Ideologies of the Scientific Revolution: The Rise and Fall of a Historiographical Concept

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Abstract

The Scientific Revolution was one of the central concepts in the history of science during most of the twentieth century. Its central idea is that a unique break in intellectual history generated modern science—or science *tout court*. Historians and philosophers of science have long debated the exact geo-historical coordinates of such an event, including which disciplines were involved in it and which material and intellectual causes produced this cultural change. In general, historians of the Scientific Revolution have assumed that it must have taken place in early-modern Europe during the two or more centuries that culminated in the works of figures such as Leonardo da Vinci, Nicolaus Copernicus, Galileo Galilei and Isaac Newton. Intellectual historians such as Alexandre Koyré regarded the Scientific Revolution as a *spiritual* achievement—one that was both philosophical and theoretical—whereas historical materialists such as Boris Hessen and Edgar Zilsel sought the socio-economic roots of the new attitude towards nature and argued for its connection with the rise of capitalism. The philosopher of science Thomas Kuhn generalized the discontinuist interpretation of modern science. He viewed examples such as the 'Copernican revolution' in planetary astronomy and the breakthrough of Newtonian physics as paradigms that reveal the invariant structure of scientific advance. His understanding of the paradigm is as a process in which phases of cumulative, *normalized* research are interrupted by moments of rupture, which are in turn followed by a new normalization.

There is an inherent bias towards pluralizing relativism—according to which there is no reliable measure to ascertain the relative superiority of different paradigms and theories— in the Kuhnian conception that was magnified in the Eighties as a consequence of the so-called 'cultural turn'. In recent years it has become even more pronounced in

new approaches to science, technology and society. Arguably, post-modernism has dismissed grand narratives of modernity along with the idea of the Scientific Revolution that arose from them, while the current trend of global history has been to substitute the *temporal* with the *spatial* leaving little room for historical retrospective. At the present juncture the very idea of the Scientific Revolution has been questioned for reasons that range from post-colonial allegations of Eurocentrism, the social-constructivist criticism of truth-claims and the post-modern suspicion towards the concept of modernity.

Given the present crisis of the 'narrative' of the Scientific Revolution, it is time to assess whether it should be dismissed all together or whether some results of past scholarship can still be rescued. I claim that such an assessment will *only* be possible if the political meaning of the Scientific Revolution is taken into account. It would be reductive to consider the Scientific Revolution as historiographical construct without taking into account the reality it refers to and the contexts it arose out of, namely the phase of European scientific and political hegemony which was previously described by the interconnected concepts of science and modernity. Therefore, the problematic of the Scientific Revolution should be seen as both an historiographical as well an historical one. In both dimensions, it refers to a problem of science and power.

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The rise and fall of the concept of the Scientific Revolution took place throughout a few decades of the twentieth century. In 1936, one of the 'Founding Fathers' of the academic history of science, George Sarton, still ignored the very idea of the Scientific Revolution. In a famous inaugural speech delivered at Harvard and devoted to "The Study of the History of Science," he defended a conception of science as a long-lasting cumulative endeavor with ancient roots that included extra-European traditions. He described the advance of science by using a vitalistic image of growth and maturation instead of the political metaphor of crisis and revolution:

> We shall not be able to understand our own science of today […] if we do not succeed in penetrating its genesis and evolution. Knowledge is not something dead and static, but something fluid, alive, and moving. The latest results are like the new fruits of a tree […]. (Sarton 1936: 5)

Sixty years later, the sociologist of science Steven Shapin published an introduction to the very topic of the Scientific Revolution. It began with a disquieting statement:

> There was no such a thing as the Scientific Revolution, and this is a book about it. (Shapin 1996:1)

What happened in the sixty years that separate Sarton's speech and Shapin's introduction?

