

GIULIA GIANNINI

EXPERIMENTAL, VISUAL, AND PRINT PRACTICES
IN EARLY MODERN EUROPE:
THE ACCADEMIA DEL CIMENTO AND ITS
RECORDS

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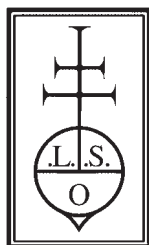
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E-MAIL: francescopaolo.deceglia@uniba.it

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GIULIA GIANNINI*

EXPERIMENTAL, VISUAL, AND PRINT PRACTICES
IN EARLY MODERN EUROPE:
THE ACCADEMIA DEL CIMENTO AND ITS RECORDS**

This issue focuses on the experimental, visual, and print practices associated with the Florentine Accademia del Cimento (1657-1667), the first scientific academy to make experimentation a core activity and to be supported by a public authority.

Despite its brief existence and the lack of any formal documentation pertaining to its establishment and operation, the Cimento produced a remarkable amount of records during its ten years of activity. Indeed, the archives of the Biblioteca Nazionale Centrale di Firenze (BNCF) alone contain over 20,000 sheets, including correspondence, instrument descriptions, experimental reports, and illustrations relating to the Academy's activities. In addition, a substantial number of Florence-related records are held in a number of European archives, including the Bibliothèque Nationale de France, the Universitaire Bibliotheken Leiden and the Archives of the Royal Society (see Appendix).

The extensive collection of documents relating to the Accademia del Cimento is a valuable historical resource, providing insights into a pivotal period in the history of science in Europe. Indeed, during its lifetime, the Florentine Academy witnessed the establishment of more enduring and prominent scientific societies, such as the Royal Society in London and the Académie Royale des Sciences in Paris. In their formative years, these acad-

* Università degli Studi di Milano, Dipartimento di Studi Storici, Via Festa del Perdono, 7, Milano, Italia, e-mail: giulia.giannini1@unimi.it

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emies did not operate as isolated institutions. Rather, they were part of a wider network of scientific and intellectual exchange in which the circulation of information, instruments, books, and people to and from Florence ultimately contributed to shaping the emergence of early modern science. In this sense, the documentary evidence produced by the Cimento is of significant historiographical value, as it not only allows us to reconstruct its history, driving forces, and activities, but also establishes the Cimento as a blueprint for early modern European academic culture and the institutionalisation of scientific knowledge.

In an influential essay published in 1981,¹ Paolo Galluzzi drew the attention of scholars to the wealth of manuscript material available on the activities of the Florentine Academy. He stressed the importance of studying the Cimento's interactions with Prince Leopold de' Medici (1617-1675), who had founded and supported the Academy, its political dimension, its internal aspirations and the dynamics among its members. Galluzzi challenged the image of neutrality presented to the public in the *Saggi di naturali esperienze* (1667), the only published work to bear the Academy's name.

Since then, major digitisation initiatives have transformed the Galilean collection at the National Central Library of Florence, providing digital access to most of the documentation relating to post-Galilean activities in Tuscany. Other archives have also been involved in digitisation campaigns, resulting in the remote accessibility of most of the material relating to the Cimento. Despite these efforts, however, a significant part of the existing sources remains unexplored. In his 2007 publication,² Luciano Boschiero presents a comprehensive historiographical revision of the origins and historical significance of the Florentine Academy. However, his reassessment largely overlooks the intricate details and extensive content of the surviving documents and relies heavily on previously published and well-known sources. The first attempt to reconstruct the history of the Accademia del Cimento in the light of this vast collection of unpublished records was made in 2009 in a book edited by Marco Beretta, Antonio Clericuzio, and Lawrence Principe. In this collected volume, the contributors portrayed the many facets and interests of the Florentine Academy and its impact on early modern European culture of knowledge production and experimentation.³

¹ GALLUZZI, 1981.

² BOSCHIERO, 2007.

³ BERETTA, CLERICUZIO, PRINCIPE, 2009.

