Introduction

Tennis and the Scientific Revolution

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In the autumn of 1463 in the town of Orvieto, the German philosopher and astronomer Nicholas Cusanus completed his treatise \textit{De ludo globi}, in which he used the rules of a novel game played with a ball to describe a new vision of the universe. The impetus and movement of the ball became a metaphor for the complex design regulating the destiny of a new cosmos, from the orbit of the planets to the exercise of free will in men’s actions.

A few decades later a new game, the \textit{gioco della palla corda} (or \textit{jeu de paume}), was embraced with enthusiasm by aristocrats at the principal courts in Renaissance Italy, gaining many devotees and becoming a significant cultural and social phenomenon. Soon the Medici in Florence, the Sforza in Milan, the Este in Ferrara and the Gonzaga in Mantova were ordering the construction of tennis courts on their sumptuous estates and a new fashion was born that rapidly spread across Europe. By the end of the 16th century Paris counted more than two hundred and eighty \textit{jeu de paume} courts – exceeding the number of churches in the French capital, as an ambassador from the Doge’s court in Venice noted with amazement.

The game became so popular that in 1555 an Aristotelian philosopher, Antonio Scaino, wrote his \textit{Trattato del giuoco della palla}, the first treatise laying out the principles of the game. Like his predecessor Cusanus, however, Scaino could not resist engaging in a few digressions of a purely scientific nature. In particular, he noted the complexity of the tennis ball’s motion and its relevance to the emerging science of ballistics, thus drawing a connection between the game and the fundamental principles of natural philosophy.
We do not know whether Galileo ever had occasion to read Scaino’s treatise or to watch the students at the university in Padua (where he taught mathematics from 1592 to 1610) when they played a game of *palla corda* between lessons. But it is certainly striking that in his most important work, *Dialogo sopra i due massimi sistemi del mondo* (1632), Galileo chose an example that he knew would be familiar to all of his readers – the curved trajectory of a ball hit by an expert player – to explain a scientific concept in his second dialogue – the combined rotational and translational motion of a mobile. And it is no coincidence that Cardinal Francesco Barberini, the nephew of Pope Urban VIII, had two *palla corda* courts constructed on the grounds of his palace in Rome. Galileo counted on these two powerful prelates, and on Ferdinando de’ Medici in Florence (who was passionately fond of the game), to support him in the dissemination of his revolutionary scientific ideas.

Galileo’s use of the image of the tennis ball in a scientific text should not be considered a mere *captatio benevolentiae* directed toward his high-born patrons. It represented the fruit of serious reflections on the physics of a game that would provide him with an effective model to explain the phenomenon of combined motion, while at the same time furnishing implicit corroboration of Copernicus’ theory of the earth’s double rotational motion. Furthermore the irregular movement of the tennis ball, with its often unpredictable trajectory, demonstrated clearly the limitations of Aristotle’s theory of motion.

Thus, to communicate his ideas Galileo found a metaphor of great immediacy, a visual image drawn from the collective imagination that provided a lucid translation of his scientific language.

It is interesting to examine in this context, and from this historiographic perspective, the numerous works of art that accompanied the diffusion of the game in early modern European culture and society. Embracing a wide range of themes, geographic contexts, and cultural spheres, the prints and paintings of the period document the allegorical and moralizing dimensions of the game, its links with the art of emblems, and its broadening perception in terms of leisure and sociability. The nuances are multiple and complex, but can be clearly read in works such as several *cabinets d’amateur*, in which tennis rackets and balls are juxtaposed next to objets d’art and scientific instruments. Paintings by Frans Francken the Younger, Jan Brueghel and Jan van Kessel document the evolution of an image in which key themes in seventeenth-century culture and society converge, and they provide confirmation of the modernity of Galileo’s approach and of his prose.

From this moment onward, tennis would occupy a permanent place in the symbolic universe of European culture and taste, and images of rackets,