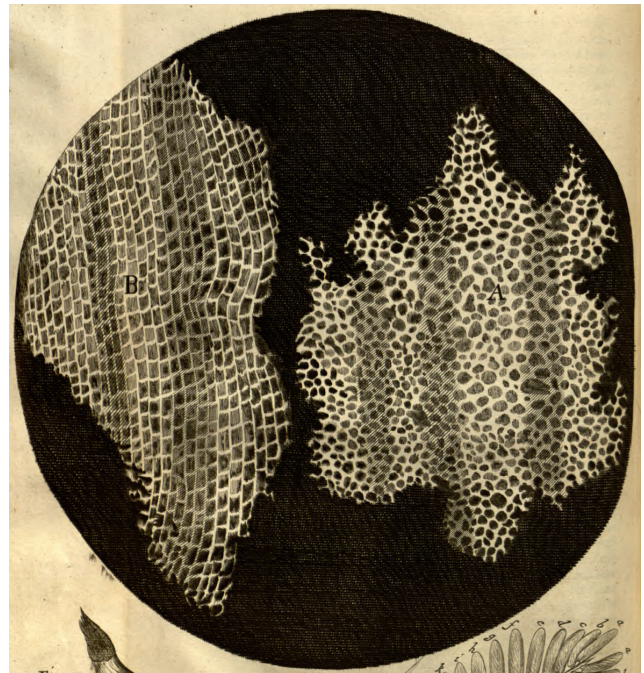


Amanda Iagusti
EN 233 – Data and Literature in the Scientific Revolution
Professor Aaron Hanlon
Selected Essay #1 – Book Review

WYFIWHF: What You see is What Hooke sees

Imagine a room with only one window open to the South, and about four feet from the window, a slim scientist stooped over a contraption of convex lenses, cement, wood, and leather; weak sunlight focusing into a strong beam to illuminate thin slices of cork. “I could exceedingly plainly perceive it to be all perforated and porous, much like a Honey-comb, but that the pores of it were not regular,” (Micrographia, 113) writes the polymath Robert Hooke in the eighteenth of the 60 observations of “Micrographia: Or Some Physiological Descriptions of Minute Bodies made by Magnifying Glasses with Observations and Inquiries Thereupon”. This description of a slice of cork viewed under a microscope is the origin of the term “cell.”

During the late 1660s, Micrographia was a hit, it grew scarce quickly and its price was raised far too much (Restaurata, Preface). A second version containing the prints made from the preserved original copper plates and a more accessible language was published in 1745 by the name of “Micrographia Restaurata.”



Hooke's illustration of cork cells (Hooke, Schem: XI)

Micrographia shows all of Hooke's interests and contributions to various branches of science, but its most distinguishing feature is the focus on microscopes and observations made with them. The table of contents that can be found at the end of the book numbers and describes all of the observations: the first 57 are microscopic observations, starting with inanimate objects like needles and razors and then moving on to natural ones like vegetables and insects; while the last three are telescopic and speculate about light, colors, planets, and stars.

Hooke was the first professional scientist of the Royal Society; he held the title of "Curator of experiments" and dedicated his entire scientific life to them (Purinton, xv). His passion for science, talent in many areas, and innate intuition for teaching were only shadowed by his fragile health and his tendency to take on too much at once, overpromising in his scientific endeavors and failing to follow through.

A letter to the King, an epistle to the Royal Society and a 28-page Preface follow the title page. In the letter to the Royal Society Hooke praises the empirical approach as the best way to make any philosophical progress, yet distances himself from the strong and narrow Baconian approach to science traditional to the Society. Hooke assumes any faults that can result from this unorthodox practice of science, freeing the Royal Society of the possibility of being associated with ungrounded, unverified conclusions.

The Preface also establishes the conceptual framework from which Hooke is conducting these experiments and a thorough description of the instruments he built and designed for that

purpose. However, other major contemporary issues are mentioned, specifically the goals of the Science of Nature and Experimental Philosophy. Science, Hooke argues, has been too long a work of the Brain and the Fancy, and it should now return to plain and sound observations of material objects. The influence of Sir Francis Bacon is undeniable not only because of the strong Baconian ideals that the Royal Society upheld, but because Hooke himself also endorsed these principles despite his digression in the letter to the Royal Society¹. Hooke also proposes the continuous exercise of philosophy through the metaphor of blood circulating inside a body: philosophy circles through the hands and eyes, memory, reason, and then back to hands and eyes again. This characterizes experimental philosophy as a self-regulating enterprise in which many delights and sensible pleasures can be found².

