

Varieties of wonder: John Wilkins' mathematical magic and the perpetuity of invention

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Abstract

Akin to the mathematical recreations, John Wilkins' *Mathematicall Magick* (1648) elaborates the pleasant, useful and wondrous part of practical mathematics, dealing in particular with its material culture of machines and instruments. We contextualize the *Mathematicall Magick* by studying its institutional setting and its place within changing conceptions of art, nature, religion and mathematics. We devote special attention to the way Wilkins inscribes mechanical innovations within a discourse of wonder. Instead of treating 'wonder' as a monolithic category, we present a typology, showing that wonders were not only recreative, but were meant to inspire Wilkins' readers to new mathematical inventions.

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Résumé

Conformément aux récréations mathématiques, le *Mathematicall Magick* (1648) de John Wilkins développe les parties plaisantes, utiles et merveilleuses des mathématiques pratiques, traitant en particulier la culture matérielle des machines et des instruments. Nous étudions le *Mathematicall Magick* en contexte, en explorant son cadre institutionnel et sa place dans un ensemble de conceptions en pleine transformation à l'époque — conceptions de l'art, de la nature, de la religion et des mathématiques. Nous portons une attention particulière à la manière dont les innovations mécaniques s'inscrivent dans un discours sur le merveilleux. Au lieu de traiter « le merveilleux » comme une catégorie monolithique, nous offrons une typologie, montrant que les merveilles ne sont pas seulement récréatives, mais qu'elles cherchent à inspirer à des lecteurs l'envie de créer de nouvelles inventions mathématiques.

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1. Introduction

In July 1654 the English virtuoso John Evelyn paid a visit to the “Civilities of Oxford” (Evelyn, 1955, p. 111). He was shown different collections, some “adorn’d with some rarities of natural things”, such as a “prodigious large *Parot*” and “two humming birds, not much bigger than our *humble bee*”, as well as with “Magical Charmes” and “divers *Talismans*”; others containing a “store of Mathematical Instruments” (Evelyn, 1955, p. 108). On his last day, Evelyn visited “that most obliging & universally Curious Dr. *Wilkins*’s, at Waddum”. The warden of Wadham College (or Waddum, as Evelyn had it) showed him among other things “an hollow Statue which gave a Voice, & utterd words, by a long & conceald pipe which went to its mouth, whilst one spake thro it, at a good distance, & which at first was very Surprizing”. Besides this, he also “had above in his Gallery & Lodgings variety of *Shadows*, *Dyals*, *Perspectives*, places to introduce the *Species*, & many other artificial, mathematical, Magical curiosities: A *Way-Wiser*, a *Thermometer*; a monstrous *Magnes*, *Conic* & other *Sections*, a *Balance* on a demie *Circle*” (Evelyn, 1955, pp. 110–111).¹ Six years earlier, just before taking up his post at Oxford, the same Dr. Wilkins had already published a treatise entitled *Mathematicall Magick, or, The wonders that may be performed by mechanicall geometry*.² In it, he treated of numerous such “artificial, mathematical, and magical curiosities”, including some of the ones that Evelyn would later see at Wadham, but also flying chariots, submarines, and perpetuum mobiles.

Although John Wilkins would later become one of the founders of the Royal Society, there has been little sustained interest in his work.³ In particular, the *Mathematicall Magick* has remained mostly uncharted territory.⁴ For the older literature, it might have been Wilkins’ elevated status as protagonist in the institutional establishment of modern science that caused some unease with respect to the scientific value of this “strange, almost baroque assembly”⁵ of curiosities. But at least since the 1980’s there has been a growing interest in the role played in the development of modern science by exactly this typical baroque practice of collecting, and its concomitant focus on both wonder as a powerful cognitive attitude and wonders as a category of objects and events.⁶ In this context, Wilkins’ *Mathematicall Magick* is sometimes cited, but a detailed analysis of the registers of wonder used in that work has never been undertaken.

¹ We should be careful with Evelyn’s account, of course, which does not necessarily reflect exactly the contents of Wilkins’ collection. Such lists of wondrous instruments belonged to a genre of wonder literature, and Evelyn’s account is as much a literary trope as an observation report of his visit.

² Page references in the text will be to Wilkins, J. (1648). *Mathematicall Magick, or, The wonders that may be performed by mechanicall geometry in two books*. London: Sa. Gellibrand.

³ A general intellectual biography (Shapiro, 1969) and an insightful piece in the *Dictionary of Scientific Biography* (Aarsleff, 1976) are the most relevant general pieces on Wilkins. More recent literature has focused on his position as a patron of Robert Hooke and Christopher Wren (Jardine, 2004), his work on an universal language (Subbiondo, 1992; Stillman, 1995; Maat, 2004; Lewis, 2007), his views on natural theology (Mandelbrote, 2007), or his astronomical work in which he not only defends Copernicanism but also treats of travel to the moon (Chapman, 1991; Ait-Touati, 2005; Kaoukji and Jardine, 2010).

⁴ To some extent, Alfonso-Goldfarb (1998) is an exception, but she mainly treats Wilkins’ views on alchemy in the discussion on perpetually burning lamps in the second book of the *Mathematicall Magick*; and only after having rather misleadingly characterized the first book as “mechanisitic”, characterizing this as the propagation of a “nonteleological” theory of matter and the “borrowing from machinery the model to interpret each and every phenomenon of motion” (p. 135). This is a forced reading of the first book, so the opposition she tries to set up between a “modern” and “an “older” view about matter” in Wilkins’ work, seems to be without good grounds. We will argue for a different, more fine-grained way to characterize the differences, but also similarities between the two books making up the *Mathematicall Magick*. Recently, Natalie Kaoukji’s unpublished PhD dissertation also devotes a chapter to the *Mathematicall Magick*, but she treats the work as an exclusively literary enterprise (Kaoukji, 2008, p. 11).

⁵ Aarsleff (1976, p. 366).

⁶ See e.g. Céard (1986), Pomian (1988), Findlen (1996), Daston and Park (1998), Campbell (1999), Benedict (2001), Tybjerg (2003), Evans and Marr (2006). Especially Marr (2006) is essential background reading for this article, as it treats of automata and wonder-working.

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