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"YET YOU KNOW THAT THERE IS ONLY ONE EULER"

ANDREAS BÖHM (1720–1790) AND THE PRACTICE OF MATHEMATICS AT GERMAN UNIVERSITIES

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Abstract. — This article explores the daily life and career of Andreas Böhm (1720–1790), a Wolffian polymath who was professor of philosophy and mathematics at the University of Gießen. Böhm represents the "ordinary" professor at work, and his career exemplifies the practice of mathematics in 18th-century German universities. He published several textbooks, trained local surveyors, edited a scholarly journal and even entertained scholarly correspondence with a German countess. Using a large set of archival sources, we follow the negotiation of his academic chair and document in detail his teaching activities—as well as his lasting influence on surveying and practical geometry. By examining Böhm's multifaceted career, the article challenges the notion of 18th-century universities as stagnant, instead portraying them as dynamic centers of mathematical education and expertise, deeply embedded in the needs of local societies.

Résumé. — Cet article étudie la carrière et le quotidien d'Andreas Böhm (1720–1790), un polymathe wolffien qui fut professeur de philosophie et de mathématiques à l'université de Giessen. Böhm représente le professeur « ordinaire » au travail, et sa carrière illustre la pratique des mathématiques dans les universités allemandes du XVIII^{e} siècle. Auteur de plusieurs manuels, il participe à la formation des experts et arpenteurs locaux, édite une revue scientifique et entretient même une correspondance savante avec une

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comtesse allemande. À partir d'un vaste ensemble de sources d'archives, nous retraçons les négociations pour l'obtention de sa chaire universitaire et documentons en détail ses activités d'enseignement, ainsi que son influence durable sur l'arpentage et la géométrie pratique. En examinant les multiples facettes de la carrière d'Andreas Böhm, cet article récuse l'idée de stagnation et d'inertie du milieu universitaire au XVIII^e siècle, présentant plutôt ces institutions comme des centres dynamiques d'enseignement et d'expertise mathématiques, profondément ancrés dans les besoins des sociétés locales.

1. INTRODUCTION

Who were the people who engaged with mathematics in 18th-century universities? What did their day-to-day activities look like? How were mathematical lectures delivered, books published, and academic careers built at the time? Such fundamental questions have not received the attention they deserve, even as understanding the practice of mathematics and its social context is essential to grasping what characterized the discipline at that time.[1] A first reason lies in the difficulty of approaching the daily activities of "ordinary" early modern mathematicians [Aubin 2024]. Another stems from the natural tendency to focus on the greatest figures in mathematical research, who form a tight circle of well-known names. For the 18th-century German lands, Gottfried Wilhelm Leibniz (1646–1716) and Christian Wolff (1679–1754), later Johann Heinrich Lambert (1728–1777) and Leonhard Euler (1707–1783) have been the topic of numerous and well-deserved studies.[2]

"Yet you know that there is only one Euler," apologized Andreas Böhm in a letter, warning his correspondent in advance and asking her, "Be kind enough not to expect as much from me."[3] The author of this intriguing admission was a scholar, a university professor, and a Wolffian polymath. For the better part of five decades, Andreas Böhm (1720–1790) was a prolific author who taught mathematical sciences at the University of Gießen. This unremarkable institution was located in the Lutheran Landgraviate

1 [Belhoste 1998], [Brockliss 2003, 44]: "To date there has been little detailed research into the history of institutionalized science teaching in the eighteenth century".

2 Recent references include De Risi [2019], Crippa [2024], Nowitzki et al. [2022] and Calinger [2015]. The correspondence between Leonhard Euler and Prussian mathematics professors is an interesting source: Euler [2018].

3 ULB Darmstadt, Hs 4005, Letter dated 18.01.1784, f. 1r. Unless otherwise stated, all translations from German, French and Latin are by the author of the present article.

of Hesse-Darmstadt, a middle-sized territory of the Holy Roman Empire. [4] As anywhere else, the discipline of mathematics was part of the lower faculty of philosophy, which was still mainly regarded as a propaedeutic for the three higher faculties of theology, law and medicine. As in most other institutions, there was only one chair of mathematics in Gießen, and one for physics (sometimes labeled "natural philosophy"). Local officials or advanced students could sometimes teach a few mathematical courses, and most lectures were fee-based [Ridder-Symoens 1996].

Böhm was at the time a notable figure of his university and well-known in German academia. "He earned remarkable acclaim among his contemporaries for his astute application of the mathematical method to the various branches of knowledge" according to his entry in the *Allgemeine Deutsche Biographie*—he was indeed considered one of the great mathematicians of his time, next to Johann III Bernoulli and Abraham Gotthelf Kästner. [5] "His numerous works," the biographer immediately tempered, "have in the course of the advancement of science largely lost their former significance for the present" [Bernhardi 1876]. This description, cruel as it might sound, is fairly accurate: Andreas Böhm is indeed largely forgotten today. Not only is no specific formula or result attributed to him, but his name is barely mentioned even in studies about German universities. [6]

It is a commonplace to note that a "quantifying spirit" animated the eighteenth century [Frängsmyr et al. 1990]. This mathematization of nature was a fascinating, multifaceted endeavour, ranging from natural philosophy to instrument-making, including forestry, political economy and meteorology among many other fields of knowledge. This was a largely uncoordinated, yet collective entreprise advanced by thousands of persons. Its modern historiography, however, is highly selective. It focuses on a handful of actors and themes retrospectively found worthy of mention, while leaving others—such as Andreas Böhm—aside. Böhm and the vast majority of his fellow mathematicians working in universities have come to be viewed as an indistinct group, about which Scharlau, for instance, scathingly noted: "Before the university reforms of the early 19th century, mathematics at universities was utterly insignificant; virtually

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4 Extensive biographic references about Andreas Böhm will be given below. About the University of Gießen in the 18th century, see Moraw [1982].

