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Epple, Moritz

Between timelessness and historicity: On the dynamics of the epistemic objects of mathematics.

ISIS 102, No. 3, 481-493 (2011).

The author discusses the temporal structure of mathematical research through the analysis of four definitions related to a mathematical object, known nowadays as knot, from different times and places. Using for the analysis a letter of the Italian mathematician Enrico Betti (1863), an unpublished manuscript of the Scottish natural philosopher James Clerk Maxwell (1868), and the monographs by Kurt Reidemeister (1932) and Dale Rolfsen (1976), he concludes the following. “1. None of these definitions makes sense in mathematical practice without a technical framework. This framework is referred to but not explained in the definitions. 2. The dynamics of the epistemic objects of mathematical research (knots) are secondary to the dynamics of the epistemic configurations as a whole. To understand the former it is necessary to understand the latter. 3. The dynamics of epistemic configurations of mathematical research does not follow law-like processes. Very different types of change may happen (and did happen in the present case), and some of them link the dynamics of epistemic configurations with events and developments beyond the bounds of the research field in question.”

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