

A man of insight and courage

Giordano Bruno, philosopher and scientist, burnt at the stake 400 years ago

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Four centuries ago today, on February 16, 1600, the Roman Catholic Church executed Giordano Bruno, Italian philosopher and scientist, for the crime of heresy. He was taken from his cell in the early hours of the morning to the Piazza dei Fiori in Rome and burnt alive at the stake. To the last, the Church authorities were fearful of the ideas of a man who was known throughout Europe as a bold and brilliant thinker. In a peculiar twist to the gruesome affair, the executioners were ordered to tie his tongue so that he would be unable to address those gathered.

Throughout his life Bruno championed the Copernican system of astronomy which placed the sun, not the Earth, at the centre of the solar system. He opposed the stultifying authority of the Church and refused to recant his philosophical beliefs throughout his eight years of imprisonment by the Venetian and Roman Inquisitions. His life stands as a testimony to the drive for knowledge and truth that marked the astonishing period of history known as the Renaissance—from which so much in modern art, thought and science derives.

In 1992, after 12 years of deliberations, the Roman Catholic Church grudgingly admitted that Galileo Galilei had been right in supporting the theories of Copernicus. The Holy Inquisition had forced an aged Galileo to recant his ideas under threat of torture in 1633. But no such admission has been made in the case of Bruno. His writings are still on the Vatican's list of forbidden texts.

The Church is currently considering a new batch of apologies. A theological commission headed by Cardinal Joseph Ratzinger, the head of the Congregation for the Doctrine of the Faith, the modern successor of the Inquisition, has completed an inquiry entitled "The Church and the Faults of the Past: Memory in the Service of Reconciliation", which proposes making an apology for "past errors". The results have been handed to Pope John Paul II, who is due to make a statement on March 12. The execution of Bruno is one of the church's crimes being considered but it is unlikely that major concessions will be made in his case. A number of hard-line Catholic figures have opposed the investigation from the outset, saying that excessive penitence and self-questioning could undermine faith in the Church and its institutions.

The current attitude of the Roman Catholic Church to Bruno is defined by a two-page entry in the latest edition of the *Catholic Encyclopaedia*. It describes Bruno's "intolerance" and berates him, declaring "his attitude of mind towards religious truth was that of a rationalist". [1] The article describes in detail Bruno's theological errors and his lengthy detention at the hands of the Inquisition, but fails to mention the best-known fact—that the church authorities burnt him alive at the stake.

Bruno has long been revered as a martyr to scientific truth. In 1889 a monument to him was erected at the location of his execution. Such was the feeling for Bruno that scientists and poets paid tribute to him and a book was written detailing his life's work. In a dedication for a meeting

held at the Contemporary Club in Philadelphia in 1890, American poet Walt Whitman wrote: "As America's mental courage (the thought comes to me today) is so indebted, above all current lands and peoples, to the noble army of old-world martyrs past, how incumbent on us that we clear those martyrs' lives and names, and hold them up for reverent admiration as well as beacons. And typical of this, and standing for it and all perhaps, Giordano Bruno may well be put, today and to come, in our New World's thankfulest heart and memory." [2]

Karl Marx's co-thinker Fredrick Engels summed up the period that produced figures, such as Bruno, who challenged the church and laid the basis for modern science. In an introduction written in the 1870s to his unfinished work the *Dialectics of Nature*, Engels wrote: "It was the greatest progressive revolution that mankind had so far experienced, a time which called for giants and produced giants—giants in power of thought, passion and character, in universality and learning. The men who founded the modern rule of the bourgeoisie had anything but bourgeois limitations. On the contrary, the adventurous character of the time inspired them to a greater or lesser degree. There was hardly any man of importance then living who had not travelled extensively, who did not speak four or five languages, who did not shine in a number of fields...."

"At that time natural science also developed in the midst of the general revolution and was itself thoroughly revolutionary; it had indeed to win in struggle its right of existence. Side by side with the great Italians from whom modern philosophy dates, it provided its martyrs for the stake and the dungeons of the Inquisition. And it is characteristic that Protestants outdid Catholics in persecuting the free investigation of nature. Calvin had Servetus burnt at the stake when the latter was on the point of discovering the circulation of the blood, and indeed he kept him roasting alive during two hours; for the Inquisition at least it sufficed to have Giordano Bruno simply burnt alive." [3]

