Giordano Bruno and the History of Science

by

David W. Murphree

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APPROVED:

David S. Lux
David S. Lux, Chairman

Peter Barker
Peter Barker

Fred J. Baumgartner
Frederic J. Baumgartner

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(ABSTRACT)

Historians of science express widely divergent interpretations of the significance of the Italian philosopher Giordano Bruno (1548-1600) to the history of science. An examination of the history of science reveals two basic schools of thought about Bruno. Specifically, historians of science disagree on the reason for Bruno's execution at the hands of the Roman Inquisition in 1600. One school of thought, the "martyr to science" interpretation, insists that Bruno died as the direct result of his advocacy of Copernicanism. The opposing school rejects this assessment and names a variety of unorthodox religious beliefs as the motivation for Bruno's execution.

These two positions, the "martyr to science" and the "anti-martyr to science" schools of thought, form the basis of two parallel interpretive schemes about early modern science that have coexisted in the history of science for nearly 150 years. In particular, the "martyr to science" school tends to view religion as innately hostile to science. Moreover, this school also emphasizes the discontinuities between medieval and modern science. In contrast, the "anti-martyr to science" school often rejects the existence of an inherent conflict

between science and religion. The "anti-martyr to science" school also tends to highlight the continuities between medieval and modern science.

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Table of Contents

Chapter One: Giordano Bruno in the History of Science

Introduction

Interpretation plays a critical role in the construction of historical accounts. Historians choose facts, and then structure those facts into accounts, on the basis of fundamental assumptions about the nature of the world. A specific example, that of Giordano Bruno's place in the history of science, aptly demonstrates the role of interpretation in the creation of historical accounts. In particular, views of the reasons for Bruno's death form, as this work will show, an integral part of wider interpretations of the development of modern science.

This thesis will examine the characterizations and uses of Bruno in broad interpretive studies of the history of science, including both popular and scholarly works, since the emergence of the martyr to science view in the mid-nineteenth century.[1] Because Bruno is the focus of attention, only works that cover the period at least until 1600 qualify for inclusion in this thesis. Bruno deserves such attention for several reasons. First, except for Galileo, no other figure receives as much coverage as an alleged victim of the early modern Church's supposedly anti-scientific posture.[2] Second, the diversity of opinion on the significance of Bruno to the creation of modern science also points to his usefulness as a subject of study. Whatever the final judgment, if one is possible, in the confrontation between Galileo and the Church, no one has ever disputed his importance to the development of modern science. Bruno, on the other hand, has a long history of controversy over his status.[3] The fact that evaluations of Bruno's significance vary in such an unusual manner provides the perfect entry point for a study of the historiography of science. Finally, and perhaps most fundamentally, no work on the historiography of Bruno's place in the history of science exists.[4] My object in this thesis is not to judge the validity of the interpretations that the works offer. At all times, the focus will be on the existence, structure, and function of interpretive patterns in the history of science.

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[1] Frances Yates, *Giordano Bruno and the Hermetic Tradition*, (New York: Vintage Books, 1964), 450; Paul Henri Michel, *The Cosmology of Giordano Bruno*, trans. R. E. W. Maddison, (Ithaca, New York: Cornell Univ. Press, 1973), 10-11.

[2] Another alleged martyr to science, Michael Servetus (1511-1543), receives too little attention to serve as a meaningful comparison with Bruno.

[3] Antoinette Mann Paterson, *The Infinite Worlds of Giordano Bruno*, (Springfield, Ill.: Thomas, 1970), 3-4. Michel, 9-11.

[4] Yates, 451; Francis Yates, in *Giordano Bruno and the Hermetic Tradition* calls for an examination of the historical development of Bruno's image. This thesis represents an attempt at such a survey within the confines of the history of science.

The Alioto Question

For the purposes of this study, a short sketch of Bruno's life will suffice. A contentious and controversial figure, Giordano Bruno was born in Nola, in southern Italy, in 1548. The Roman Inquisition supplied the other terminal point of his life by burning him at the stake in Rome in 1600. During the half-century in between, Bruno continually provoked controversy with his out-spoken iconoclasm. Forced to leave the Dominican Order because of his unorthodox opinions, Bruno wandered across Europe expounding a radical critique of established ideas on nature, society, and religion. He had little regard for the opinions of others and viciously attacked his critics' positions; he also had little regard for the threat that such vociferous attacks posed to his personal safety. Finally, in 1592, the Inquisition seized Bruno while he was in Venice. After extradition to Rome, he spent eight years in prison until his execution on February 17, 1600.[5]

