

Transversal: International Journal for the Historiography of Science, 2 (2017) 226-232

ISSN 2526-2270

www.historiographyofscience.org

© The Author 2017 – This is an open access article

Article

Galileo and the Medici: Post-Renaissance Patronage or Post-Modern Historiography?¹

Michael Segre²

Abstract:

At the beginning of the eighties of the last century, the issue of “patronage” began to arouse scholarly interest and gained importance. Galileo became a test case: his importance, and the importance of patronage – and that of the Medici in particular – go beyond the historical junction of the scientific revolution and have corollaries in the more general attitude to science and knowledge. This case furnished a new line of research for the historical sociology of science. As far as Galileo is concerned, my claim is that the new trend belongs to post-modern historiography, rather than to post-Renaissance Medici patronage.

Keywords:

Galileo; Medici; patronage; post-modern historiography

226

Received: 13 February 2017. Accepted: 03 April 2017.

DOI: <http://dx.doi.org/10.24117/2526-2270.2017.i2.17>

At the beginning of the eighties of the last century, the issue of “patronage” began to arouse scholarly interest and gained importance. Galileo became a test case: his importance, and the importance of patronage – and that of the Medici in particular – go beyond the historical junction of the scientific revolution and have corollaries in the more general attitude to science and knowledge. This case furnished a new line of research for the historical sociology of science. As far as Galileo is concerned, my claim is that the new trend belongs to post-modern historiography, rather than to post-Renaissance Medici patronage.

In 1985 the late Richard Westfall published an interesting article in *Isis* under the title “Galileo and the Telescope,” arguing that Galileo’s main concern then was not so much astronomy as the telescope’s capacity to ensure his own future at the Tuscan court (Westfall 1985). Westfall lamented that quite generally, the history of science had been excessively dominated by nineteenth-century concerns. He suggested drawing more on seventeenth-century ideas, whereby “the subtle alchemy of patronage transmuted an object of science into an *objet d’art* to amuse and flatter a prince” (Westfall 1985, 15). He concluded that patronage could well have been the most pervasive institution of pre-industrial society, as well as an avenue leading us into the fruitful social history of the scientific revolution. He thereby offered a solution to a rarely mentioned historical problem: today scientists are academics or employees in industry, and both kinds of

¹ This article is based on a lecture held at the Bar-Hillel Colloquium for the History, Philosophy and Sociology of Science, Jerusalem, on March 9, 2005.

² Michael Segre is a Professor at the Gabriele D’Annunzio University. Address: 66100 Chieti Scalo (CH), Italy. Email: segre@unich.it.

scientists scarcely existed prior to the scientific revolution (Segre 2015). What, then, was their economic base? Answer: they were private pensioners of rich and powerful patrons.

Westfall's claims are interesting – although doubtful – and they deserve serious consideration. His challenge was welcome. As one result, meticulous investigations of Galileo's ascent to the Tuscan court were conducted, albeit not until twenty years after his article had appeared. To use the contemporary jargon, historians of science and of the sociology of science tried to reconstruct the "strategies" involved, such as "microphysics of patronage" and "self-fashioning of a client versus his patron," flavoured by a variety of "practices" drawn from realms such as etiquette, rhetoric, art, mythology, and even emblems.³ The conclusion was that science would not have evolved the way it has but for the kind of patronage that Galileo had inaugurated. Some historians went so far as to claim that in Galileo's case and in Early Modern Europe in general, patronage and science were more or less coextensive.

Two difficulties throw doubt on these views. The first is historical: In the Galilean case, patronage ultimately played a relatively restricted role, if any, in the advancement of science; his great contributions were quite independent of the patronage that he enjoyed. The second difficulty is philosophical: patronage – particularly when offered by a potentate to a courtier – came with the demand for a measure of conformity. How can this be reconciled with science's demand for freedom of thought, which is essential for scientific innovation? Indeed, even Galileo suffered pressure to conform, and it took a strong character and a brilliant intellect to overcome it. And so it is tempting to suggest that scientists are under pressure to conform, and only those who overcome this pressure have any chance to innovate. This is a romantic, Kuhnian view that scarcely squares with the complex and varied historical record (Kuhn 1996 [1962]).⁴ Without belittling the importance of patronage, let me call for caution; occasionally it may have been overemphasized following an attempt to conform to a certain historiographic trend.