What is most characteristic of Bruno is his vigorous appeal to reason and logic, rather than religious dogma, as the basis for determining truth. In a manner that anticipates the Enlightenment thinkers of the eighteenth century, he wrote in one of his final works, *De triplici minimo* (1591): "He who desires to philosophise must first of all doubt all things. He must not assume a position in a debate before he has listened to the various opinions, and considered and compared the reasons for and against. He must never judge or take up a position on the evidence of what he has heard, on the opinion of the majority, the age, merits, or prestige of the speaker concerned, but he must proceed according to the persuasion of an organic doctrine which adheres to real things, and to a truth that can be understood by the light of reason." [4]

An examination of Bruno's philosophical legacy reveals a complex figure who was influenced by the various intellectual trends of the time, in a period when modern science was just beginning to emerge. His

enthusiastic polemics earned the admiration of the most advanced thinkers of the period and the loathing of the Church, whose authority was being shaken to the core by learned assaults such as these.

Bruno was born in the town of Nola, near Naples, in 1548, at the dawn of the revolution in astronomy which was heralded by the publication of Copernicus's *De revolutionibus orbium coelestium libri VI* in 1543. Copernicus asserted that the sun, not the Earth, was the centre of a finite universe, with the planets on circular orbits around it and the stars on a fixed sphere a considerable distance beyond.

The Copernican system not only challenged the Church's cosmological views, but also the rigid social hierarchy of feudalism. The previous neatly ordered view of the universe, with the Earth at the centre, reinforced the rigid feudal order with serfs at the bottom and the Pope at the pinnacle. The dangerous implication of the Copernican theory was that if the Church's credo of infallibility could be challenged in the cosmological arena then its social position was also cast into doubt.

The Church was already under siege from all sides. In 1517 Martin Luther nailed his *Ninety-Five Theses* to the church door in Germany, denouncing the practices of the Roman Catholic Church, the first blow in the Protestant Reformation that swept across Europe. The Vatican responded with a counterattack—the Counter Reformation—on anyone who appeared to challenge Catholic doctrine. In 1542 it established the Roman Inquisition to enforce its edicts with torture and execution.

Thus Bruno entered a world in ferment. In 1563 Bruno entered the monastery of St. Dominic, where he came to the notice of Church authorities for his unorthodox religious views. He used his time as a novice to acquaint himself not only with the philosophical works of the ancient Greeks, but also his more contemporary European thinkers. It was at this time that he first encountered the work of Copernicus, which was to have such a profound impact on his life.

Bruno took holy orders in 1572 but then left the order in 1576 after travelling to Rome. He had been caught reading philosophical texts annotated by the Dutch humanist philosopher Erasmus and escaped before being denounced to ecclesiastical authorities. He spent the rest of his life until his capture wandering Europe discussing and promoting his philosophical ideas.

After three years in Italy he went to Geneva, which was then dominated by the Protestant sect led by Calvin. He soon came into conflict with academic authorities when he published a pamphlet stating that a local professor of philosophy had made 20 errors in one lecture. He was imprisoned by the Calvinist authorities and only released after withdrawing the offending publication. Twenty-six years earlier the Calvinists had burnt Servetus, a Spanish doctor, geographer and man of letters, at the stake for his scientific views.

Bruno then travelled to Toulouse in France, where he lectured on Aristotle's *De anima* and wrote a book on mnemonics—systems of memory training. He arrived in Paris by 1581, where he came to the attention of King Henry III who was attracted by his reputation of having a prodigious memory. The King found a position for him at the College de France after he had been forbidden entry to the Sorbonne by the ecclesiastical authority.

During his stay in Paris he wrote three books, two on mnemonics and a play entitled *The Torch-Bearer by Bruno the Nolan, Graduate of No Academy, Called the Nuisance*. In this play Bruno described his time in the Dominican convent in Naples and presented a withering indictment of the Church. Giovanni Gentile's commentary on the play describes Bruno's characterisation of the Church as follows: "You will see, in mixed confusion, snatches of cutpurses, wiles of cheats, enterprises of rogues; also delicious repulsiveness, bitter sweets, foolish decisions, mistaken faith and crippled hopes, niggard charities, judges noble and serious for other men's affairs with little truth in their own; virile women, effeminate men and voices of craft and not of mercy so that he who believes most is

most fooled—and everywhere the love of gold." [5]

Bruno was forced to leave France in 1583 and travelled to England where his three-year stay proved to be one of the most fruitful periods of his life. He was introduced into a society that craved all forms of Italian learning and already had a considerable Italian and foreign exile community. Many had fled to avoid persecution for unorthodox philosophical and religious ideas. Bruno held discussions with Queen Elizabeth I, who was attracted by the prospect of discussing philosophical matters directly in Italian. He quickly attracted a number of intellectuals who eagerly discussed the philosophical ideas of the time.

