

# Architecture and Modern Science: the mathematics of the circle; arithmetic and geometry as figure and symbol in Renaissance and Baroque

Clara Germana GONÇALVES

CITAD, Lusíada University, Portugal / ISMAT, Portimão, Portugal

[claramoutinho@gmail.com](mailto:claramoutinho@gmail.com)

Orcid: 0000-0002-1236-5803

## Abstract

This paper will discuss how the circle – as figure and symbol – is adopted in architecture and relates to other disciplines in the period from the 15th to the 17th century.

The particular analysis will be made of the incorporation of philosophical and scientific concepts translated by mathematics, at first arithmetically and then geometrically and expressed in the plastic architectural forms of the Renaissance and Baroque.

Proceeding from Alexandre Koyré's idea that is summed up in the title of his book *From the Closed World to the Infinite Universe (Du monde clos à l'univers infini, 1957)* – on the philosophical and scientific thought of the 16th and 17th centuries – an analogy is established between the theoretical assumptions imposed by the new philosophical and scientific approach and the practice and theory of architecture.

It analyses how in Renaissance architecture the circle presents itself as an evident figure without autonomy while symbolising the finite world, and in Baroque architecture, the circle presents itself as a non-evident figure with autonomy while symbolising the infinite universe.

**Keywords:** circle, Renaissance, Baroque, arithmetic, geometry