How such a cantankerous individual became the center piece of this work requires a bit of explanation. A short passage in Anthony Alioto's textbook, *A History of Western Science*, describes Bruno's philosophy. After a discussion of

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[5] Frances Yates, "Giordano Bruno", *Dictionary of Scientific Biography*, (Charles Coulston Gillispie, ed., New York: Charles Scribner's Sons, 1970), 2: 539-544. The literature on Bruno's life is extensive. Among the more important biographies are Christian Bartholmess, *Jordano Bruno*, 2 vols., (Paris: Librarie Philsophique De Ladrange, 1847). Domenico Berti, *La Vita di Giordano Bruno*, (Florence: 1867). I. Frith, *Life of Giordano Bruno*, Rev. by Moriz Carriere, (Boston: Ticknor and Co., 1887). J. Lewis McIntyre, *Giordano Bruno*, (New York: The Macmillan Company, 1903). William Boulting, *Giordano Bruno: His Life, Thought, and Martyrdom*, (1914; rprt. Freeport N.Y.: Books for Libraries Press, 1972). V. Spampanato, *Vita di Giordano Bruno* , (Messina: Casa Editrice G. Principato, 1921). Dorothea Waley Singer, *Giordano Bruno: His Life and Thought*, (New York: Henry Schumann, 1950). Frances Yates, *Giordano Bruno and the Hermetic Tradition*, (New York: Vintage Books, 1964).

Bruno's interpretation of Copernicanism, Alioto dismisses Bruno's philosophy as irrelevant to the development of modern science.[6] Specifically, Alioto argues that

> Bruno appears to be more of a heretical pantheist than a champion of the new astronomy. It is no wonder, then, that he was tried in Rome by the Inquisition and burned at the stake in 1600. His was a religious revolution, and he was not burned because of his astronomy. Strictly speaking, he was not even a Copernican![7]

The coverage and subsequent negative evaluation of the role of Bruno's philosophy in the Scientific Revolution seem at odds with the purpose of Alioto's book. A textbook is generally a concise catalog of accepted facts and interpretations that presents only the data that is relevant to the subject at hand. Yet, Alioto's treatment of Bruno violates this principle of economy. By examining Bruno's philosophy and then rejecting it as unimportant to the discussion, Alioto thus raises the puzzling question of the purpose behind his inclusion of Bruno in a textbook.[8]

An investigation into the relationship between Alioto's book and the rest of the literature on the history of science offers an answer to the mystery of Alioto's incongruous treatment of Bruno. Even a brief perusal of the secondary literature indicates that Alioto's coverage of Bruno is not an isolated event. Bruno appears in virtually every historical work that examines the emergence of modern science. Equally evident is the vast array of opinions about him. No

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[6] Anthony M. Alioto, *A History of Western Science*, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1987), 183-184.

[7] Ibid., 184.

[8] Alioto's treatment of Bruno, though serving as the inspiration for this project, differs in character from the works that will be considered. Specifically, Alioto's textbook consciously strives to refute the notion that Bruno died for his science. By addressing Bruno's status so forcefully, Alioto effectively excludes Bruno as a legitimate figure in the history of science. While some of the works that will be examined also reject Bruno as a scientific thinker, such works nevertheless attempt to integrate Bruno into the history of science in some manner. See Alioto, 183-184.

consensus exists concerning Bruno's significance to the Scientific Revolution.[9] Knowledge of this state of affairs in the history of science renders Alioto's otherwise puzzling passage comprehensible. Although Alioto himself considers Bruno unimportant to the development of modern science, the combination of a lack of consensus and Bruno's ubiquitous presence demands that Alioto address the issue of Bruno's significance in some manner. In effect, his assertions about Bruno act as a disclaimer against the welter of competing claims regarding Bruno's place in the history of science.[10]

An examination of the secondary literature, however, solves the Alioto "question" at the expense of creating the Bruno "question." At issue is the very thing that illuminates the mystery of Alioto's inclusion of Bruno in a textbook: the omnipresence of Bruno and the conflicting interpretations of his significance to the development of modern science. Viewing the passage in *A History of Western Science* as a self-conscious response to a vast and contentious body of literature thus opens the door to an examination of the history of science as a whole. Specifically, such an examination centers on the mismatch between the widespread coverage of Bruno and the lack of consensus about his place in the Scientific Revolution. The odd thing here is the fact that even works that don't consider him important to the development of modern science often go to considerable lengths to make sense of Bruno's ideas in the context of the early

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[9] Among others, the following note the debate over Bruno's significance to science: Hugh Kearney, *Science and Change 1500-1700*, (New York: The McGraw-Hill Book Comp., 1971), 108; Edward A. Gosselin and Lawrence S. Lerner, ed. and trans., *The Ash Wednesday Supper: La Cena de la Cenari*, by Giordano Bruno, (Hamden Conn.: Archon, 1977), 13; William P. D. Wightman, *Science and the Renaissance*, 2 Vols., (New York: Hafner Pub. Co., 1962), 43, also note the lack of consensus.