Galileo and Patronage

At the beginning, Galileo's move to the Tuscan Court, his acceptance of a patronage, was advantageous to both sides, and to the Medici even more than to him. In a period of utter decline, the presence of Galileo at their court enhanced their prestige: they could present themselves as patrons of the new, emerging science and pursue the traditional cultural policy of their dynasty. But this was no more than a temporary aura and a luxury that they could dispense with. In the long run, his presence at court did not produce any particular advantage either to the Medici or to Tuscan culture.

Galileo's benefit was mainly financial; the Medici granted him enough leisure to concentrate on his scientific work with no teaching duties. His remuneration, incidentally, was paid not by the court but by the University of Pisa – a fact that raises a question concerning the extent and nature of the Medici patronage (Galilei 1890-1909, 233-264). Independently of the source of money, Galileo got all he asked for and more: in addition to good financial support and no teaching duties, he was able to take advantage of all the services a court could offer. Furthermore, he was totally free to proceed with his work – an exceptional situation as we shall soon see, especially in Tuscan post-Renaissance patronage.

Nevertheless, the outcome was disastrous. In 1616 the Catholic Church prohibited Galileo from teaching heliocentrism, and in 1633 the Roman Inquisition sentenced him to life imprisonment. The Grand Duke of Tuscany was only able to offer him his carriage to go to Rome and to put at his disposal the services of his embassy. History cannot rest on subjunctive conditionals, but these have their role to play. So let us note that all this might not have happened had Galileo remained a well-paid civil servant of the relatively strong and independent Republic of Venice. Moreover, much of Galileo's contribution to science was made prior to his return to Tuscany: his major work, the *Dialogue* of 1632, is essentially a popular presentation of previous thoughts, admittedly on the highest literary level, but still scientifically not very innovative. Even

³ A substantial contribution to this literature is made by Mario Biagioli, *Galileo Courtier: The Practice of Science in the Culture of Absolutism* (1993). He describes Galileo's science as part and parcel of his career and self-fashioning at the Tuscan court. The book has been debated, battles have been fought, and the History of Science has moved on. The inclination to conform, however, is always present.

⁴ Kuhn allows scientific leaders to be sufficiently nonconformist to break the framework occasionally, but "normal" scientists conform both in following the paradigm and in switching allegiance to a new one when told to. See Segre (2016).

without Galileo's campaign, the new astronomy would have established itself thanks to the contributions of great thinkers such as Kepler, Huygens, and Newton – and possibly in a less traumatic way. Taking Galileo as a test case, then, scales down the importance of patronage.

Why, then, give so much importance to patronage? To answer the question, one should consider a broader historical and historiographical context. As far as history is concerned, a look at the development of the Medici patronage could be helpful, and this requires extending the discussion from history of science to history of art, and more specifically to history of art patronage.

The basic question is:

What Was the Purpose of the Medici Patronage?

Any question about patronage can be too ambiguous to receive a clear answer, as the very concept of patronage is both broad and ambiguous. Collins *English Language Dictionary*, for example, defines it generally as “help and financial support given by someone to a person or group,” to enhance enterprises such as science, art, or culture (Collins 1987). Consider then, for instance, a later case – that of Luigi Galvani. After resigning his chair at the University of Bologna to avoid taking an oath of loyalty to the Napoleonic Cisalpine Republic, Galvani was sheltered by his brother. Can we call this patronage? And can one call the salary that the University of Pisa grudgingly paid Galileo “court patronage”?

