Chapter 4

History of mathematics for trainee teachers

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Abstract: The movement to integrate mathematics history into the training of future teachers, and into the in-service training of current teachers, has been a theme of international concern over much of the last century. Examples of current practice from many countries, for training teachers at all levels, enable us to begin to learn lessons and press ahead both with adopting good practices and also putting continued research efforts into assessing the effects.

4.1 Earlier views on history in teacher education

Almost since the beginning of internationally coordinated mathematical activities, the importance of a historical component in the training of future mathematics teachers has been stressed by historians of mathematics and by mathematics educators and has been backed by the mathematical community. Already in 1904, the third International Mathematical Congress, held in Heidelberg, adopted a motion recommending the introduction of a historical component (IMC 1904, 51):

Considering that the history of mathematics nowadays constitutes a discipline of undeniable importance, that its benefit—from the directly mathematical viewpoint as well as from the pedagogical one—becomes ever more evident, and that it is, therefore, indispensable to accord it the proper position within public instruction.

The Congress wished to see established, on an international level (ibid., 51):


John Fauvel, Jan van Maanen (eds.), History in mathematics education: the ICMI study, Dordrecht: Kluwer 2000, pp. 91-142
The motion was proposed by expert mathematicians, historians of mathematics and mathematics educators, including David Eugene Smith (USA), Paul Tannery (France), Anton von Braunmühl, Emil Lampe, Max Simon, Paul Stäckel, and Ernst Wölffing (Germany), and Gino Loria (Italy). They made reference to earlier similar motions passed by the International Congress for Comparative Historical Research (Paris 1900) and by the International History Congress (Rome 1903). Since mathematics students were at this time (and in the following decades) almost exclusively studying for a teaching licence, the effect of this motion was to recommend the introduction of mathematics history into teacher training. The motion even recommended, additionally, the proposal “to introduce the elements of the history of the exact sciences into the curriculum of the particular teaching disciplines of the high schools” (ibid., 51 sq.)

The readiness to agree to such appeals has probably not diminished since that time. The problem, however, lies not simply with putting such appeals into practice. Nowadays, we can also see a profound shift in the motivations and justifications advanced for such claims and, consequently, decidedly different forms of practice from those intended by the proponents of the use of history at the beginning of this century.

The changes that have occurred during the last two or three decades can best be illustrated by considering a characteristically traditional position as presented by the Dutch teacher and historian of mathematics Eduard Jan Dijksterhuis. The position he adopted is highly revealing since it was published in an ICMI study directly preceding our present one, namely the Dutch contribution of 1962 to an international ICMI study on the state of teaching mathematics. Contrary to earlier periods, Dijksterhuis here made a distinction between two different career orientations: the profession of mathematics teacher and the career of mathematician.

As regards the latter, Dijksterhuis expressed his conviction that “the history of mathematics does not form an essential part” of the study of mathematics — at best forming a complement serving some historical or cultural curiosity. In justification, Dijksterhuis (1962,34) claimed that:

> present-day mathematics has [...] adopted and preserved all (from older mathematics) that was valuable and discarded the rest. There is not the slightest reason for occupying oneself with this rest once more.

For the other career pattern, that of mathematics teacher, he proposed a historical component as an essential core of the study course (ibid., 34 sq.):

> An entirely different situation presents itself for those who are qualifying for the profession of mathematics teacher in a secondary school. Their principal task will be to hand on mathematical knowledge to the new generation and, if possible, to engender love and admiration of man’s achievements in this field through the centuries. For those students a knowledge of the historical evolution of the science is an asset which is not only valuable, but downright indispensable, and which alone, naturally in combination with a good command of present-day mathematics, will enable them to perform their duties satisfactorily. They are constantly concerned with phases from the development of mathematics which have long ago become a thing of the past and they have to make those phases clear and attractive to adolescents who in this way have to be trained in mathematical thinking.