

Paolo Bussotti

ARITHMETICS AND ARITHMETIZATION:
THE WAY INDICATED BY GAUSS AND KRONECKER

Abstract

The thesis of this article is that the concept of arithmetization endorsed by Weierstrass, Cantor and Dedekind is not the only possible. In fact, at the end of the XIX century, Leopold Kronecker proposed a different point of view: he thought that an arithmetization of analysis was necessary, but this process had to be based on an application of arithmetical methods in analysis. It was wrong, in his view, to define the real numbers in terms of rational numbers (as Weierstrass, Cantor and Dedekind did) without studying the deep connections between arithmetics and analysis.

Kronecker said to have based his opinions on Gauss's. So to examine the "new" concept of arithmetization, it's necessary to begin to understand Gauss's conception of arithmetics. For this reason the inquiry proposed begins with Gauss and I try to explain what Gauss meant for arithmetical methods and arithmetical objects. Then the influence of Gauss on Kronecker is expressed, underlying also the differences between the two mathematicians.

The conclusions are inherent to a brief confrontation between "classical" arithmetization and Kronecker's.