The issue gets even more complex if one considers that the Medici patronage began in the fifteenth century, lasted three centuries, and involved the arts and letters at first and the sciences only later. Although the literature describing patronage is enormous, interestingly it overlooks, to the best of my knowledge, the question of whether the stipend that the University of Pisa paid Galileo was a patronage proper. It seems this literature even overlooks the basic question of the purpose of this stipend or similar ones.

Even with no expertise in the history of the Medici or the history of art, it is not hard to notice that the style of patronage varied in different times and under different rulers. It is likewise not hard to notice that the tradition of patronage began as a successful private enterprise and developed into a less successful state project. The first members of the Medici family to rule Florence were bankers whose motivation was protecting their finances. The complex structure of the Florentine *comune*, which some historians call a “League of Mafia families,” needed – *inter alia* – good terms with artists and their guilds (Trexler 1980, 27).

The first famous Medici “godfather,” in the first half of the fifteenth century, was Cosimo the Elder, a high-style businessman and a shrewd politician who promoted the arts in an enlightened way. He gave his clients total freedom, at least occasionally, even if this meant the deliberate overriding of current morality. An example of this is Donatello's “David,” which he commissioned in 1434, and which was the first life-size nude to be cast in bronze since Classical times, with a playful, sensuous, and androgynous body.

Cosimo instituted his patronage for diverse reasons. It seems he had religious motives in addition to his personal taste and his interest in local politics: as his earthly enterprises were not always spotless, he may have hoped to redress the balance with pious deeds. One of his major sponsorships was the restoration of the Dominican Cloister of San Marco in Florence. In its cells one can still admire Beato Angelico's wonderful, meditative frescos, and Cosimo's own cell testifies to his spiritual concern.

The heritage of Cosimo the Elder reappeared in his legendary grandson, Lorenzo “the Magnificent,” who supported artists and men of letters both in his own personal interest and in that of the state.

On the personal level, Lorenzo was a learned individual. He enriched the Medici libraries with rare manuscripts, collected rarities, and sponsored crafts neglected by traditional patrons. On the political level, Lorenzo was more ambitious than his grandfather and endeavored to win for Florence and its scattered territories the cultural leadership of Italy. He used art and artists for diplomatic and propaganda purposes, and strengthened ties with other princes and states by offering artistic advice and art objects and by recommending artists.

Yet just half a century ago the leading French historian André Chastel argued, under the provocative title “*le mythe de la Renaissance: age d'or et catastrophes*” (“The Renaissance myth: age of gold and catastrophes”), that Lorenzo's time had ran far less smoothly than his legend suggests. The quality of intellectual production at the time was lower than that of the earlier Renaissance. Also, Lorenzo's cultural enterprise seems to have been excessive at times and a burden on the family's and state's finances (Chastel

1492 – raised Savonarola to power and forced the Medici family into temporary exile.

Interestingly, Savonarola came from the very San Marco Cloister that Cosimo the Elder had restored, and his Dominican followers in San Marco initiated a reactionary, anti-humanist, and later anti-Copernican trend directly related to Galileo's trial.⁶ The first serious challenge to Galileo and to Copernicanism originated in San Marco in 1614. And this is but one example of the unpredictability of the results of patronage.

Incidentally, the Florentine decline at the end of the fifteenth century is depicted in a clear manner, with a nuance of sadness, in Botticelli's later works. This decline is the reason why leading high Renaissance artists from Tuscany, including Michelangelo and Leonardo, had to try their luck elsewhere. A century later, much the same happened to the young innovative mathematician and academic Galileo, who went to Padua.

Thus, it seems clear that at least part of the aura surrounding Lorenzo's patronage is an artificial production – his own or that of later historians. Moreover, during the period in which Italian rulers were competing with each other to raise their prestige and embellish their cities and palaces, European nations were taking shape. It was an epochal change that heralded the modern era. Fine arts could contribute little to assist the Italian principalities to keep up with these developments. Niccolò Machiavelli foresaw all this at the beginning of the sixteenth century and suggested political remedies.⁷ He offered the Medici his advice, together with his good offices, when they returned from exile; they maltreated him and shoved him aside.