[10] Alioto, 183-184.

modern period. Such efforts, at first glance, are difficult to explain. If Bruno is not important to the rise of modern science, then he does not belong in a history of science. Yet, Bruno frequently appears in histories of science only to be quickly dismissed as, ultimately, unimportant to science.[11]

In retrospect, the secondary literature reveals that Alioto's passage also hints at another major feature of the Bruno "question." With no obvious justification, Alioto explicitly includes a discussion of the reasons for Bruno's death.[12] A comparison of Alioto's work with the rest of the literature shows that his inclusion of Bruno's death performs the same "disclaimer" function as did the discussion of Bruno's significance. As was the case with the debate over his significance, discussions of Bruno's death figure prominently in the history of science. Only a handful of works neglect to mention Bruno's trial and execution by the Roman Inquisition. Moreover, the stated reasons for Bruno's execution vary as widely as the judgments on his significance. These parallels, in function, diversity, and quantity, between discussions of Bruno's death and his significance are striking. Assuming that mere morbid interest is not the motivation for dwelling on his execution, the similarity of the evaluations of both Bruno's death and his significance suggests a connection between interpretations of Bruno's significance to science and interpretations of the reasons for his execution.[13]

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[11] Probably the best example of this ambivalent attitude towards Bruno appears in James Jeans, *The Growth of Physical Science*, (New York: The Macmillan Co., 1948), 140.

[12] Ibid., 184.

[13] See for example, Kearney, 108, 148; Woodbridge Riley, *From Myth to Reason*, (London: D. Appleton and Co., 1926), 124, 126, 135.

The lack of data on the reason for Bruno's execution further strengthens the case for a correlation between his significance and the manner of his death. According to Frances Yates, French troops, in the early nineteenth century, destroyed the official Church documents that recorded the charges against Bruno. Other sources on Bruno's trial and execution do not state the exact charges against him.[14] In the absence of a document that charges Bruno with a specific crime, historians must interpret the circumstances of his death from vague clues in the surviving documents.[15] The meanings that historians of science attach to the clues naturally derive from the historians' fundamental assumptions about the history of science. Not surprisingly, evaluations of the reasons for Bruno's death vary considerably from writer to writer.[16] If the hypothesized correlation between Bruno's significance and the reasons for his execution holds up, then evaluations of his significance in the history of science should vary in the same manner and match with the judgments on the reasons for his death.[17] Determining the existence of a correlation between evaluations of Bruno's significance to science and the manner of his death would then fulfill two purposes. First, it would offer an explanation, as the preceding argument has demonstrated, for the strange inconsistency between the degree of coverage and

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[14] Yates, *Hermetic Tradition*, 349; Frith, 290. Yates, in *Hermetic Tradition*, cites Angelo Mercati's *Il Sommario del Processo di Giordano Bruno*, (Citta' del Vaticano: Biblioteca Apostolica Vaticana, 1942), 1-4, as evidence that the documentation on Bruno's death no longer exists. Yates made this remark in 1962; however, Frith made the same comment in 1887 (290).

[15] Yates, 354-355.

[16] Compare, for example, Joseph Mayer, *The Seven Seals of Science*, (New York: The Century Co., 1927), 7, with Allen G. Debus, *Man and Nature in the Renaissance*, (New York: Cambridge Univ. Press, 1978), 87.

[17] Examples include Kearney, 108, 148; Riley, 124, 126, 135.

the degree of consensus about Bruno. Second, a correlation between interpretations of Bruno's significance and his death might also reveal a number of basic assumptions about the history of science.

Bruno's Function in the History of Science

The possibility of a correlation between interpretations of Bruno's significance and his death provides the key to the Bruno "question". Although either the views on Bruno's execution or the views on his death could serve as the starting point for an investigation of the Bruno "question" two factors favor the use of statements on Bruno's death. Superficially, the evaluations of Bruno's significance seem a jumble of opinions. The evaluations of the reasons for his death fall, in contrast, into two broad, though distinct, camps.[18] For reasons of simplicity, therefore, the judgments on Bruno's death serve as the point of departure for this project.

