

The “Mapping” Concept in Mathematics: Potential Cartographic Influences?

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Formally speaking, a mapping is “a correspondence by which each element of a given set has associated with it one element (occas., one or more elements) of a second set.” (OED). What is the role of mapmaking and cartography in the history and philosophy of the “mapping” concept across mathematics and the exact sciences? How might the related formal concepts of “function” and “representation” also resonate cartographically? Is the polysemy of “map” in English an accident, or are there historical or conceptual reasons for it? A tentative archaeology of various sub-fields in 19th and early 20th century mathematics reveals possible influences and resonances of mapmaking, cartography, and the earth sciences on the concepts of “mapping” (English), and “Abbildung” and “Zuordnung” (German). The work of CF Gauss, Bernhard Riemann, Richard Dedekind, Ernst Mach, Henri Poincaré, Hermann Weyl, and Ludwig Wittgenstein, among others, is excavated for this conceptual genealogy. The exploration of surprising analogies and styles of reasoning may shed new light on the foundations of mathematics.