That is the picture of Tuscany at the beginning of the sixteenth century. During this century that is described as post-Renaissance, the Medici became the absolute rulers of most of the Tuscan territory, received the titles "Duke" and later "Grand Duke," and hoped, at times pathetically, to obtain a royal crown. They deluded themselves that culture could be instrumental in achieving this ambition, and this opened an interesting new chapter in their patronage: post-Renaissance patronage.

The main aim of the first Tuscan Duke, Cosimo I, was to emulate the great European powers, Spain in particular (Forster 1971; Segre 1991a, 7-9, 144-145). Cosimo I, unlike Cosimo the Elder and Lorenzo the Magnificent, was no intellectual. His goal was not so much to encourage culture as to use it in his effort to glorify Tuscany and his own self. He introduced a complex art of patronage which was carried on by his heirs and lasted over a century.

Briefly, Duke Cosimo I raised culture to the status of a major official state project. This included financing Tuscan cultural institutions (universities and academies in particular), and at the same time putting them under strict state control so that they could serve political purposes. Cosimo I also used culture as a means for the prevention of possible opposition.⁸ Among the projects that he invested in as methods for the glorification of his dynasty, which fitted well into the absolutist extravagance of his day, were botanical gardens that he opened and new university chairs that he established to attract leading scholars. He tried in vain to bring Andreas Vesalius, the leading anatomist and physician to Charles V, to the University of Pisa.⁹

Most importantly, as far as historiography is concerned, Cosimo I allowed an artistic genius, Giorgio Vasari, to supervise the state's artistic interests. One of Vasari's undertakings at court was to glorify Tuscan culture and art under the patronage of the Medici. His celebrated *Lives of the Artists*, considered the beginning of modern history of art, was soon criticized for paying too much attention to Tuscan art and neglecting art produced elsewhere on the peninsula.¹⁰ Vasari used his literary ability to inflate and spread

⁵ Cf. Melissa M. Bullard's outstanding *Lorenzo the Magnificent. Image, anxiety, politics and finance* (1994).

⁶ One of the main anti-Copernican figures in this trend was Giovanmaria Tolosani (c. 1470-1549). See Camporeale (1986).

⁷ In *The Prince (Il Principe)*, written in 1513 and published for the first time in 1532). Chapter 24 is "an exhortation to liberate Italy from the barbarians," expressing the wish that Italy become a great European nation.

⁸ For Cosimo and the academies, see Cochrane (1983). For Cosimo's reform of the University of Pisa, see Marrara (1965).

⁹ For a detailed biography of Vesalius, see O'Malley (1964, 203) on Charles V and Vesalius. See also Galluzzi (1980) arguing that the Medici's patronage of science, just as in other domains, has been mystified: p. 194 on Vesalius.

¹⁰ Carlo Cesare Malvasia (1616-1693), a Bolognese historian of art, for instance, in his *Le pitture di Bologna* (1686, 1-2), criticized Vasari, among other things, for neglecting non-Tuscan artists, particularly from Bologna, see Malvasia (Reprinted 1969).

the myth of the Medici as enlightened patrons.¹¹

Incidentally, Vasari played a posthumous part in the creation of the Galileo myth (he died in 1574 when Galileo was ten years old) as Galileo's influential follower and earliest biographer, Vincenzo Viviani, adopted his hagiographical style of writing in his *Vita* of Galileo in 1654 (in Galilei 1890-1909). One sentence of his biography is an almost exact copy of one from Vasari's *Life of Michelangelo* (Segre 1989; 1991a, chap. 7).

The image of Tuscan culture created by Vasari and the Medici post-Renaissance patronage in general may have been impressive, but it utterly failed to achieve their political aims. The country was sinking into irreversible political, artistic, and cultural decadence. Intellectuals and artists there were forced to work under strict control. This was naturally unpopular and harmful (Forster 1995).

