

EXPERIMENTS IN EARLY MODERN NATURAL HISTORY AND NATURAL MAGIC

“Instruments and Arts of Inquiry: Natural History, Natural Magic and the Production of Knowledge in Early Modern Europe”, eds. Dana Jalobeanu and Cesare Pastorino, *Journal of Early Modern Studies*, Volume 3, Issue 1 (Spring 2014), ISSN: 2285-6382 (print), 2286-0290 (online), 153 pp.

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This special issue of the *Journal of Early Modern Studies* aims at contributing to what is considered to be an unstudied field – the emergence of experimentalism in natural history, natural philosophy, and natural magic. The editors present two books for the intersection of natural history and natural magic: Giambattista della Porta’s *Magia naturalis* and Francis Bacon’s *Sylva sylvarum*. The first was read by contemporaries as “a treatise on natural ‘white’ magic, a compendium of wonderful ‘objects’ and instruments” or as “a sourcebook of experiments, recipes and ideas” (p. 9). The second, while inspired from the first, re-interpreted the experiments borrowed from it and placed them in what the editors consider to be a “very different theoretical and methodological context” (p. 10).

The first two articles create completely different images of Della Porta: a stage director who manipulated appearances and audiences on the one hand, and as a very meticulous experimenter and mathematician, on the other. Of course, the reader might ask how can these two images present the same thinker? In fact, both authors bring strong arguments to portray Della Porta as someone interested at the same time in producing both marvels and scientific knowledge.

Sergius Kodera’s study entitled “The Laboratory as Stage: Giovan Battista Della Porta’s Experiments” focuses on the ludic aspect on the Italian magus’ writings. Using as example the magnets, one of Della Porta’s favourite objects, the author shows how magic objects were for Della Porta to be manipulated in the same way as the actors on stage. In fact, the justification for natural magic was the nexus between stage and nature. However, the picture is more complicated than this. An important aspect of Della Porta’s magic was the relation between concealing and revealing: there is a “demonic show” for a general uneducated public and a level of explanations given for savants and possible patrons. But, as the author continues, “he was far less interested in the theoretical framework that might explain the causes of magnetism [...]. Porta was more interested in the sense of amazement these experiments would create in his audience [...]” (p. 24). A last part of this article deals with the art of physiognomics, used to highlight the histrionic character of Della Porta’s laboratory. The Italian was creating a macabre spectacle by showing, in candlelight,

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representations of bodies made of gypsum and wax, which, otherwise, were further used as models for drawings. Finally, the physiognomist was reading and interpreting them.

Arianna Borrelli, in “Thinking with optical objects: glass spheres, lenses and refraction in Giovan Battista Della Porta’s optical writings”, argues that Della Porta transformed the optical artifacts, glass spheres and lenses, into philosophical instruments, which helped him to formulate the sinus law of refraction. The article argues against the general way of interpreting Della Porta’s optics and aims at including him in a process of knowledge production called “geometrical optics.” The geometrical constructions are, Borrelli argues, experimental tools which free Della Porta from justifying his results on a more theoretical basis. The first part of the article presents a short history of optics with the aim of proving that Della Porta’s treatise *De refractione* contains both “the first systematic treatment of lenses and the first statement of geometrical rule of refraction” (p. 43). The rest of the study is concerned with the analysis of Della Porta’s formulation of the rule of refraction, the cathetus rule, and image formation.

The Baconian part of this special issue starts with an article authored by Daniel Schwartz, who gives an answer to the question “Is Baconian Natural History Theory-Laden?” The main claim of his study is that causes and axioms are necessary in natural history, even if their presence makes the histories “impure,” because they represent the method to refine the natural historical part. Schwartz’s aim is to show that Bacon was an empiricist foundationalist. In order to show this, the author analyses what he calls the “first-level notions,” which represent the starting-point of Bacon’s structure of justification and scientific inquiry. Further, he claims that Bacon recognizes that we need a system of scaffolding “that allows us to ascent to higher levels of the structure to assist in the construction and stabilization of the lower levels” (p. 83). Schwartz concludes that speculative philosophy is not problematic in Bacon’s natural histories as long as one uses the principle of gradualism and uses “mechanisms of enhancement and self-correction to refine, revise, and correct notions and axioms at all levels” (p. 88).

The fourth article is Dan Garber’s “Merchants of Light and Mystery Men: Bacon’s Last Projects in Natural History”. The article compares Bacon’s Latin natural histories with the posthumous *Sylva sylvarum*, arguing that *Sylva* represents the very first stages of constructing natural histories, while the Latin histories represent the later stages. The Latin natural histories were written in learned Latin, very carefully organized and structured. By contrast, *Sylva sylvarum* is written in English and has no clear structure and organization. Because of this, Garber considers it should be linked to the first level of members of Salomon’s House in the *New Atlantis*: “the *Sylva* can be thought of as representing the stage preliminary to the formal setting out of things into tables and ordered lists” (p. 104). Nevertheless, Garber stresses the fact that *Sylva* is not free-form – the material it contains is guided by the goal of collecting the appropriate instances which can later be arranged into lists and tables. Thus, Garber concludes, *Sylva sylvarum* can stimulate the less-learned reader to do his own investigation and maybe build something similar to the Latin natural histories, the core of Bacon’s project for the reformation of natural philosophy.

“Bacon in Holland: some evidences from Isaac Beeckman’s *Journal*” is the title of the last article of this issue. Benedino Gemelli shows how Bacon’s theory of sympathies and occult qualities are not compatible with the physico-mathematical explanations which were emerging at the time, as it results from Beeckman’s *Journal*. The article starts by presenting Beeckman’s annotations on earlier works, such as the *Novum organum* and the *Historia vitae et mortis*, dedicating the largest part of the article to the comments regarding *Sylva sylvarum*, in which the Dutch philosopher had a particular interest. Beeckman’s main criticisms, which can be observed throughout his journal is Bacon’s incapability “of marrying physics with mathematics” (p. 120). Gemelli concludes that the main point of divergence is the material character of sound, light, vision, and heat, together with the need, in Beeckman’s case, to replace occult qualities with either mathematical and geometrical relationships or elementary mechanisms of pressure. The author generalizes this claim: the different explanations do not only separate the two philosophers, but also one epoch from another.

All in all, this special issue of the *Journal of Early Modern Studies* creates a very complex image of some relevant writings in the field of natural history and natural magic, from Della Porta’s *Magia naturalis* and *De refractione*, to Bacon’s Latin natural histories and *Sylva sylvarum*, ending up with Beeckman’s *Journal*. More than being a way to show how the production of marvels has been transformed into a mechanical explanation of natural and artificial phenomena, the articles show how these very diverse theories co-existed, mingled with each other, and lead to what is now called ‘modern science’.