Since then, despite the publication of many important analyses on the development of science in Tuscany after Galileo, research on the Accademia del Cimento has stagnated. Conversely, new and noteworthy studies continue to appear in the early stages of the most renowned and enduring scientific academies in Europe. In particular, research into the archival sources associated with the early Royal Society is increasingly opening up new and fruitful avenues of investigation. A revealing example is the body of research that has emerged in the last decade on the textual practices within the Royal Society.⁴

This special issue has two main objectives. First, to revitalise the research on the Accademia del Cimento and the development of science in post-Galilean Tuscany by offering new perspectives based on previously unexplored documents. Second, to contribute to the contemporary studies of early modern experimental, visual, textual, and material practices by highlighting the early position of the Cimento in the broader process of the institutionalisation of science in Europe. In addition, a third aim is to highlight the rich intertwining between different sources: in the Appendix, we provide a comprehensive overview of the sources related to the Accademia del Cimento, demonstrating the need to integrate sources of different nature and with different communicative or operational functions, and ultimately the need to extend research on the Cimento to sources that are not usually considered in relation to it. All the contributions to this special issue are based on the study of hitherto unexplored documents or sources, generally overlooked by historians.

Books and print culture play an important role in shaping the experimental programme and the public and private identity of the Florentine Academy. A visual representation of a pile of books is symbolically depicted on the opening page of one of the first diaries of experiments carried out by the Academy (see Ruggero Pace Gravina), which contains experiments that never appeared in the pages of the *Saggi di naturali esperienze*. A variety of documentary sources indicate that the reception of books played a significant and central role in shaping and defining the Academy's

⁴ To mention just a few examples: building particularly on the work of Ann Blair (BLAIR, 2010), Richard Yeo (YEO, 2014) analyses the intensive use of common placing and note-taking by the English *virtuosi* as a central process in the production of knowledge. In her work *Sociable Knowledge* (YALE, 2015), Elizabeth Yale looks at the Royal Society as a structure capable of integrating conversation into a system of written communication and record keeping, focusing on the interaction between scribal exchange and printed projects. Again, in her analysis of the use of the 'wish list' as a literary technology, Vera Keller (KELLER, 2015) also considers the relationship between experiments and desiderata lists in the Royal Society.

experimental agenda.⁵ Similarly, the production of books was equally important in defining the Academy's identity and shaping its legacy.

The *Saggi* is the first public document to mention the name of the Academy and the date of its foundation. It contains a selection of the experiments carried out by the Academicians over the previous decade, but the publication is not merely a compendium of their work. Rather, it incorporates a number of political, cultural, and diplomatic threads that run through the Florentine Academy. The volume encapsulates the tactile and visual experience of the experimental practice that was a defining characteristic of the Cimento's years, highlighting in particular the importance of the operational manipulation of instruments and experimental apparatus as the primary source of scientific knowledge (see Francesco Barreca). The use of a rhetorical and communicative strategy focused on technical and material practice was not a choice dictated solely by the patron of the Academy, but is also reflected in the printed and manuscript works of some of the scholars who participated in the Tuscan court. The case of Francesco Redi, who combined scientific observation with the study of rhetoric and linguistic skills in order to transmit scientific knowledge, is particularly revealing (see Noemi Di Tommaso).

Yet, the *Saggi* was also conceived as an emblematic representation of the Medici patronage of science. As such, it was presented as a gift to European courts and served as a conduit that could facilitate the formation of new networks and alliances (on this case and the absence of Spain, see Sebastián Molina-Betancur).

The book did not fully reflect the complexity and diversity of the activities carried out in Florence during the previous decade, and was only published after the establishment of both the Royal Society and the Académie Royale des Sciences in Paris. Prior to its publication, one of the main driving forces that made the Florentine activities known in Europe, more than the discussion of experiments, or the dissemination of ideas and information, was the circulation of instruments (see Giulia Giannini). Indeed, the surviving letters show that very few experiments were ever reported outside Florence before the appearance of the *Saggi*. On the other hand, some instruments were already in circulation before the founding of the Academy, and were often presented by the Medici as part of a diplomatic exchange of gifts between European courts during the period of the Cimento's activity.