As a matter of fact, Shapin did not aim at originality. In spite of his disaffection with the Scientific Revolution, he presented standard authors and themes of science from the sixteenth and seventeenth centuries. Before him, Herbert Butterfield had established the canonic themes that any history of the Scientific Revolution ought to deal with in his own introduction entitled *The Origins of Modern Science* (1958). These sources must, according to Butterfield, be comprised of Nicolaus Copernicus's heliocentric theory, William Harvey's theory of blood circulation, Francis Bacon's empirical method in connection with the rise of experimentalism, Cartesian mechanism, modern physics (with particular attention to dynamics and universal gravitation), the birth of scientific societies, and modern chemistry. These themes, with small additions and variations, can be found in the countless handbooks on the Scientific Revolution which appeared in the middle decades of the twentieth century. Not even Shapin dared to abandon the classical *loci*. He limited himself to reorganizing the historical material around three socio-cultural questions: What was the object of scientific inquiry during the Scientific Revolution? How was it investigated? And to what purpose? The last question concerned the aims of science, a problem that the previous generation of *internalists* and *externalists* had intensely debated by either arguing for the intellectual disinterestedness of the scientific

practitioner or by defending the social character behind the advances of science. The question we ought to discuss here does not concern the reasons of early-modern science as much as those that lay behind the concept of the Scientific Revolution.

Why is it so difficult to deal with early-modern European science without the label of the Scientific Revolution? What makes it so essential to reading history in this period, or why should it be abandoned? In short, what is 'dead' and what is 'alive' in the past historiography on the Scientific Revolution.

Genesis and development of the Scientific Revolution

The philosophical historian of science, Alexander Koyré, was one of the most arduous supporters of the Scientific Revolution. In 1943, he stated: "The Scientific Revolution of the sixteenth century [has been] one of the profoundest, if not the most profound, revolution of human thought since the invention of the Cosmos by Greek thought: a revolution which implies a radical intellectual 'mutation', of which modern physical science is at once the expression and the fruit" (Koyré 1943:400). In his classical works on the history of science—*Études galiléennes* (1939), *From the Closed World to the Infinite Universe* (1957) and *Newtonian Studies* (1965)—he propagated the idea that the emergence of modern science in Europe happened between the mid sixteenth-century and the end of the seventeenth century thanks to a series of intellectual heroes. They set the stage for a new vision of nature and the universe and provided the conceptual tools that for the investigation of worldly reality. According to Koyré, the most important philosophical shift towards scientific modernity concerned the passage from a qualitative, approximate approach to a quantitative one, together with the geometrization of space and the establishment of cosmological infinity. In addition, he regarded the codification of scientific ideas as fundamental; the concept of inertia and the heliocentric planetary theory were the most prominent of these ideas. Moreover, Koyré considered science to be a purely intellectual endeavor. As a consequence, he neglected and even explicitly rejected the idea that society and technology could account in any way for the historical development of science. Instead, he exclusively dealt with the ideal. This led him to conclusions that were hardly tenable, for instance to his judgement of Galileian physics as a 'revolution of thought' that did not have any basis in experimental work.

Thomas Kuhn, the Harvard-trained historian and philosopher of science, elevated Koyré's historical interpretation to the level of a general theory of science. He drew upon a generalized idea of the Scientific Revolution in order to determine that 'revolutions' included *all* the identifiable turning points in the development of any scientific discipline. According to the epistemology that he expounded in *The Structure of Scientific Revolutions* (1962), the history of science unfolded through long periods in which 'normal' science advanced upon unquestioned and stable foundations, which were upturned by crises and revolutions of their supporting frameworks, or 'paradigms', and their eventual substitution with new paradigms. Later, Kuhn explicitly praised Koyré as his *maître à penser* (Kuhn 1970:67).

The historical work that Kuhn wrote as a preparation for *Structure* was dedicated to the heliocentric astronomer Copernicus. The title, *The Copernican Revolution* (1957), echoed Koyréan themes. It dealt with the change from Ptolemaic geocentrism to heliocentrism as a theoretical revolution, the importance of which went beyond planetary theory. In fact, it concerned physics and natural philosophy in general. For Kuhn, the Copernican subversion of the Aristotelian-Ptolemaic worldview counted as the 'paradigm of all paradigms' from which the universal logic regulating the advancement of science can be derived (Swerdlow 2004:75, Omodeo 2016). As a matter of fact, the success of Koyré's 'disembodied' history in Anglo-American scholarship was the product of an overdetermination. It was largely due to the perception that his intellectual history was a politically sound alternative to *socialist* externalist historiography. It was the most suitable approach for 'free' Western societies.

The alternative model was constituted by socio-economic analysis. The Soviet cultural leader, Nikolai Bukharin, and the historians of science who were associated with him propounded such an approach at the *International Congress of the History of Science and Technology* (held in London, in 1931) (Bukharin 1931). Marxist historiography spread widely, especially thanks to scholars linked to the Frankfurt Institute for Social Research, for example Henryk Grossmann, the Vienna circle, for example Edgar Zilsel (Freudenthal 2009, Long 2011:11-22), and British leftists, for example John D. Bernal and Joseph Needham (Young 1990).