This, then, was the state of affairs when Galileo joined the Tuscan court in 1610 – much tradition, some decadent splendor, and very little substance. Understandably, Grand Duke Cosimo II was very happy to have Galileo at court. As an exception to traditional, post-Renaissance Medici patronage, he imposed no restrictions on him. Yet, to repeat, even this did not help. Cosimo's mid-seventeenth century heirs tried to return to the traditional post-Renaissance policy of control, censoring the work of the Galilean followers whom they supported (Galluzzi 1980; Segre 1991b). But this, too, did not bring the desired results, as one of the last prominent members of the dynasty, Prince Leopold de' Medici, frankly admitted.¹²

All this renders very questionable the claim that patronage and science were at that time more or less the same thing. It requires imagination, or perhaps faith in somewhat speculative theories in sociology and anthropology, in addition to taking for granted past historical descriptions that have been exposed as more legend than truth. How was this possible?

From Post-Renaissance Patronage to Post-Modern Narrative

In the nineteenth century, as William Whewell's monumental *History of the Inductive Sciences* (1837) was giving much prestige to modern history of science, Galileo was still largely depicted as the mythical martyr and founder of experimental science. The only social aspect of his work considered was his trial, which suited the anticlerical feelings of the day (Segre 1998, particularly 393-396). Yet as the field developed, historians began wondering what criteria to adopt when choosing among historical facts. Also in the same century, the founder of positivism, Auguste Comte, invented the term "sociology" and Émile Durkheim, one of the leading thinkers who established this field, asserted that "social facts" (to use his term) are the basis for all human action. Among the countless historiographies suggested, the presentation of science as a social occurrence began gaining ground. Thomas Kuhn was perhaps most instrumental in establishing it in the second half of the twentieth century. Kuhn drew attention to the relevance of the social aspects of science and particularly to its professionalization.¹³ (It is nevertheless hard to view mathematicians such as Copernicus, Galileo, or even Newton as scientific professionals.)¹⁴

Historians of science became increasingly interested in the social developments related to science, and instead of chronological facts and discoveries, began speaking of "practices." Substituting practices for facts moved the discussion to the sociological domain, but the difficulties could not be surmounted. The hoary issue of experimenting, for instance, re-emerged, with the difference that instead of speaking of experiments, one spoke of "practice of experiments" and concentrated more on the experimenters than on the experiment itself.

The myth of Galileo as the founder of experimental science and martyr of science, like Viviani's hagiography of Galileo, or Vasari's myth of the artistic patronage of the Medici, all share one problem that post-modern terminology calls "conflict between science and narrative." This is the starting-point for the

¹¹ See Forster (1971) and Rubin (1995). Rubin's book is a detailed study of the composing of the two editions of Vasari's *Lives*: on Vasari's glorification of the Medici, see pp. 197-208.

¹² Prince Leopold de' Medici promoted the work of the Accademia del Cimento between 1657 and 1667. For an English outline of the work of this Academy, see Middleton (1971). For the prince's disappointment, see p. 316.

¹³ According to Kuhn (1996 [1962]) a scientific revolution is a change in paradigm, whereas science administrators decide what the next paradigm is.

¹⁴ Joseph Agassi, in his recent, masterly, *The Very Idea of Modern Science: Francis Bacon and Robert Boyle* (2013), presents, *inter alia*, modern science as an amateur movement.

French philosopher Jean-François Lyotard, who, in 1979, published his influential book on *The Postmodern Condition: A report on Knowledge*, in which he proposes a post-modern approach (Lyotard 1979 and 2004).

“Post-modern” is a concept even vaguer than “patronage.” The term was invented in the nineteenth century in relation to art and was adopted in different fields with different meanings. It distances itself from what it considers the monolithic approach of modernity, no longer pertinent in a culturally diverse and fragmented world such as ours. It has produced interesting results such as *Learning from Las Vegas* by Robert Venturi *et al.*, where, in a study of Las Vegas’ architecture, the authors show how a mixture of styles can be attractive (Venturi; Brown; Izenour 1977).

