# How has one, and how could one, approach the diversity of mathematical cultures?

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Since the eighteenth century, interest in the history of mathematics has intensified significantly. This interest has grown in different scholarly contexts, for instance, among specific collectives of mathematicians, or specific collectives of philologists. Accordingly, depending on the context, different types of historical approaches to mathematics have been shaped. These historical approaches can be characterized, among other things, by their goals, and the topics of interest privileged. They can also be characterized by the methods used (in the treatment of the documents, for instance), the norms these methods satisfy, and the epistemological values they reflect. In my interpretation, these features signal the existence of different scholarly cultures in the field of the history of mathematics, both in the past, and at the present day. Scholarly cultures of this kind will be more generally the focus of this talk. It is easy to perceive their existence in a given field. It is more difficult to understand how to describe them in a relevant way, and to establish how they can help account for historical phenomena.

In recent decades, the number of historical approaches to mathematics has proliferated, each taking specific facets of the past into focus. These approaches have developed in such a way that we witness a fragmentation in the history of mathematics, comparable to the fragmentation that can be noticed in the history of science more generally. The various approaches focusing on different facets of the past, the past is itself dealt with in separate pieces, which in my view constitutes a significant loss. One major consequence of this recent evolution has been a widening of the gap between the histories of mathematics practiced among mathematicians, and those carried out in other scholarly contexts. One of the aims of my contribution is to reflect upon this situation, and to suggest ways of building bridges to restore forms of cooperation. I am convinced that a description of the variety of cultures in the history of mathematics, and the shaping of common goals can contribute to the establishment of such cooperation.

To begin with, I intend to concentrate on a value shared by several scholarly cultures in the history of mathematics, namely, rigor. I would like to illustrate the variety of forms this value has taken, in different contexts in which a historical approach to mathematics has been pursued. I suggest that such a diversity is precisely what manifests the existence of different scholarly cultures and that this helps explain problems of communication between different approaches to the history of mathematics. In my view, each of these forms of rigor requires distinct scholarly skills, and each has a specific contribution to

make to history of mathematics in general. This plurality of the meanings and practices of the value of rigor will constitute my entry point into the more general phenomenon of the diversity of scholarly cultures.

I will then turn to the diversity of scholarly cultures in mathematics itself. Talk in terms of diversity of mathematical cultures is not new. We can inquire into its roots, and the related historical practices, as early as in the nineteenth century. With respect to ancient mathematics, this diversity has predominantly been, and is still too often, approached in national or communautarian terms. I will expose what I consider to be the fallacy of such conceptions, and examine the kind of contexts in which such views have been, and are still, promoted.

In the same way as I argue that there exist several scholarly cultures in the history of mathematics, and their identification could be consequential for us, I will argue that we can identify different scholarly cultures in mathematics, both in the past and at the present day, and acknowledging this fact brings into focus new and interesting phenomena. However, in my view these scholarly cultures have in general nothing to do with nations or other types of communities. I argue these scholarly cultures were shaped, and constantly transformed, by the practitioners themselves, in relation to, among other factors, the issues they addressed, the institutions in the context of which they were active, and the epistemological values they prized. This is one of the main reasons for us to be interested in these mathematical cultures. The shaping of scholarly cultures is one of the outcomes of mathematicians' work. I will more generally consider historiographic benefits that can derive from such an approach to mathematical activity, and I will suggest that the description of this variety of mathematical cultures could be a task for which cooperation between different types of history of mathematics could be beneficial.