

Back to the Future: Roots of Ecology, Environmental Studies and Plant Ethics in Seventeenth-Century Plant Studies

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Throughout the history of Western philosophy and science, scholars have relegated plants to the background of life on Earth. Two influential Aristotelian assumptions primarily drive this view: (1) that plant life functions independently of other beings, and thus (2) that botany operates separately from the rest of the sciences. These assumptions have pushed botany to the periphery of modern scientific inquiry, slowing its development into a fully-fledged discipline relative to other natural scientific fields. This historical trend perhaps anticipates the [current alarm](#) scientists are raising about the future of botany as a discipline today.

Yet the growing philosophical interest in plants holds the power to reverse hundreds of years of such tired assumptions. In the last three decades especially, philosophers and scientists have explored plant behavior, intelligence, and life in new ways. Thinkers like Anthony Trewavas and Michael Marder, alongside Paco Calvo and his laboratory MintLab, argue that vegetal nature possesses sensation, motion, memory, and cognition.

If we look to the under-acknowledged history of pre-modern science, we will see that the seeds of our new awareness about plant life grew from early modern botany and philosophy, particularly the sixteenth-century Italian Renaissance. Thinkers of that era shaped ideas that later influenced seventeenth-century European philosophy and science, thus offering an alternative interpretation that challenged the modern hierarchical organization of nature. As a historian of pre-modern science, I want to highlight the lessons we can gain by revisiting the era of Italian Renaissance science to explore its relevance to our evolving understanding of humans' many relationships with plant life.



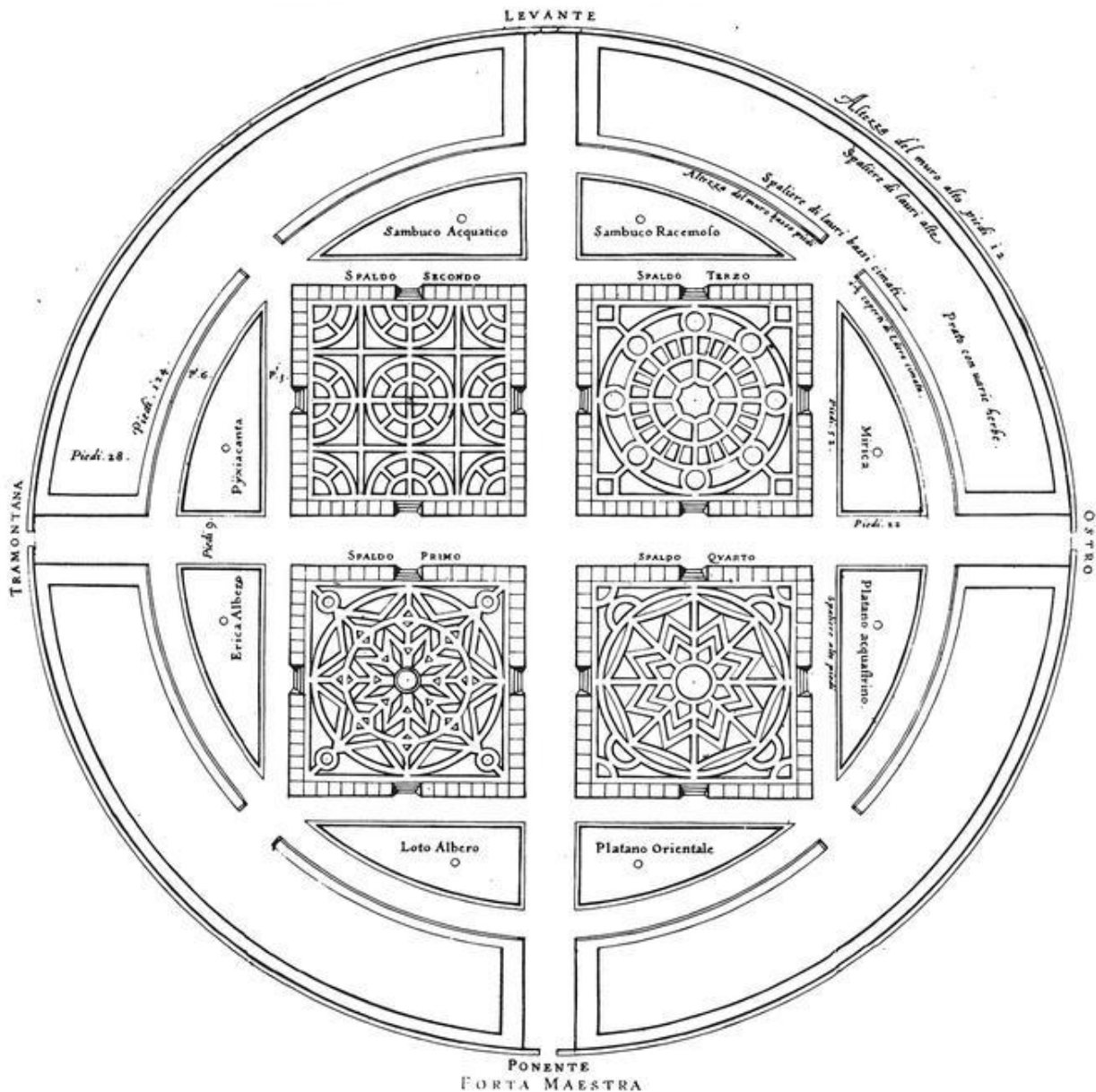
Andrea Cesalpino (Credit: Wikipedia)

