

## BRINGING PAST PRACTICES TO THE PRESENT

“From the Library to the Laboratory and Back Again:  
Experiment as a Tool for Historians of Science”,  
eds. Hjalmar Fors, Lawrence M. Principe, and H. Otto Sibum,  
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This special issue focuses on the reworking of past experiments and how the knowledge they bring can be used in the history of science, as a complementary tool to textual analysis. It is composed of an extended introduction and four articles, each telling the story of how reworking past practices led to acquiring knowledge which was either absent or obscure in the texts.

The introduction starts with an account of experimental history of science, which gives a comprehensive overview even to a reader unfamiliar with the topic. As the editors point out, while in other disciplines (such as anthropology and art history conservation) reproduction of artefacts and processes started earlier, in history of science there have been only a few attempts before the 1980s, and these were in the history of physics and pharmacology. This changed with two prominent scholars. Lawrence M. Principe reproduced alchemical processes, proving that alchemy was not the product of imagination and textual transmission, as previously believed. Another, H. Otto Sibum, who reproduced James Joule’s crucial experiment regarding the mechanical equivalent of heat, revealing the fact that scientific enterprise depended on various social constraints. These practices encountered heavy criticism. One of the most preeminent criticisms came from the proponents of the sociology of the scientific knowledge, who claimed that the reproduction of experiments says more about the historian than about the original experimenter. The editors responded that, on the contrary, “performing historical experiments actually enriched aspects of the sociology of scientific knowledge by illustrating in practice how various scientific practitioners relied upon artisans, assistants, and family members, and how scientific work could be embedded in wider artisanal, industrial, and societal networks.” (88)

Probably the most significant aspect of the introduction is the exposition of how reproductions contribute to the history of science. The experimental approach is supposed to help the historian to better understand past texts and objects “through an active engagement with the practices these texts and objects describe or instantiate.” (89) In addition, it offers insights of what historical actors were doing and thinking and makes it possible to acquire details, which we cannot have only by reading the

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text. One specific case is sensual knowledge, which was either difficult to describe textually or part of ‘tacit knowledge’. Sensual experience can disclose the origin of ideas, theories, or the path of investigation; it can resolve ambiguities in the text; it can reveal the significance of something that seemed irrelevant in the text. Even if difficult, the authors conclude that it is not impossible to “to learn to see though the eyes and think along the minds of past figures.” (92)

The first article, “Understanding Texts with the Help of Experimentation: The example of Cupellation in Arabic Scientific Literature,” written by Sébastien Moureau and Nicolas Thomas, is the result of the collaboration between a philologist and an archaeologist. In translating three texts from Medieval Arabic literature and writing complementary commentaries, the authors carried out more than one hundred cupellation experiments – a technique used to purify gold and silver. These proved very useful in deciphering obscure instructions related to ‘tacit’ knowledge, those instructions which were not included in the ‘algorithmic’ knowledge transmitted through the written text.

Lawrence M. Principe’s article, “Chemical Exotica in the Seventeenth Century, or, How to Make the Bologna Stone,” focused on the Bologna Stone, a mineral that becomes fluorescent after chemical treatment. Its recipe was discovered by secret in the second half of the seventeenth century. By producing this stone, Principe discovered several issues about the trade and the knowledge of how to make these materials, about the role of real and imagined secrecy, and, most importantly, about the usefulness of reproducing experiments overall in the history of chemistry, where sensorial knowledge is crucial for the understanding of a process.

In the third article, Hailegh Robertson brings into discussion the production of saltpetre, an important product in the early modern period, in both chymistry and medicine. His “reworking Seventeenth-Century Saltpetre” was the result of collaboration with the Medieval Gunpowder Research Group. While trying to solve the difficulties raised by the recipes, Robertson understood the challenges faced by the authors she studied, and why sometimes their scientific attempts (in this case, to find a more efficient method of producing saltpetre) failed.

Nills-Otto Ahnfelt and Hjalmar Fors co-author the last article, “Making Early Modern Medicine: Reproducing Swedish Bitters.” They describes how it is possible to reproduce a medicine using early modern pharmaceutical methods and what it means to analyse it with contemporary science. This was possible only through tracing back every substance in the composite and examining its characteristics. The central role of sensual knowledge is underlined again in this article: “by smelling, touching, rubbing between the hands, weighing, mixing, grinding, pouring, and eventually tasting, we can make immediate estimations of quality, not dissimilar to those that would have been made by early moderns.” (182) In addition, the pharmaceutical analysis proved that the effects of the Swedish Bitter were those described by eighteenth century physicians, precisely because of the combination of the way in which substances reacted in composition. This constitutes a powerful suggestion for how past knowledge can be recovered and used in nowadays medicine and pharmacology.

This special issue of *Ambix* represents a valuable contribution to the history and philosophy of science for two main reasons. First, the four articles add significant

knowledge about past scientific actors and processes. Second, both the introduction and the individual papers offer insightful methodological considerations that show the value of reproducing past practices.