Focussing on the purported reasons for his execution also simplifies the confusion over Bruno's significance. Two basic positions on his importance in the creation of modern science emerge from an examination of the alleged reasons for his death. The first position emphatically asserts that Bruno played a major role in the Scientific Revolution and attributes his death to persecution for the espousal of the new science.[19] At the opposite pole, the other position tends to

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[18] Ibid. These two works provide some indication of the range of opinion on Bruno.

[19] Riley, 124, 126, 135.

deny that Bruno contributed anything of value to modern science and either avoids or rejects outright the contention that science was his downfall.[20]

The story of Bruno's image in the history of science does not end with the assertion of two sets of opinions that cover the reasons for his death and the extent of his significance. These two schools of thought form the nuclei for two broad and contrasting interpretive schemes of the development of modern science. Both schemes can, overall, claim comparable numbers of adherents. Moreover, both schemes have co-existed at least since the mid-nineteenth century. Despite these similarities, the two patterns of interpretation offer contrasting assumptions about the nature of the relationship between science and religion and about the development of modern science.[21]

The Image of Bruno

The categorization of the rationales for Bruno's death is the first problem for this thesis. The definition of "martyr to science" will serve as the basis for delineating the other categories of thought on Bruno's death. In this context, the expression "martyr to science" will mean that Bruno's execution resulted from his adherence to ideas that opposed the medieval Ptolemaic-Aristotelian cosmology. For the most part, this definition refers to Bruno's alleged acceptance

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[20] Francis R. Johnson, *Astronomical Thought in Renaissance England*, (Baltimore, Md.: The Johns Hopkins Press, 1937; rprt. New York: Octagon Books, 1968), 168.

[21] The next chapter will delineate the origins of the martyr to science view of Bruno. As examples of the longevity of the two schools of thought see Andrew Dickson White, *The History of the Warfare of Science and Christendom*, (1896; New York: George Braziller, 1955), 129-130, and William Whewell, *History of the Inductive Science*, 3 vols., (1857; rprt. London: Frank Cass and Co., Ltd., 1967).

of Copernicanism.[22] Some writers, however, attribute Bruno's demise more to his own peculiar brand of cosmology than to heliocentrism as Copernicus conceived of it.[23]

This distinction makes no difference in categorizing Bruno's fate. His death, in both cases, resulted from his adherence to doctrines that were contrary to the medieval scientific tradition. Identification of "martyr to science" claims is thus very easy. Works that assert the "martyr to science" claim explicitly argue that cosmology, whether Copernican or personal, brought the Inquisition down on Bruno.[24] Using the "martyr to science" definition as a sort of litmus test also facilitates the classification of claims about Bruno's death. Any works that do not connect Bruno's death to his cosmological ideas, or directly reject such a connection automatically fall into a separate category. Works that advance no explanation for Bruno's death or omit any mention of him also fall, as Chapter Three will show, into this category.

The Science-Religion Relationship

Assumptions about the nature of the science-religion relationship in the early modern period compose the next area for study. The examination of this relationship will include both the broad question of the interaction of science and

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[22] Mayer, 7.

[23] Rene Taton, ed., *History of Science*, vol. 2, *The Beginnings of Modern Science 1450-1800*, trans. A. J. Pomerans, (1958; New York: Basic Books, 1964), 72-73.

[24] Mayer, 7; Taton, 2:72-73.

religion and the more specific problem of Catholic and Protestant reactions to the new science. In general, assumptions about the relations between early modern science and religion translate into three categories of attitudes about religion. A work that posits an essential hostility between early modern religion and science falls into the "anti-clerical" category. Next, works that either express the existence of clerical hostility toward science, but offer mitigating circumstances that place the source of hostility outside of religious doctrine, or works that eschew an investigation of the science-religion relationship, constitute the "neutralist" category. Finally, works that promote the view that religion and science shared no innate hostility make up the "pro-clerical" category. The examination of assumptions about Protestant and Catholic reactions to the new science will also use the same three categories.