Lyotard and others express disillusion with the Enlightenment’s rationality and reject absolute standards and truth: knowledge can only be relative (knowledge and rationality are indeed relative, but not the truth.) They favour and advocate narrative without any meta-narrative (i.e. narrative without a theory of rationality). They consider science as strictly human, and therefore suffering from human bias; This is indeed true – and so the truth is not easily accessible.

Westfall’s article was well accepted in the new trend despite, or perhaps thanks to, the ambiguity of his claims. Assuming, for instance, that Galileo thought first of his career, as Westfall claims, this does not mean that patronage was as important or as pervasive as Westfall claims. Post-modern narrative can, however, digest, and even welcome, irrational and confused discourse. Westfall’s article received a prize from the History of Science Society and inspired many other works that emphasise the importance of the Medici.¹⁵ Incidentally, quite a few articles that were awarded prizes by the History of Science Society in the following years were clearly post-modern.¹⁶

Conformism, then, is the common denominator between patronage and post-modern historiography, or so it seems, and that is why a post-modern historian would exalt post-Renaissance patronage with a clear conscience. It still is difficult to agree, and it is still much more helpful to apply the more modest approach of formulating specific questions and attempting to answer them in their immediate context and discuss them as critically as we know how.¹⁷ Had historians posed the question, for example, of what was the purpose of the Medici patronage, or other related specific questions, they would be in a much better position to give a balanced judgement. And this would probably indicate that patronage had more incidental consequences than have been presented in the past thirty years.

References

- Agassi, Joseph. 1967 [1963]. *Towards an historiography of science*. The Hague: Mouton; Middletown, Conn.: Wesleyan University Press.
- Agassi, Joseph. 1975. Three views on the renaissances of science. *Physis* 27: 165-185.
- Agassi, Joseph. 2008. *Science and its history: A reassessment of the historiography of science*. Dordrecht: Springer.
- Agassi, Joseph. 2013. *The very idea of modern science: Francis Bacon and Robert Boyle*. Dordrecht: Springer.
- Biagioli, Mario. 1993. *Galileo courtier: The practice of science in the culture of absolutism*. Chicago: The University of Chicago Press.
- Bullard, Melissa M., 1994. *Lorenzo the magnificent. Image, anxiety, politics and finance*. Florence: Olschki.

¹⁵ The article was awarded the 1997 Zeitlin-Verbrugge Prize by the History of Science Society.

¹⁶ An example of a post-modern formulation is Findlen (1993). The author suggests (p. 41) labeling Francesco Redi – a naturalist working at the Medici court in the middle of the seventeenth century – rather than a leading contemporary biologist, “a courtier who deployed the natural and human resources that his environment offered to shape experimental narratives that met the expectations of a patrician and largely court-based audience” (*sic*). Redi’s works and manuscripts still show him to be a leading biologist; yet Findlen’s description is an example of trendy, post-modern jargon.

¹⁷ As suggested by Karl Popper, for an historiography following Popper’s philosophy of science, see Agassi (1963; 1975). Agassi argues for the superiority of a Popperian approach compared mainly over the inductivist and conventionalist ones. This is further emphasized in Agassi’s collection of articles under the title *Science and its History: A Reassessment of the Historiography of Science* (2008).