The Soviet historian and philosopher of science Boris Hessen, who was Bukharin's collaborator, drafted the manifesto for an interconnected history of science, technology and economy: "The Social and Economic Roots of Newton's *Principia*" (1931). According to Hessen, historians should investigate the causal relation between social formations and cultural expressions. In his London lecture on Newton, he defended the historical-epistemological view that "economics […] present[s] demands, which pose technical problems, which generate scientific problems." (Freudenthal 2009:4). Hessen argued that the development of machine technology constituted the *conditio sine qua non* for the development of theoretical mechanics, which is corroborated by the fact that, in those areas where seventeenth-century scientists could not draw on existing technology, the corresponding physical disciplines did not develop (the science of heat is one example which did not develop because steam engine technology was rudimentary). For Hessen, ideology, and especially religion, was an additional factor that shapes science but its function is a rather negative and limiting one.

Edgar Zilsel was another historian of science who wrote in a Marxist lineage. In a famous paper on the social roots of the Scientific Revolution, he argued that the origins of modern science had to be traced back to incipient capitalism, which was an age of the valuation of practical knowledge and technical skills. He pointed out the crucial role played by the craftsmen's experience and higher artisans in forming the basis for a new empirical, practice-oriented science. He regarded the scholar of magnetism, William Gilbert, as well as Galileo Galilei and Francis Bacon as the embodiments of the new empirical and theoretical science (Zilsel [1942] 2000). Zilsel argued that the modern scientist resulted from the fusion of three types and their habitus, namely the craftsmen's

practical sense, the systematic thought of the university and humanist literacy (Omodeo 2018a: 67–73). Europe was the place and early modernity was the time where this particular socio-intellectual fusion occurred.

Although Marxist scholars were in deep disagreement with Koyré on which *causes* could explain scientific advance, they did not disagree with him on the *fact* that science was born at precise points in space and time. 'Socialist' externalists sought for the societal factors while 'liberal' internalists restricted their inquiry to the intellectual merits of individual minds and the contents of their pure science. Despite their interpretative differences, this ideology-laden opposition between the two camps did not cast the very idea of the Scientific Revolution into doubt. Instead, there was a struggle to define, explain and appropriate this idea. Internalists and externalists shared the conviction that the core of modern science was the advance of the physical-mathematical disciplines. These disciplines solved a clearly defined set of problems, thanks to new (empirical-mathematical) methodologies and philosophical principles. The historian of science, Reijer Hooykaas, summarized the tenets of the Scientific Revolution in the following points (Hooykaas 2003): modern science acknowledges no authorities except the authority of nature itself; it is experimental; it favors a mechanistic world picture; it 'speaks' in mathematical terms.

The accurate determination of the causes and nuances behind the emergence and development of modern science constituted a sort of *research program* for most historians of science from the Fifties up to the Nineties. In their retrospective of those years, Simon Schaffer and Steven Shapin have remarked that in the 1980s the notion of the Scientific Revolution was, for many people, still "the central organizing element in the grand narrative of science and its past—the moment when 'modern science' originated, when everything changed, and from which there was no return" (Schaffer and Shapin 2011:xxix).

The end of a paradigm

Shapin and Schaffer's *Leviathan and the Air-Pump* (1585) has been celebrated as the instigator of a novel historiography of science—more precisely, as a cultural turn in the discipline. Although their work emerged from Cold-War debates on the origins of modern science, they wanted to go beyond the existing historiography on the Scientific Revolution. They programmatically undermined its framework by replacing the grand narrative of modern science with micro-historical reconstruction. Instead of focusing upon structures they focused on the ethos of the scientific community in its specific context. They specifically dealt with the debate between the seventeenth-century English experimenters from the Royal Society and Thomas Hobbes's philosophical rationalism. In this manner, they relativized and localized the central figures, themes and institutions of the Scientific Revolution and transformed them into one 'case study' among countless other possible ones.

However, the success of their erosion of the Scientific Revolution narrative cannot be explained by their argumentative cogency nor by their exemplary historical analysis. Instead, their book should be seen as one that appeared in a timely moment when the criticism of the Scientific Revolution was gaining momentum from various directions.