The Nature of the Scientific Revolution

The final component of the two interpretive schemes involves the nature of the transition for medieval to modern science. During the sixteenth and seventeenth centuries, science underwent a remarkable transformation. A new view of the natural world supplanted the 2,000 year-old tradition of Aristotelian science. An intense debate rages over the processes that created the new view of nature. Essentially, the arguments fall into three groups. One group argues that changes in scientific knowledge are continuous with past traditions. The development of science thus traces a smooth path between the past and the present.[25] A second group adopts an opposing stance. Scientific knowledge, this group of arguments asserts, develops through discontinuous changes. New ideas burst onto the scene and,in short order, topple the established school of thought.[26] In between these two extreme positions is a third camp that mixes elements of both continuity and discontinuity. Holding the title of Renaissance discontinuity, this school of thought asserts that modern science arose from the infusion of classical Greek learning into Western Europe at the end of the Middle Ages.[27]

At one extreme of historical opinion lies the absolute discontinuity school of thought. According to this category, modern science arose form the rejection of its intellectual antecedents. Works that fall into this category, therefore, draw no connections between modern and medieval science or any other past tradition. Thomas Kuhn's *The Structure of Scientific Revolutions* presents the best-known example of an absolute discontinuity model. In Kuhn's view,"Scientific Revolutions are here taken to be those non-cumulative developmental episodes in which an older paradigm is replaced in whole or in part by an incompatible new one."[28] Kuhn concedes that at times scientific knowledge possesses a cumulative

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[25] Joseph Agassi, "Continuity and Discontinuity in the History of Science," *Journal of the History of Ideas*, no. 4, 1973: 609, 616-623.

[26] Ibid., 609-614.

[27] Ibid., 624.

[28] Thomas Kuhn, *The Structure of Scientific Revolutions*, 2nd. ed., (Univ. of Chicago Press), 92.

nature.[29] Scientific development, however, occurs only when science discards its cumulative aspect and rejects the accepted tradition.[30]

The Renaissance discontinuity category occupies the middle position. This category includes works that associate the transition from medieval to modern science with the introduction of previously unknown Greek scientific writings into Europe in the late Middle Ages. Like the thinkers of the Renaissance era, the Renaissance discontinuity category effectively cuts the Middle Ages off from the historical development of modern science and ties the modern intellectual tradition directly to ancient Greek learning. Most works in this category regard the medieval intellectual tradition as worthless, or even as an impediment, to the development of modern science. Moreover, works in this category often see modern science as a continuation of Greek learning.[31]

As a result, the Renaissance discontinuity category is a compromise in the discontinuity-continuity debate. The Scientific Revolution was discontinuous in the sense that the sudden influx of Greek learning disrupted the course of medieval science. The connection with that same learning, however, established an intellectual continuity between two bodies of knowledge across the expanse of the Middle Ages. A notable example of the Renaissance discontinuity category is Alexandre Koyre's work on the origins of Galileo's scientific ideas. Koyre

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[29] Ibid., 96-97.

[30] Ibid., 3-13; Agassi, 623.

[31] Whewell, 1:271, 276, 299

describes the Scientific Revolution as a "mutation."[32] So abrupt and so complete was the change, Koyre argues, that the Aristotelian worldview vanished without a trace.[33] An altered form of Platonism, which had first entered Western Europe during the Renaissance, acted as the catalyst for the development of modern science.[34]

The third and final category are arguments in favor of absolute continuity. On the far left of the spectrum, the absolute continuity category basically inverts the claims of the absolute discontinuity supporters. Works in favor of continuity directly connect modern science to its medieval predecessor. Pierre Duhem, for example, argues for a distinctly continuous view of science. According to him, science in the early modern period extended and modified the long-established principle that scientific explanations should be solely instrumental accounts of natural phenomena. As the cardinal principle of western science since the Greeks, the continued use of this principle insured the continuity between medieval and modern science.[35]

Three criteria will determine the placement of works into the proper category. This thesis will not, however, apply all three tests to every work. Since arguments about the nature of the Scientific Revolution can focus on the contributions of the major figures responsible for the creation of modern science

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[32] Alexandre Koyre, *Galileo Studies*, trans. John Mepham, (Atlantic Highlands, N. J.: Humanities Press, 1978), 1.

[33] Ibid., 3

[34] Ibid., 208-209.

[35] Pierre Duhem, *To Save the Phenomena*, trans. Edmund Doland and Chaninah Maschler, (Chicago: Univ. of Chicago Press, 1969), 114-117.

or on the large scale trends of the transition between medieval and modern science, a work need adhere only to a single, appropriate criterion to establish its inclusion in a category. The obvious first criterion, and the most rare, is a direct statement about the nature of the relationship between medieval and modern science. Generally, most historians of science do not address this issue explicitly. The reader must, as a result, employ two other tests to reveal a work's conclusions on the nature of the Scientific Revolution.