5 [Scheibel 1786]. Scheibel's *Introduction to mathematical literature* was dedicated to Andreas Böhm, next to Bernoulli, Kästner, and Joachim Michael Geuß (famous at the time for his work on military mathematics.)

6 See Kühn [1988], Kröger [2014], Confalonieri & Kröger [2016] and Reimers [2025].

all professors from that time have been forgotten today" [Scharlau 1990, 1]. A widespread opinion is indeed that the mathematization of nature and contemporary developments of mathematics were taking place in the higher spheres of the academies of sciences. As a logical consequence, there are very few studies asking what was going on in universities, and these mostly focus on the largest institutions of Halle, Leipzig and Göttingen. As a result, little is known about what was happening in the three dozen universities of the Holy Roman Empire.[7]

This article examines the daily life of mathematics as an academic discipline in the second half of the 18th century, using as a lens the biography of Andreas Böhm. It seeks to understand the variety of activities encompassed by the practice of mathematical sciences, as well as how these were considered in German universities. While centred around one pivotal figure, for whom a large set of sources could be gathered, many students and colleagues will be mentioned. This enables a precise reconstruction of often-overlooked aspects—for instance teaching, editing, and administrative duties. Where relevant, this article highlights and discusses the extent to which Böhm's actions were typical of his time.

Why focus on one individual like Andreas Böhm? One might reasonably think that biographical studies have been made redundant by the breathtaking speed at which digital humanities developed, allowing for large prosopographical projects and the manipulation of ever-growing datasets.[8] When it becomes possible to have an all-encompassing view of the actors and of their scientific output in a given period, why focus on a single individual? "The efficiency of digital-history techniques," Orrje answers in a recent article, can "make it more difficult for us to adopt actor-centric perspectives to the past". The ultimate risk is to see knowledge as a self-contained, self-sustaining, and self-developing system, thus letting "actors out of sight" [Orrje 2023, 218]. "An excessively holistic analysis of the professionalization of science" warns Ehrhardt, "does not allow us to understand how, in very concrete terms, teaching and research activities were integrated into the daily lives of those who carried them out." [Ehrhardt 2009, §4]. Between the Charybdis of a hagiographic history focused on a few geniuses and the Scylla of dehumanizing large-scale, distant studies, this article attempts to present a typical individual working in a typical institution. Of course, the life and career of Andreas Böhm

7 Two remarkable exceptions are Müller [1904] and Kühn [1988].

8 On prosopography in the history of mathematics, see Rollet & Nabonnand [2012] as well as the DFG-Projekt *Politische Umbrüche und Disziplinenwandel. Mathematik in Deutschland, 1920–1960* (2022–2026).

have their singularities, but nevertheless offer a window into the intellectual atmosphere and daily life of eighteenth-century mathematicians [Aubin 2024; Ehrhardt 2009].

The fact that Andreas Böhm was an important figure of his time means his activities have left a substantial paper trail—even though he has largely been forgotten today. Considered together, these sources enable a precise reconstruction of not only his biography and his teaching, but also the cultural and intellectual climate in which he worked. Böhm was one of the most dedicated students of Christian Wolff, whose intellectual influence on contemporary academia could hardly be overstated and will be a recurring theme of this article. As a professor in Gießen, Böhm published four textbooks, translated numerous essays from various languages and even edited a journal. For almost half a century, he taught with such an "enviable facility and fluidity" and received such *applausum* that many students and travellers mention him in their writings.[9] His teaching activities and the hundreds of lectures that he offered can be retraced using the lecture catalogues of the University. A cunning negotiator, Böhm amassed over his long career a wealth of positions, titles and sources of income which are documented in detail in the local archives. Finally, in an era when university professors were public figures, Böhm was a civil servant of the Landgraviate who took an active part in the court life—more notably through correspondences.

In a first part, I will thus retrace Andreas Böhm's biography. Hired as a professor of metaphysics, Böhm obtained a mathematical chair after a protracted conflict which provides precious insights about the changing status of the discipline within the philosophical faculty. I will also discuss how the professionalization of mathematics developed in the second half of the century. The second part analyses his teaching activity in Gießen between 1745 and 1790, including to some extent his students and colleagues. The third part zooms in on Böhm's surveying textbook. At a time when cadastral surveys and cameralism were in full swing, his mathematical production reflects interesting developments in the teaching and editorial landscape. The fourth and last part broadens the perspective by examining his various activities as a civil servant. This includes the mathematical training of local experts in a short-lived faculty of *OEconomy*, the edition of a scholarly journal on military architecture, and his literary exchange with a local countess, Elise zu Solms-Laubach.

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9 Eulogy of Andreas Böhm, *Intelligenzblatt der Allgemeinen Literatur Zeitung*, Num. 99, 7. August 1790, S. 810. About the academic *applausus* and the social life of university courses, see Füssel [2022a].