One of the most controversial historiographical assumptions of the Scientific Revolution concerned the assumption that there was a fundamental historical discontinuity between the old conceptions and the new world vision that emerged in early European modernity. Although medieval scholars—along with nostalgic admirers of the 'premodern' world—had argued previously for the continuity between Scholasticism and early-modern science (for example, Pierre Duhem, Anneliese Maier, Marshall Claggett, and Edward Grant, cf. Cohen 1994:147–150), their arguments rested on 'internalist' considerations of the generation of ideas from ideas (e.g., the principle of inertia and terrestrial motion from Scholastic disputes on the *impetus* imparted to moving bodies). In recent years, new arguments for continuity have been derived from institutional history, especially those arising from studies on scientific education, communication and circulation. As has been noted, *traditional* university teaching was the necessary background for the emergence of the new theories propagated by Galileo, Descartes, Newton and their like (cf. Schmitt 1981 and Feingold 1984).

A more destabilizing critique of the Scientific Revolution has come from the dismissal of the idea of modernity itself. This attack upon such a central historiographical category has come from at least two concurring tendencies: the aforementioned reduction of historical inquiry to localized case studies or micro-histories, and the post-modern rhetorical turn away from the trust in historical *reconstruction* and towards *narrativism* (Omodeo 2018b). From the Nineties onwards, the classical connection between scientific progress, modernity and civilization has been seriously questioned: the critique of modern 'securities' in the name of post-modern 'freedom' has undermined the belief in the *solidity* of modern science (cf. Bauman 1997)

Two additional critiques ought to be mentioned in regards to the *epistemological* assumptions of the Scientific Revolution. One is that the Scientific Revolution assumes science in the singular but this should be substituted with sciences in the plural—and epistemology should be declined in the plural as well (Galison-Stump 1996). This pluralistic perspective eliminates the very possibility of detecting one single moment in history at which science emerged. Moreover, insofar as the sociology of science is concerned, social constructivism has questioned the objectivity of truth-claims in general (cf. Shapin 1994). Its most radical version has undermined the legitimacy of science's reference to a physical reality by reducing validity to social dynamics disconnected from material constraints.

Yet, the most powerful cultural-political critique has come from post-colonial and global history: the allegation of Eurocentrism (see e.g. Raina 2016). The Marxist historian of Chinese science, John Needham, once justified his studies on science and civilization in China by arguing that they would help understand why the Scientific Revolution took place in Europe in the first place. The new post-colonial perspective fosters cross-cultural studies which do not share Needham's presuppositions about European exceptionality. It

radicalized Needham's own contention against "that fundamental insularity of outlook which is so difficult for Europeans, even those who have the best intentions, to discard" (Needham 1954:3).

In connection with (and partially as a consequence of) the Eurocentric criticism, a new wave has emerged that aims to go beyond an 'exclusivist' *history of science* and embrace a more 'inclusive' *history of knowledge*:

> This capacious and usefully vague term [history of knowledge] has the advantage of nipping in the bud sterile, inconclusive discussions about whether Hellenistic alchemy or indigenous Peruvian botany or early eighteenth-century British steam technology is really science—the definition of which has proved to be as elusive as the Holy Grail or the Snark […] it allows historians to follow practices wherever they may lead, however remote these may be from anything resembling latter-day science. (Daston 2017:142–143)

While cognitive democracy may seem secure, the boundaries of science have become too blurred. Together with the suppression of the Scientific Revolution and modernity, post-modern epistemology and the ecumenism of global studies erode the trust that a clear-cut line can distinguish science from opinion. Such a post-truth predicament puzzles historians and philosophers of science. The current political climate has led to concerns about the political consequences of a social-epistemological relativism that can be easily instrumentalized for the purposes of propaganda (corporate, religious and electoral) while, simultaneously, new forms of social Darwinism reduce truth to the interest of the stronger (Oreskes-Conway 2010, Kofman 2018, Omodeo 2018c).

Past and present

Thus, what are the gains and losses of renouncing the idea of the Scientific Revolution?

To be sure, the debates of the last decades have offered us a broader understanding of science as a cultural phenomenon that cannot be isolated from its social, political and intellectual entanglements (Epple-Zittel 2010). Further, the concept of science has been historicized through recognition of its material practices and its shifting a priori. Many studies have appeared in recent years on practical knowledge and the interdisciplinary connections between the scientific study of nature and various other disciplines including art and literature (Long 2011, Smith 2004, Valleriani 2017). Additionally, studies on once-neglected disciplines such as astrology and alchemy are flourishing today (see, for example, Rutkin 2019).