Copernicus's role in creating the Scientific Revolution serves as the second criterion. For many works, Copernicus is an excellent starting point because of the almost universal agreement about his significance in initiating the Scientific Revolution. The central question here is the presence of immediate predecessors to his work on heliocentrism. Affirming the presence of predecessors places the work in the continuity category. Denial indicates that the work belongs in either the absolute or Renaissance discontinuity categories. The role of Greek science, as discussed above, will be the deciding factor between the two discontinuity categories. Statements on the development of medieval science will also, where appropriate, perform the same task. In this case, the decision turns on whether a work portrays medieval science as an evolving system or as a dead-end. A view of medieval science as vigorous and dynamic usually denotes a continuist outlook. Conversely, a view that characterizes medieval science as fruitless almost certainly fits into one of the two discontinuity categories. Once again the decision as to which one rests on the role of Greek science.

Patterns of Explanation in the History of Science

The Martyr to Science Scheme

Applying the preceding definitions and categories to the history of science generates two distinct interpretive schemes. The first scheme accepts as one of its basic assumption that early modern religion was hostile to the new science. This scheme also presupposes that modern science is discontinuous with the medieval scientific tradition. The second scheme, on the whole, considers the relationship between science and religion to have been much more hospitable that the first scheme is willing to admit. Furthermore, the second school of thought offers arguments for a continuity between medieval and modern science. The application of these assumptions, along with the assumptions about the reasons for Bruno's death, inevitably leads to two different evaluations of the historical setting and evolution of modern science.[36]

According to the first scheme, which attributes Bruno's death to his science, Bruno was a "martyr to science". With impeccable logic, the "martyr to science" scheme integrates the alleged reasons for Bruno's execution into a framework that justifies both an anti-clerical attitude and a revolutionary view of the origins of modern science. The connection between Bruno's execution and anti-clericalism is usually explicit. Most sources that adopt the "martyr to science" scheme directly accuse the Roman Catholic Church of deliberately

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[36] White, 120-130, serves as an example of the first scheme. Johnson, 7-8, 61-65, 94-95, 114-116.

seeking the death of Bruno an account of his support for the new science. The same sources also frequently claim that Catholics, and often the early Protestants as well, evinced considerable hostility towards any innovations in scientific thought. In the eyes of early modern religious authorities, the anti-clerical position claims, new scientific ideas threatened the validity, and hence the power, of religious dogmas. As a result, the science-religion relationship is inherently and inevitably antagonistic. Supporter of the first scheme argue that this hostility often manifested itself, particularly in the case of the Catholic Church, in attempts to actively suppress scientific knowledge. Histories of science that espouse the first scheme thus portray early modern religion as an obstacle to the progress and, at times, even as the sinister and calculating enemy of reason and enlightenment.[37]

Characterizing the emergence of early modern science as revolutionary completes and reinforces the first scheme. Probably because of its association with the Church, medieval science receives a great deal of abuse from works that advocate the "martyr to science" model. Such works usually ignore medieval science or attack it as an impediment to scientific progress. Also, a rejection of medieval science fits into the logic of the first scheme. A new system of knowledge that broke sharply with the medieval intellectual tradition and, as a consequence, threatened religion's monopoly on learning provides a possible rationale for the the supposedly harsh reaction of the religious authorities to the new science. Obviously, from this point of view, the religious authorities could

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[37] The classic example is of course, White, 122-129.

not tolerate someone like Bruno who refused to parrot the official doctrine on matters relating to science. He, and others like him, represented a competing source of intellectual authority. Bruno thus became the unfortunate victim of his science because he spoke his mind in an intolerant society that was in the midst of a violent upheaval. While explicit statements that link the nature of the of the science-religion relationship and the Scientific Revolution to the manner of Bruno's death are rare, such a logical connection appears to be an unspoken assumption in most of the works that adopt the "martyr to science" interpretation.[38]

The Anti-Martyr to Science Scheme

The second school of thought is essentially a mirror image of the first one. While maintaining the same logical structure as the first scheme, the second scheme inverts the relationship of all three components common to both sets of interpretations. The second scheme, in general, rejects science as the reason behind Bruno's death and connects a relatively mild position on the religion and science conflict with continuist view on the development of modern science. Almost without exception, this scheme appears as a direct, conscious reaction against the "martyr to science" scheme. Consequently, the more extreme

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[38] H. S. Williams and Edward H. Williams, *A History of Science*, 5 vols., (New York: Harper and Brothers, 1904), 2: 13-14, 53-54, 66-67, 81-82.