Michel Foucault famously claimed that pre-modern scholars did not feel the need to define plant life, as they were too busy collecting natural varieties or preparing therapeutic remedies. My research challenges this claim. Consider the Italian Renaissance physician and naturalist Andrea Cesalpino (1524–1603), who grounded his methodology of plant classification in the Aristotelian concept of the vegetative soul, which unites plants (vegetables) with the vegetative faculties. For Cesalpino, “vegetative” meant “to be alive.” His often-overlooked methodology identified generation, nutrition, and growth as fundamental functions of life. He used these elements to classify plants, particularly by examining their reproductive faculty—specifically, the arrangement of plant seeds. Cesalpino’s morphological approach to understanding plant life was far from speculative. His work anticipated and influenced seventeenth-century naturalists such as Joseph Pitton de Tournefort (1656–1708) and John Ray (1627–1705), as well as the eighteenth-century naturalist Carl Linnaeus (1707–1778).

Like Cesalpino, who reveals the early modern effort to unify methodology with plant philosophy, other Renaissance Italian naturalists such as Bernardino Telesio (1509–1588), Giordano Bruno (1548–1600), and Tommaso Campanella (1568–1639) also developed alternative interpretations of plant life and behavior. They viewed plants as combinations of different agencies rather than the lowest rung on the scale of beings. In particular, these naturalists drew on sixteenth- and seventeenth-century scientific findings from botanical gardens in Pisa, Padova, Bologna, Montpellier, Leiden, and Paris, among others.

This movement in plant studies developed alongside contemporaneous plant anatomical observations conducted in garden laboratories and philosophical investigations into plant life and behavior. These scientific practices fostered an experimental metaphysics that Renaissance-era naturalists like Pietro Andrea Mattioli (1501–1578) advanced through their attention to plant classification, while philosophers such as Giambattista Della Porta (1535–1615) contributed through experiments with singular plant bodies. Importantly, these practices reflect early modern efforts to define the transmutation of plant species and pursue the creation of what Francis Bacon (1561–1626) called “super-plants.” This discourse also anticipated modern debates over the evolution of species.

PIANTA DELL HORTO DE I SEMPLICI DI PADOVA



Plan of the Hortus botanicus in Padua. (Credit: Wikipedia)

Finally, during the seventeenth century, scholars revised the plant-animal analogies inherited from Hippocratic and Galenic medicine, which had long subordinated plant studies to the study of animals. Around this time, physiological and medical research further entrenched this hierarchy. British physician Nehemiah Grew (1641–1712) and Italian physician Marcello Malpighi (1628–1694), however, used plant anatomy to challenge pre-modern anthropomorphic conceptions of plants and nature. They argued that plants should be studied in their own right and dismissed the presumed superiority of animal and human life.

Consequential rejections of traditional zoocentric and anthropocentric views of nature appear in the botany of Guy de La Brosse (1586–1641), who emphasizes the superiority of plant life by expanding concepts such as sensation, motion, memory, imagination, joy, sadness, and cognition, which he observed in plants. Additionally, several seventeenth-century literary utopias explore the

idea that plants can construct better societies, anticipating modern ecological theories about how plants shape and reshape local and regional environments.

Taking these three key lessons together—the early modern study of plant life and behavior; the scientific and philosophical insights gained through anatomical observation; and a new resistance to anthropomorphic understandings of plant life and nature—the pre-modern history of plant studies emerges as far richer than often assumed. The sixteenth- and seventeenth-century forerunners of modern botany created space for challenging anthropocentrism, criticizing the objectification of plant life, and opposing the idea that humans are masters of nature. Their work laid the groundwork for modern science and offer a new perspective on pre-modern philosophy and science.

While contemporary thinkers urge us to reconsider our world in light of what science reveals about plants today, their insights are not without precedent. Examining just a few leading figures from sixteenth- and seventeenth-century Western plant studies shows that these insights have deep roots that stretch back centuries. Such historical investigations offer us a valuable perspective for addressing contemporary and future plant-related challenges, revealing the origins of ecology, biodiversity, and plant ethics, as well as the need to revise social and economic hierarchies and Eurocentric and colonial perspectives. All of these aspects clarify the dangerous threats to botany (such as the removal of herbals from universities) we are seeing today.