Religion has come to the forefront as a crucial element of the early-modern scientific culture. This renewed attention on science and ideology has reinvigorated the legacy of the so-called 'Merton thesis.' Robert Merton, who was a Weberian sociologist of science, used his seminal work *Science, Technology and Society in Seventeenth-Century England* (1938) to argue for the relevance of 'Protestant ethics' as one of the main drivers behind much of seventeenth-century natural inquiry at the Royal Society. According to

Merton, English classical science (that of Robert Boyle and Newton) grew on a terrain that had been constantly fertilized by Puritan ideas and habits about the investigation of nature as a means of glorifying God and improving the human condition at the same time (Merton 1970:80–136). In recent years, post-Mertonian scholarship has gone much further in the reassessment of the role played by religions (in the plural) in the development of modern natural science. After the cultural turn of the Nineties, this line of thought has gone so far as to indiscriminately rehabilitate all sorts of religious agendas. Revisionist perspectives have reconsidered famous Inquisitorial trials on science, most notably the 'Galileo Affair', and deployed apologetic strategies to rehabilitate forms of scientific control, censure and propaganda (cf. Omodeo 2017). In this manner, religiously-tinged approaches have questioned and reconsidered the meaning of modern scientific mentality in the name of the 'culturalist' principle that we should let the 'actors' speak on their own terms—which revives, on the methodological level, the positivistic prescription that the historian ought to be a transparent writer of unbiased reports.

Apart from a good dose of cynicism in their assessment of the power relations of early-modern science, such positions also neglect that a great part of the justification of early modern science was based on an unprecedented emphasis placed on experience, practice and effectiveness. Renaissance mathematicians were at the forefront in the defense of a conception of science which was at once theoretical and practical (Renn 2001). To give one example, the practical mathematician Bonaiuto Lorini expressed such an epistemology, which was typical for the mentality of his generation of 'scientist-engineers' (Lefèvre 1978:96):

> Those who wish to deal with these [technical] works do not only need to know mathematics, in order to assess and realize them, but also have to be prudent and experienced mechanics. (Lorini 1596:172)

The Neapolitan experimenter Giambattista Della Porta, one of the most prominent members of the scientific academy of the *Lincei*, expressed a similar idea in his most successful work, *Magiae naturalis libri viginti* [Twenty books on natural magic] (1589). According to Della Porta, the new practice-oriented man of science (the "natural magician")

> must be a skilful workman, both by natural gifts, and also by the practice of his own hands; for knowledge without practice and workmanship, and practice without knowledge, are worth nothing; these are so linked together, that the one without the other is but vain, and to no purpose. (Della Porta 1658:3)

Such an awareness of effectiveness and the practical orientation of knowledge ultimately rested on the material experience of concrete scientific practices.

The *reduction* of the idea of the Scientific Revolution to historiographical distortion also neglects the early-modern roots of the idea of a break between the moderns and the ancients. The belief in the scientific-technical superiority of the moderns was symbolized

by the three so-called 'Baconian technologies': gunpowder, typography and the compass. The celebration of this triad became a sort of commonplace among Renaissance thinkers concerning the practical roots of knowledge, among whom were the Renaissance polymath Girolamo Cardano and the Royal mathematician in Paris Pierre de la Ramée (Ramus 1569:65). In chapter 41 of his autobiography, *De vita propria liber*, Cardano presented gunpowder, the compass and the printing press as "natural prodigies observed, rare though, in my life." In his eyes, all of them were overshadowed by the geographical discoveries:

> Among the extraordinary, though quite natural circumstances of my life, the first and most unusual is that I was born in the century in which the whole world became known; whereas the ancients were familiar with but little more than a third part of it.
> [. . .] We explore America [. . .] Brazil, a great part of which was before unknown, Terra del Fuego, Patagonia, Peru [. . .] Toward the East under the Antarctic we find the Antiscians [. . .] and some Northern people not yet known, as well as Japan [. . .] all discoveries sure to give rise to great and calamitous events in order that a just distribution of them may be maintained. (Cardano 1962:189–190)

A world of possibilities was opened by the new geography. These commercial and colonial opportunities produced a novel "European self-definition" that reflected the establishment of global power relations (Vogel 2006). Amerigo Vespucci, after whom America was named, started his *Mundus novus* (1503) with a note on the cultural consequences of his discoveries relative to the authority of the ancients:

> These [regions] we may rightly call a new world. Because our ancestors had no knowledge of them, and it will be a matter wholly new to all those who hear about them. For this transcends the view held by our ancients. (Vespucci 1916:1).