- Camporeale, Salvatore I. 1986. Giovanmaria dei Tolosani O.P. 1530-1546, umanesimo, riforma e teologia controversista. *Memorie Dominicane, Nuova Serie*, 17: 145-252.
- Chastel, André. 1959. *Art et humanisme à Florence au temps de Laurent le magnifique*, Vol. 4. Paris: Presses Universitaires de France.
- Cochrane, Eric. 1983. Le accademie. In Giancarlo Garfagnini, *Firenze e la Toscana dei Medici nell'Europa del '500*. Vol. I. Florence: Olschki, pp. 3-17.
- Danilo Marrara. 1965. *L'università di Pisa come università statale nel granducato mediceo*. Milan: Giuffrè.
- Collins. 1987. *Cobuild English language dictionary*. London: HarperCollins Publishers. Reprint 1988, 1990, 1991.
- Findlen Paula. 1993. Controlling the experiment: Rhetoric, court patronage and experimental method of Francesco Redi. *History of Science* 31: 35-64.
- Forster, Kurt W. 1971. Metaphors of rule. Political ideology and history in the portraits of Cosimo I de' Medici. *Mitteilungen des Kunsthistorischen Institutes in Florenz* 15: 65-104.
- Galilei, Galileo. 1890-1909. *Le opere*. Edizione nazionale, edited by Antonio Favaro, Vol. 19, Florence: Barbèra. Reprint, 1929-1939, 1964-1965, 1968.
- Galluzzi, Paolo. 1980. L'Accademia del Cimento: 'gusti' del principe, filosofia e ideologia dell'esperimento. *Quaderni Storici* 48 (3): 788-844.
- Galluzzi, Paolo. 1980. Il mecenatismo mediceo e le scienze. In Cesare Vasoli. In *Idee, istituzioni, scienza ed arti nella Firenze dei Medici*. Florence: Giunti Martello, pp. 189-215.
- Kuhn, Thomas. 1996 [1962]. *The structure of scientific revolutions*. Chicago: The University of Chicago Press.
- Lyotard, Jean-François. 1979. *La condition postmoderne: rapport sur le savoir*. Paris: Minuit.
- Lyotard, Jean-François. 2004. *The postmodern condition: A report on knowledge*. Translated from French by Geoff Bennington and Brian Massumi. Manchester: Manchester University Press.
- Machiavelli, Niccolò. 1991. *Il Principe*, ed. Piero Melograni. Milan: Rizzoli.
- Machiavelli, Niccolò. *The Prince*. Translated by W. K. Marriott. <http://www.constitution.org/mac/prince00.htm>. Accessed September 11, 2013.
- Malvasia, Carlo Cesare. 1969 [1686]. *Le pitture di Bologna*. Bologna: Alfa.
- Middleton, W. E. Knowles. 1971. *The experimenters: A study of the Accademia del Cimento*. Baltimore: The Johns Hopkins Press.
- O'Malley, C. D. 1964. *Andreas Vesalius of Brussels, 1514-1564*. Berkeley: Univ. of California Press.
- Rubin, Patricia L. 1995. *Giorgio Vasari: Art and history*. New Haven: Yale University Press.
- Segre, Michael. 1989. Viviani's life of Galileo. *Isis* 80: 207-231.
- Segre, Michael. 1991a. *In the wake of Galileo*. New Brunswick: Rutgers University Press.
- Segre, Michael. 1991b. Science at the Tuscan Court, 1642-1667. In *Physics, cosmology and astronomy, 1300-1700: Tension and accommodation*. Edited by Sabetai Unguru. Dordrecht: Kluwer, pp. 295-308.
- Segre, Michael. 1998. The never-ending Galilean story. In *The Cambridge companion to Galileo*, edited by Peter Machamer. Cambridge: Cambridge University Press, pp. 388-416.
- Segre, Michael. 2015. *Higher education and the growth of knowledge: A historical outline of aims and tensions*. New York: Routledge.
- Segre, Michael. 2016. Kuhn, meritocracy, and excellence. In *Shifting paradigms: Thomas S. Kuhn and the history of science*. Edited by A. Blum, K. Gavrolu. C. Joas. J. Renn. Berlin: Edition Open Access, pp. 258-263.
- Trexler, Richard C. 1980. *Public life in renaissance Florence*. Ithaca: Cornell University Press.
- Venturi, Robert; Scott Brown, Denise; Izenour, Steven. 1977. *Learning from Las Vegas*. Revised Edition. Cambridge, Mass.: MIT Press.
- Viviani, Vincenzo. Racconto storico della vita di Galileo. In Galilei 1890-1909, pp. 597-632.
- Westfall, Richard S. 1985. Science and Patronage: Galileo and the Telescope. *Isis* 76: 11-30.