Throughout the observations, we get a glimpse of Hooke's self-awareness regarding the limits of experimentation. He admits there are things he cannot conclude and things that he cannot see because of the limitations of his instruments. Most observations are paired with figures, and sometimes it is not clear whether the illustration follows the explanation or vice versa. This book becomes too focused on the visual and is somewhat dismissive of the English language. There is no denying that the most attractive feature of *Micrographia* is the illustration of minute bodies, but the language can be perplexing and overcomplicated yet absolutely necessary to explain some procedures.

¹ He departs from those principles in the letter to the Royal Society, acknowledging the problem of unregulated experimentation.

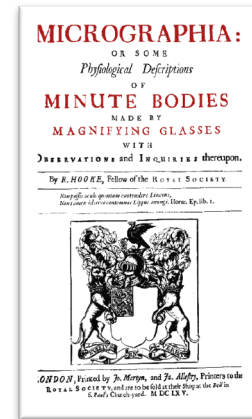
² Knowledge for knowledge itself.

The image drawn by Hooke is after he looked under the microscope is what the reader gets. This produces a quadruple lens distortion: first, the object is distorted by the lenses of the microscope; second, the image of this object is drawn; third, these images were etched onto copper plates; and finally, they were printed on the page. This chain of imperfections poses an important interrogation on the legitimacy and realness of Hooke's elaborate illustrations. However, Hooke's irresistible illustrations will win over most readers not only because of the complexity and precise details of the drawings themselves, but also because they magnify aspects of bodies that we are unable to observe closely enough with our naked eye.

Micrographia: Or Some Physiological Descriptions of Minute Bodies made by Magnifying Glasses with Observations and Inquiries Thereupon.

By Robert Hooke

Published 09.1665
Martyn and Allestry
323 Pages



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Another fascinating aspect of Micrographia is that the readers actively participate in the unfolding of the experiment, even 351 years after its publication. "Observation 25: Of the Stinging Points of a Nettle" takes us on a riveting journey where Hooke thrusts the bristles of a nettle leaf into his skin to explain how the stinging feeling, swellings, and inflammations are formed and by which mechanism. The "corrosive penetrant liquor" (Micrographia, 143) of nettle leaves is stored in small bags within the leaves and the pain results from the mixing of the body's "chymical liquors" with the poison.

The final three observations, although not totally coherent with the rest, still have the same powerful effect. “Observation 60: Of the Moon³” mentions gravity long before any other book, and was most likely the source of many disputes between other members of the Royal Society and their pupils.

If you doubt that a book can express pure aesthetic delight, unveil Nature’s underlying mechanisms, *and* be a page-turner, you will certainly be in awe of *Micrographia*. Although this book did not establish a new way of scientific thinking, it is both innovative and delightful, describing the abstract scientific principles behind the precise illustrations and procedures. It introduced many concepts that are now fundamental, established the conceptual groundwork for many branches of science, and raised the standards of microscopy. This brings to mind the thoughts of Abraham Cowley and his Ode to the Royal Society:

*No smallness her hear Objects can secure
Y’have taught the curious Sight to press
Into the privatest recess
Of her imperceptible Littleness.
Y’have learn’d to Read her smallest Hand,
And well begun her deepest Sense to Understand.*

Word count: 1097

³ In describing the spherical shape of the moon, Hooke asserts that the surface must be “equidistant from the Center of Gravitation; and indeed the figures of the superficial parts of the moon are so exactly shap’d, according as they should be, supposing it had a gravitation principle as the Earth has” (Hooke, 245).

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OR, THE COPPER-PLATES OF Dr. HOOKE's Wonderful Discoveries BY THE MICROSCOPE,

Reprinted and fully Explained : Whereby the most Valuable PARTICULARS in that

Celebrated AUTHOR's MICROGRAPHIA Are brought together in a narrow Compass ; AND

Intermixed, occasionally, with many Entertaining and Instructive DISCOVERIES and

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