In England, Bruno published six books, all in Italian, fully elaborating his philosophical ideas for the first time. He was one of the first philosophers to discuss scientific issues in the vernacular. The very act of publishing in Italian was an open challenge to the Church, which sought to maintain Latin as the language of intellectual discourse and so limit the wider dissemination of ideas. Copernicus's groundbreaking work had been published only in Latin. So afraid were Bruno's printers that not one of them identified himself in the printed texts.

Bruno's cosmology is outlined in *The Ash Wednesday Supper, Cause, Principle and Unity* and *On the Infinite Universe and Worlds*, which represent a brilliant anticipation of subsequent scientific and philosophical developments. In some respects the conclusions Bruno arrived at by bold intuition surpassed the work of his successors such as Galileo and Kepler. The works are in the form of dialogues, where Bruno's characters argue various philosophical positions from different points of view, one representing Bruno himself.

In *The Ash Wednesday Supper* Bruno was one of the first to argue for the existence of an infinite universe, which contained an infinite number of worlds similar to the Earth. In doing so, he rejected the limits of the Copernican system, which posited a finite universe limited by a fixed sphere of stars just beyond the solar system. He argued that the sun was not the centre of the universe, saying that if the sun were observed from any of the other stars it would appear no different from them. Bruno even speculated that the other worlds would be inhabited.

German philosopher Ernst Cassirer explained the significance of Bruno's conception of an infinite universe as follows: "This doctrine ... was the first and decisive step toward man's self-liberation. Man no longer lives in the world of a prisoner enclosed within the narrow walls of a finite physical universe. He can traverse the air and break through all the imaginary boundaries of the celestial spheres which have been erected by a false metaphysics and cosmology. The infinite universe sets no limits to human reason; on the contrary, it is the great incentive of human reason. The human intellect becomes aware of its own infinity through measuring its powers by the infinite universe." [6]

Bruno's other three works published in England—*The Expulsion of the Triumphant Beast*, *Cabal of the Cheval Pegasus* and *On Heroic Frenzies*—contain a biting critique of the Counter Reformation. Italian historian Hilary Gatti in her book *Giordano Bruno and Renaissance Science* observed: "The sense of these final Italian works, in my opinion, is ... to be found in a transition from an intellectual sphere dominated by a vision of the world in essentially theological terms to an intellectual sphere dominated by a vision of the world in essentially philosophical terms. In this passage from theology to philosophy all forms of revealed religion receive harsh treatment, but above all the Christian religion that dominated the life and culture of the Europe of the sixteenth century, often through violence and oppression." [7]

It was in England that Bruno had his most profound impact. His views were discussed in intellectual circles and the arguments presented in his various books give a flavour of the contemporary discussion. Two leading scientists, William Gilbert and Thomas Harriot, became leading proponents of Bruno's cosmological views. Gilbert, whose *De Magnete* (1600) stood as a basic text on magnetism until the nineteenth century,

was prominent in a grouping that discussed scientific issues. He was particularly interested in developing his magnetic theories in relation to Bruno's cosmological views.

Harriot was a noted mathematician and astronomer, who was thought to have discovered sunspots before Galileo. Harriot exchanged letters with Kepler in 1608 discussing Bruno's conception of an infinite universe, which Kepler was to reject. Harriot was one of the scientists cultivated by the Ninth Earl of Northumberland—a devoted follower of Bruno. Northumberland had an extensive library of Bruno's works, which he made available to the scientists in his circle.

Bruno was forced to return to France because of the decline in the fortunes of his patron, the Marquis de Mauvissiere, with whom he had travelled to England. He produced three works on his return to Paris but was forced to leave after his challenge to debate all comers on the topic *One Hundred and Twenty Articles on Nature and the World* resulted in him being set upon by supporters of the Church. He then travelled to Germany, where he resided in Wittenberg and Marburg until 1588. He was forced to leave Marburg after coming into conflict with the Lutheran authorities, then wandered Europe—Prague, Helmstedt, Frankfurt and Zurich.

In 1591 Bruno returned to Italy after being invited by the Venetian nobleman Zuane Mocenigo to educate the aristocrat in mnemonics. Mocenigo subsequently denounced him to the Inquisition. Bruno was arrested on May 23, 1592, cross-examined on his philosophical works and on January 27, 1593 handed over to the Inquisition in Rome on the direct request of the Papal Nuncio, Taverna, acting on behalf of Pope Clement VIII.