Instead, the Academicians kept the descriptions of their experiments in selected correspondence between members and, in particular, in the dia-

⁵ GIANNINI, 2023.

ries, which preserve the records of over a thousand experiments carried out between 1657 (or shortly before) and 1667.

The analysis of these documents reveals the existence of lines of research in the Cimento that are absent or only partially hinted at in the *Saggi*. Examples of such studies include those on sound (see Elisabetta Rossi) and colour (see Giulia Simonini). Furthermore, the study of the manuscripts makes it possible to identify the scholars responsible for specific experiments, the places where they were carried out, and the sources on which they were based.

In order to gain a full understanding of the nature of the Academy and a nuanced appreciation of its functions and activities, it is necessary to consider not only the surviving manuscripts, but also a number of printed works produced within its sphere of influence. These include the contributions of scholars associated with the Medici court, as well as the extensive publications produced by many of the members of the Cimento during the time in which they participated in the Academy's activities. An example is the considerable mathematical output published by some of the scholars who contributed to the Florentine scientific activities, which was not part of the material collected in the *Saggi*, but which cannot be disregarded or dismissed as a marginal phenomenon distinct from the Cimento's endeavours (see Angela Axworthy).

Exploring the role of books within the Cimento, and the circulation of instruments and experimental results from Florence to European societies and to European peers, brings to the surface a range of practices that played a major role in early modern Europe. The following papers explore visual practices, illustrating the extensive and varied use of images in correspondence, diaries, and printed sources. Images fill the archives of the Cimento in various media, interacting with textual elements, either replacing or enhancing them, supporting the production and replication of scientific apparatus (Giannini), succinctly conveying the origins of experimental initiatives (Pace Gravina), and shaping the image of the academy (Barreca). The papers in this special issue also address textual and publishing practices, showing how the Florentine circle around Leopoldo de' Medici was concerned with linguistic, narrative, and editorial choices (Di Tommaso, Barreca, Axworthy). Material practices are also examined, with particular attention to the crucial role of instruments. Whether depicted and described (Barreca), or in tangible form (Rossi), whether travelling physically or through images and written messages (Giannini), instruments are the fundamental basis of the work of academicians and an important tool for disseminating the image and activities of the Academy.

In sum, this special issue aims to open up new avenues of research by exploring new directions in relation to the boundaries of an academy without a defined list of its members; by taking into account the contributions of scholars typically considered peripheral to the group, such as Redi (Di Tommaso) and Paolo Del Buono (Giannini); by analysing hitherto unexplored or under-explored connections with other European centres and scholars, such as the Spanish world (Molina-Betancur), the Polish court, and previously undiscovered links with Paris (Giannini); and, finally, by offering insights into hitherto neglected subjects, including investigations into colour (Simonini), research in mathematics (Axworthy), and early interests in the field of acoustics (Rossi).

This issue is the result of a collaborative work achieved by the group I have directed within the ERC Project TACITROOTS at the University of Milan.⁶ In this sense, while articles are the results of the individual research pursued by each author, we have read and discussed all contributions in a series of meetings, raising questions and comments to each other, in a very profitable way. These discussions have shown the interconnections between different features of the Accademia del Cimento, ultimately outlining the internal coherence of the whole fascicle. For this reason, I would like to thank all authors for their patient work, all referees for their precious comments, and all members of the group TACITROOTS, who have read, commented, and participated in this enterprise with their knowledge and expertise – a special thank goes to Fabrizio Baldassarri, Stefano Gulizia, Gianluca Magro, and Alessandro Tripepi for their help. I would also like to thank the editors of *Physis*, who have readily welcomed the proposal of this special issue on the Cimento.

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⁶ TACITROOTS, *The Accademia del Cimento in Florence: Tracing the roots of the European scientific enterprise*, Department of Historical Studies, University of Milan. This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 Research and Innovation Programme (GA n. 818098). <https://sites.unimi.it/tacitroots/>

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