

1046-01-525

Renaud G. Chorlay* (renaud-chorlay@noos.fr), Universite Denis Diderot PARIS VII, case courier 7064, 2 place jussieu, 75251 Paris Cedex 05, France. *What is at stake in Weierstrass' criticism of Riemann's function theory ?*

The comparison between the theory of complex functions a la Riemann and a la Weierstrass has been a standard topic since the end of the 19th century. However, what exactly is at stake remains, to some extent, unclear; we think it calls for both epistemological and historical work. We shall first stress elements which are common to both mathematicians, such as the rejection of brute calculation, the conception of regular functions, and the use of singularities. We will also use the example of Poincare's work to show that, long before Weyl's "Idea of a Riemann surface", some mathematicians had successfully devised a mixed approach. This should help pinpoint more precisely where the differences lie. We will also document the ways in which these differences were described by late 19th century mathematicians : discovery vs proof, intuition vs rigor, geometry vs arithmetic, transcendental vs algebraic, global vs local. Analyzing the meaning and use of these pairs can contribute to the historical epistemology (in the sense of Daston) of some standard categories in the mathematical discourse. From a more philosophical viewpoint, it can provide non-standard case studies for the ongoing debates on issues such as purity of methods, choice of "proper" setting, and geometric thinking. (Received September 06, 2008)