GALILEO GALILEI'S LOCATION,SHAPE AND SIZE OF DANTE'S INFERNO: AN ARTISTIC AND EDUCATIONAL PROJECT

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Mathematics and Art have a long historical relationship, which goes as far back as the ancient Greeks. It suffices to think, for instance, to their use of the golden ratio, regarded as an aesthetically pleasing canon and incorporated into the design of many monuments and temples. With the Renaissance we can see a rebirth of Classical (Greek and Roman) culture and ideas, and among them the study of Mathematics as a relevant subject needed to understand the nature and the arts.
Two major reasons drove Renaissance artists towards the pursuit of Mathematics. Firstly, painters needed to figure out how to depict three-dimensional scenes on a two-dimensional canvas. Secondly, philosophers and artists alike were convinced that Mathematics was the true essence of the physical world so that the entire universe, including the arts, could be explained in geometrical terms. For instance, Galileo Galilei in his *Il Saggiatore* wrote that "[The universe] is written in the language of Mathematics, and its characters are triangles, circles, and other geometric figures."
Thus, there is a close relation between Mathematics and Fine Arts during the Renaissance: mathematical knowledge is applied in drawings and paintings with the use of symmetry, producing ratios and proportions.
Within the study of such a context arises the artistic and educational project "*Galileo: location, shape and size of Dante's Inferno*" as a collaboration between the FDS Laboratory for Mathematical Education and Science Communication at the Department of Mathematics of the Politecnico di Milano and Accademia di Belle Arti di Brera.
The project is inspired by the first of two lectures held by Galileo Galilei at the Accademia Fiorentina in 1588. These lectures were commissioned by the Accademia to solve a literary controversy concerning the interpretation of Dante's *Inferno*. In these lessons Galileo took the opportunity to show his mathematical abilities combined with his strong background in Humanities. His ultimate aim was to show that Mathematics is not merely useful from a technical point of view, but can also give a contribution to nobler cultural debates, thus acquiring an intellectual status comparable to that of the Humanities.
When giving his lectures Galileo probably used drawings to explain how to map Dante's *Inferno*, because of " *la difficoltà del suggetto che non patisce esser con la penna facilmente esplicato*" (the difficulty of the subject which does not admit of easy explication in writing). Galileo's manuscript survives and is catalogued in the Filza Rinucciniana 21 of the Biblioteca Nazionale di Firenze, but the drawings are lost.
The project here presented included an accurate analysis of Galileo's work and was meant as an opportunity for the students of Graphic to investigate the relationship between geometric representation and artistic interpretation. They made scale drawings of the *Inferno*, by using different paper media and drawing techniques of their choice. Later they produced original art works resulting from a personal artistic interpretation of the subject, free of pure scientific representation. The results reflect various artistic and creative sensibilities: drawings, paintings, engravings. The students' works were gathered, accompanied by short sentences associated with the selected quotes of *Inferno* and displayed on the exhibition that was held at Politecnico di Milano (May 2012). After the works were exhibited at the Museo Dantesco of Ravenna (September 2013) and at the Bergamo Science Festival (XI Edition, October 2013).