A few years later, Copernicus found it convenient to refer to these claims of Vespucci's in order to introduce his daring cosmology which set the earth in motion around the sun (Copernicus 1543:2*r*). At the beginning of the next century, the telescopic observation of the surface of the moon, of new satellites, stars and celestial phenomena were often regarded as a furthering of the cosmographical exploration in the heavens.

Francis Bacon took inspiration from the Oceanic travels to foster the progress of knowledge in line with his well-known idea of the connection between science and power, which is aptly synthesized by the dictum "*Scientia et potentia humana in idem coincidunt*" [Human knowledge and human power come to the same thing] (Bacon 2000a:33). He praised a form of knowledge which is useful, practical and empirical; and saw his commitment to it as his institutional duty as an adviser to the King of England. In his treatise *The Advancement of Learning* (1605) he tried to persuade King James to institutionalize science, because it was functional to the empowerment of the nation, which was, in truth, an imperial program of dominion over nature and rule over other people. Bacon equated his advice to James to the teaching that Aristotle imparted to

Alexander the Great, which set the intellectual foundations of the Hellenic conquest of the world (Bacon 2000b: 10, B4*v*).

In summary, the early-modern discourse on the superiority of the moderns—whether technological or scientific—received direct or indirect justification from European colonial expansion: cosmography produced the first globes, terrestrial and celestial, the compass permitted the navigators to navigate unknown waters, gunpowder to conquer new territories, and the printing press to circulate knowledge. The historical-cosmological connection between scientific and technological progress, modernity and Eurocentrism are not an ungrounded historians' construct propagated by the Scientific Revolution narrative. Rather, these ideas were already interlocked at the beginning of a historical phase of global expansion. They expressed, at the level of individual and collective consciousness, the establishment of new world dominations, which secured the Europeans a vantage point in relation to other cultures and their own past. Within this perspective, the Scientific Revolution should be seen as a historically grounded narrative of a phase of *scientific hegemony*, which coincides with Eurocentric modernity.

Today, the story of the Scientific Revolution looks like an origin myth: It refers to the beginning and essence of modernity. In the years of the Cold War, to side with a spiritual understanding of the history of modern science or to offer a socio-economic explanation meant to take sides in the cultural struggles that opposed incommensurable political paradigms, namely capitalism and real socialism. But, at a deeper level, the Scientific Revolution itself was the expression of an ideology, namely the Eurocentrism that it implicitly justified. Such ideology is not mere mystification—an intentional lie to be dispelled and corrected. It is a crucial factor in political activity. It reflects back upon society, justifying and redirecting it. Hence, the Scientific Revolution cannot be treated as a mere problem of historiography and epistemology to be revised and eventually substituted by a 'correct' narrative (or abandoned for no narrative at all) once a hypothetical agreement among the academic community of historians of science (perhaps 'historians of knowledge') has been reached. Rather, the Scientific Revolution should be understood as the cultural expression of specific relations of power and a specific historical arrangement of society. Its geo-historical coordinates correspond to European colonial expansion and the establishment of Europe-centered forms of global dominion. It is by no means accidental that the dawn of the Scientific Revolution coincided with the definitive end of European centrality in geo-politics and the establishment of a US-centric globalization.

Thus, in political-epistemological terms, the Scientific Revolution ought to be understood as a problem of science and power, or in more precise terms as a historical-historiographical case for an inquiry into problems of scientific hegemony. It helps us to reflect on the socio-political and historical conditions, causes and implications of scientific (and scientific-technological) hegemony. Within this perspective, the problems linked to the history and philosophy of the Scientific Revolution have not lost their significance at all, as they are still at the center of science politics. The Scientific Revolution can maintain today paradigmatic relevance as a suited terrain to study the problem of scientific (and scientific-technological) dominion at a symbolic level (of ideology via historiography) as

well as at the material level of political economy and global power relations. The crucial problem of the Scientific Revolution is that of the power relations that were established through early-modern knowledge hegemonies, and our positioning thereupon.

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