

The Spread of Wolff's Mathematical Method in 18th-Century Germany: A Data-Driven Investigation

The German mathematician and philosopher Christian Wolff (1679-1754) is famous for articulating the so-called *mathematical method*, a method which he thought all sciences should adopt. Although Wolff's mathematical method is well known, the precise impact of Wolff's conception of the mathematical method upon eighteenth-century German science remains unknown. In this paper, we give a data-driven assessment of the spread of Wolff's mathematical method in eighteenth-century Germany by resorting to a mixed method involving qualitative, quantitative and computational components.

We (i) identify and collect, by devising a novel, replicable procedure, a corpus of hundred-sixty books in German and Latin published in Germany between 1720 and 1789 in logic and philosophy, (ii) model Wolff's mathematical method conceptually as a special take on traditional axiomatics (or a variant of it), (iii) develop an extensive annotation scheme in fifty-seven different questions with the aim of identifying sources in our corpus that reject Wolff's specific mathematical method while endorsing traditional axiomatics, (iv) have two independent annotators annotate the sources; (v) assess, on the bases of annotations, the spread and popularity of Wolff's specific mathematical method with respect to the axiomatic ideal of science.

Our results show incomparably stronger conceptual continuity in 18th century Germany's sources on scientific method than commonly thought (see e.g., Hinske 1990, Gava forthcoming), with differences being on conceptually rather minor points (the relation between axioms and definitions). Our data-driven assessment backs up purely qualitative work stressing continuity between Wolff and e.g. Kant and Lambert. These authors, in our terms, endorsed traditional axiomatics but were critical of Wolff's specific variant.

The result that many authors endorsed traditional axiomatics but were critical of Wolff's specific variant is important since it allows us to trace the continuity of views on traditional axiomatics while recognizing that many authors also rejected specific versions of axiomatics, such as Wolff's specific variant. This is the case for famous authors such as Lambert and Kant, who famously reject Wolff's mathematical method, but, according to our results, still endorsed traditional axiomatics. Hence, Lambert's and Kant's critique of the mathematical method, and the critique formulated by their followers, does not imply a rejection of traditional axiomatics. Our result counters reading of Kant who deny that Kant accepted axiomatics as a model of science (e.g., Sturm 2009).

Keywords: mathematical method, Christian Wolff, data-driven study.