During his detention in Rome he was interrogated on all aspects of his life and his philosophical and theological views over a period of seven years. On February 15, 1599 the Inquisition charged Bruno with eight specific acts of heresy, which the church has not revealed to this day. According to the limited documents available, Bruno was indicted for his "atheistic" views and for the publication of *The Expulsion of the Triumphant Beast*. He refused to recant.

The Inquisition delivered its verdict on January 20, 1600, stating: "We hereby, in these documents ... pronounce sentence and declare the aforesaid Brother Giordano Bruno to be an impenitent and pertinacious heretic, and therefore to have incurred all the ecclesiastical censures and pains of the Holy Canon.... We ordain and command that thou must be delivered to the Secular Court ... that thou mayest be punished with the punishment deserved, though we earnestly pray that he (the Roman Governor) will mitigate the rigour of the laws concerning the pains of thy person, that thou mayest not be in danger of death or of mutilation of thy members.

"Furthermore, we condemn, we reprobate and we prohibit all thine aforesaid and thy other books and writings as heretical and erroneous, containing many heresies and errors, and we ordain that all of them which have come or may come in future into the hands of the Holy Office shall be publicly destroyed and burned in the square of St. Peter before the steps and that they shall be placed upon the Index of Forbidden Books." [8]

Despite the false note of concern about Bruno's physical well-being, the Inquisition's verdict was a death sentence. Bruno was defiant to the end. Gaspar Schopp of Brelau, a recent convert to Catholicism and a witness to the sentencing, reported that Bruno exclaimed on hearing the sentence: "Perchance you who pronounce my sentence are in greater fear than I who receive it." [9]

The Holy Inquisition and its tormentors are remembered only as symbols of arch-reaction. But Bruno has stood the test of time. An examination of his life reveals a true Renaissance man with a passionate interest in all aspects of human learning, who participated with great energy and determination in the intellectual turbulence of his times. His

insights made an important contribution to the ideas that laid the basis for modern science. His stubborn refusal to bow to the authority, power and repressive apparatus of the Roman Catholic Church, the most powerful institution of his day, will no doubt be an inspiration for centuries to come.

The German philosopher Georg Hegel summed up the generation of thinkers to which Bruno belonged in *his Lectures on the History of Philosophy*: "These men felt themselves dominated, as they really were, by the impulse to create existence and to derive truth from their very selves. They were men of vehement nature, of wild and restless character, of enthusiastic temperament, who could not attain to the calm of knowledge. Though it cannot be denied that there was in them a wonderful insight into what was true and great, there is no doubt on the other hand that they revelled in all manner of corruption in thought and heart as well as in their outer life. There is thus to be found in them great originality and subjective energy of spirit; at the same time the content is heterogeneous and unequal, and their confusion of mind is great. Their fate, their lives, their writings—which often fill many volumes—manifest only this restlessness of their being, this tearing asunder, the revolt of their inner being against present existence and the longing to get out of it and reach certainty. These remarkable individuals really resemble the upheavals, tremblings and eruptions of a volcano which has become worked up in its depths and has brought forward new developments, which as yet are wild and uncontrolled." [10]

Notes:

1. *The Catholic Encyclopaedia* (<http://www.knight.org/advent/cathen/03016a.htm>)
2. Quoted in *The Infinite Worlds of Giordano Bruno* by Antoinette Mann Paterson, 1970, page ix
3. *Dialectics of Nature* by Frederick Engels, page 21-22
4. *De triplici minimo* by Giordano Bruno as quoted in *Giordano Bruno and Renaissance Science* by Hilary Gatti, 1998, page 4
5. Quoted in *Giordano Bruno, His Life and Thought* by Dorothea Waley Singer, 1950, page 22
6. Quoted in *The Infinite Worlds of Giordano Bruno* by Antoinette Mann Paterson, 1970, pages 33-34
7. *Giordano Bruno and Renaissance Science* by Hilary Gatti, 1998, page 229
8. Quoted in *Giordano Bruno, His Life and Thought* by Dorothea Waley Singer, 1950, page 176-177
9. Quoted in *Giordano Bruno, His Life and Thought* by Dorothea Waley Singer, 1950, page 179
10. *Lectures on the History of Philosophy* by G.W.F.Hegel, Volume 3, pages 115-116



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