipnes (ed.) *Visual Culture and Mathematics in the Early Modern Period*, London: Taylor and Francis.

By Albrecht Heeffer

This collection of papers on the relationship between art and mathematics originated in two sessions at a conference organized in Los Angeles in 2012 by the editor. The title of the book curiously situates the studies in the early modern period but with, as its main protagonists the architects, engineers, artist and mathematicians Francesco de Giorgio (1439 – 1502), Leonardo da Vinci (1452 – 1519), Piero della Francesca (1412 – 1492), Luca Pacioli (1447 – 1517) and Albrecht Dürer (1471 – 1528) and its situation in Italian humanist culture, the Renaissance would be a more specific period reference. The eight papers are categorized in three subjects which are aptly chosen: 1) the mathematical mind and the search for beauty, 2) artists as mathematicians and 3) Euclid and artistic accomplishment.

In the first part John Hendrix argues that mathematics was an essential component of a humanist philosophy of art and illustrates the connection through the works of Alberti, Piero and Pacioli. Angeliki Pollali shows how the theory of proportions influenced modular architectural design on basis of late 15th century manuscripts by Francesco de Giorgio. Interestingly, she identifies an abbaco text on practical geometry as the main source for his work, which indicates that the mathematics of architectural design was embedded much more in the lay tradition of merchants and surveyors than previously considered. The next paper by Matthew Landrus shows that the abbaco tradition also provided the mathematical basis for engineers such as Leonardo and his contemporaries. With textual fragments from the *Giant Crossbow* project he show how calculations of balance, force and motion depended on rules and proportions of merchant arithmetic.

The second part explores how artists successfully expressed themselves as mathematicians, or is it the other way around? A short paper by Rangsook Yoon focuses on the mathematics of letters in the alphabet in his *Underweysung der Messung*. The discussion on sizing the letters on a tall building so that they appear the same height for people on the ground is an application of anamorphic projection, which is strangely not mentioned by the author. Anamorphosis is a direct consequence of the theory of perspective and was frequently applied in the fifteenth and sixteenth centuries as in the well known skull in Hans Holbein's painting *The Ambassadors*. Obviously also Piero belongs in the category of artists/mathematicians with a paper of Perry Brooks on the use of the special proportions pi and phi in his compositions.

The third part consists of a philosophical analysis by Caroline Fowler of the Euclidean concept of point and how the practice of geometrical drawing influenced later conceptions of movement in space. The chapter by Renzo Baldasso and John Logan is the more technical in the book and

addresses the representation of platonic solids in the well-known painting of Luca Pacioli by de' Barbari. The painting is obviously strongly connected with Pacioli's work *De divina proportione*. The last paper by the editor is somewhat different from the previous ones, discussing a painting by Raphael depicting mathematicians in the School of Athens rather than dealing with the geometry of composition.

The book represents well the different ways in which art and mathematics became closely intertwined during the Renaissance and how one discipline became and inspiration for the other. It builds further on previous works by Martin Kemp, Judith Field and Alexander Marr and deserves a place in every book shelf where you find books on art and mathematics together.