

Pre-print

Published version in: *Encyclopedia of Renaissance Philosophy*, edited by Marco Sgarbi. Cham: Springer, 2022, 689–691. DOI [https://doi.org/10.1007/978-3-319-14169-5\\_722](https://doi.org/10.1007/978-3-319-14169-5_722).

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### **Title\***

Cesalpino, Andrea

### **Alternate names**

Cisalpino, Andrea

Caesalpinus, Andreas

### **Dates and places of birth and death\***

Born: 1524 or 1525, Arezzo

Died: 23 February 1603, Rome

### **Abstract\***

Andrea Cesalpino is an important figure in the history of science: he demonstrated that blood circulates into heart from veins and from the heart to arteries, paving the way to Harvey's complete description of blood circulation. Moreover, he was the founder of botany as a systematic discipline, which he based, rather than on the observation of accidental similarities of plants, on the discovery of their vegetative-generative principle. In philosophy, he attempted to conciliate the immortality of the soul (i.e. the form of the body) with the existence of a unique immaterial intellect, which is individuated and multiplied in the singular souls that participate to it.

### **Biography\***

Andrea Cesalpino was born in Arezzo in 1524 or 1525 (Repici 2005, 47-48, n.1). Between 1544 and 1551 he studied in Pisa, under Luca Ghini (professor of botany), Realdo Colombo (anatomy), and Simone Porzio (philosophy), attending also the anatomical lectures of Vesalius. He obtained a doctorate in medicine in 1551, and in 1555 he became director (*prefetto*) of the botanic garden (*Orto dei semplici*) in Pisa, succeeding to its founder Luca Ghini. In 1555 he started his teaching at University of Pisa, where he lectured for thirty-six years, although not with continuity: he taught medical botanics for six-teen years, and then practical medicine as ordinary professor for twenty years (s.n. 1755, 6-7). In these years he published his major works in philosophy, i.e. the *Quaestiones peripateticae* (1571) and *Daemonum investigatio peripatetica* (1580), and his *De plantis* (1683) in botany. Between 1582 and 1584 Galileo probably attended his lectures. In 1592 he moved to Rome, after having being defamed by his colleague in philosophy Francesco de Vieri, who accused him of propagating the ideas of Telesio. Also, he probably did not meet the

expectations as a botanic of the Grand Duke, as testified by the belated publication of his *De plantis* (Repici 2005, 47-48, n.1). In Rome, he became physician of the Pope Clemente VIII, and held a lecturer position in medicine at the *Sapientia* University until his death in 1603. (s.n. 1755; De Ferrari 1980; Repici 2005).

### Original aspects and legacy

Cesalpino is an important figure both for the history of science and for the history of philosophy. First, he paved the way to Harvey's discovery of the circulation of blood. Building upon the discovery of Vesalius and Realdo Colombo that blood does not pass through the pores of the cardiac septum (as maintained by Galen), Cesalpino ascertained by anatomical observations on ligatures of veins that blood perpetually circulates into heart from veins (vena cava and peripheral veins) and from the heart to arteries. In this way, he fore-ran Harvey's discovery that the centripetal movement of blood to heart is by veins only (Cesalpino 1571; Cesalpino 1583; Cesalpino 1605; Pagel 1967, 169-171; Bylebyl 1972; Pagel 1975). Moreover, Cesalpino inaugurated botany as a systematic discipline. He aimed to rewrite the pseudo-Aristotle's *De plantis*, which he found to be inconsistent with Aristotle's zoology, and to replace Theophrastus' classification of plants based on exterior similarities only. Cesalpino's *De plantis* consists of a classification of plants not provided with illustrations, as he wanted to give scientific descriptions rather than representations. His classificatory criteria prescribe not to look at similarities concerning singular parts of plants, and to find their vegetative-generative principle, shown by fruits and seeds (Repici 2005). Finally, his teaching of mechanics constituted the Aristotelian background of Galileo's mechanics, as he dealt with the composition of motions (Helbing 2008).

In philosophy, Cesalpino attempted to rediscover of the 'original' thought of Aristotle (Repici 2005, 51-53) and, in doing so, to solve the problem of the immortality of the soul raised by Pomponazzi, who maintained on the basis of *De anima* that soul performs all its knowing activities with corporeal imagination and it is therefore mortal (Sellars 2016). To solve this problem, Cesalpino argues that intellect is a potency or faculty, i.e. it is not a substance, and that it is not separated from the body; at the same time, intellect is not mixed with the body and is in itself intelligible, in order to make corporeal images intelligible. Secondly, he defines human soul (which is the form of the body) as participating to the unique immaterial substance or intelligence, i.e. God, which is separated from the world and is located in the first heaven. In this way, soul can participate of the intellect and individuate it in singular bodies. However, Cesalpino could not solve the problem of the loss of individuality of soul after the death of the body itself (Cesalpino 1571; Cesalpino 1580; Colombero 1977).

Cesalpino was portrayed as a main sample of impious Aristotelianism by Nicolaus Taurellus, since his idea of participation entails that of universal animation, and by Samuel Parker, accusing him of atheism as he maintained that first intelligence is speculative i.e. not directed to the providential ordering of the world (Taurellus 1597; Parker 1678; Colombero 1980, 343-345). Moreover, Cesalpino's idea of the participation to a unique immaterial substance was labelled as proto-Spinozist by Pierre Bayle (Bayle 1734; Colombero 1980, 349-354).

### Cross-References

System  
Spinoza  
Botanics  
Images in science (function of)  
Observation  
World Soul  
God  
Substance

Intellect  
Colombo, Realdo  
Imagination

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