Giordano Bruno: Expander of the Copernican Universe

Max E. Valentinuzzi

How many crimes were and are committed in God’s name?
Combien de crimes ont été et sont commis sur le nom de Dieu?
Wie viele Verbrechen wurden und werden auf Gottes Namen begangen?
¿Cuántos crímenes fueron y son cometidos en nombre de Dios?
Quanti crimini furono e sono commessi sul nome di Dio?

Giordano Bruno, or Iordanus Brunus Nolanus (1548–1600), was an Italian Dominican friar, philosopher, mathematician, poet, and cosmological theorist, born in the Kingdom of Naples. He extended the then novel Copernican model and proposed that the stars were just distant suns surrounded by their own exoplanets and raised the possibility that these planets could even foster life of their own. Besides, Bruno also underlined that the universe is infinite and could have no celestial body at its center. Revolutionary ideas shaking the base of the Catholic Church contentions; the response took some time, but was mercilessly cruel.

He was tutored privately at an Augustinian monastery and attended public lectures at the Studium Generale, which were the teaching institutions to bring about the earlier Christian universities. At the age of 17, he entered the Dominican Order at the monastery of San Domenico Maggiore, always in Naples, taking the name Giordano, after Giordano Crispo, his metaphysics tutor. He continued his studies there, completing his novitiate, and became an ordained priest in 1572 at age 24. During his time in Naples, he became known for his skill with the art of memory and on one occasion traveled to Rome to demonstrate his mnemonic system before Pope Pius V, named Antonio Ghislieri (1504–1572), ascetic, reformer, and relentless persecutor of heretics. During his reign (1566–1572), the Inquisition was successful in eliminating Protestantism in Italy, and the decrees of the Council of Trent (1545–1563) were put into effect [1], [2].

First years of wandering (1576–1583)
Bruno first went to the Genovese port of Noli, then to Savona, Turin, and finally to Venice, where he published his lost work On the Signs of the Times with the permission (so he claimed at his trial) of the Dominican Remigio Nannini Fiorentino. From Venice, he continued to Padua, where he met fellow Dominicans who convinced him to wear his religious habit again (which he had left). From Padua, he moved to Bergamo, and then across the Alps to Chambéry and Lyon, France. His movements after this time are obscure. In 1579, Bruno arrived in Geneva. During his Venetian trial, he told inquisitors that while in Geneva
he told the Marchese de Vico of Naples, who was notable for helping Italian refugees in Geneva, that he did not intend to adopt the religion of the city. He desired to stay there only that he might live at liberty and in security. Bruno had a pair of breeches made for himself, and the Marchese and others apparently made Bruno a gift of a sword, hat, cape and other necessities for dressing himself; in such clothing, Bruno could no longer be recognized as a priest. Things apparently went well for Bruno for a time, as he entered his name in the Rector's Book of the University of Geneva in May 1579. But in keeping with his personality, he could not long remain silent. In August, he published an attack on the work of a distinguished professor, an act that led him and the printer to prompt arrest. Rather than apologizing, Bruno insisted on continuing to defend his publication. He was refused the right to take sacrament. Eventually such right was restored, but thereafter, he left Geneva.

Then he went to France, arriving first in Lyon, and thereafter settling for a time (1580–1581) in Toulouse, where he took his doctorate in theology and was elected by students to lecture in philosophy. It seems he also attempted at this time to return to Catholicism, but was denied absolution by the Jesuit priest he approached. When religious strife broke out in the summer of 1581, he moved to Paris. There he held a cycle of 30 lectures on theological topics and also began to gain fame for his prodigious memory. Bruno’s feats of memory were based, at least in part, on his elaborate system of mnemonics, but some of his contemporaries found it easier to attribute them to magical powers. His talents attracted the benevolent attention of King Henry III (King of France between 1574 and 1589). Henry called him to the court. Bruno subsequently reported that he had such a name that King Henry III summoned him to discover if the memory he possessed was natural or acquired by magic art. He satisfied him that it did not come from sorcery but from organized knowledge; and, following this, he had a book on memory printed, titled The Shadows of Ideas, which he dedicated to His Majesty. Besides, the King granted him a salary.

**England (1583–1585)**

Bruno’s restless temperament kept him moving, this time in April 1583, to England with letters of recommendation from Henry III to the French ambassador, Michel de Castelnau. There, he became acquainted with members of the Hermetic circle. Let us remember that Hermeticism was a religious and philosophical tradition based upon writings attributed to Hermes Trismegistus, perhaps a combination of the Greek god Hermes and the Egyptian god Thoth. These writings were considered of great importance during the Renaissance and the Reformation [3].

Bruno also lectured at Oxford and unsuccessfully sought a teaching position there. His views were controversial, notably with John Underhill, Rector of Lincoln College, and George Abbot, who mocked Bruno for supporting Copernicus’ stance that the Earth did go round and the heavens stood still. George Abbot (1562–1633) was Archbishop of Canterbury from 1611 to 1633. He also served as the fourth Chancellor of Trinity College, Dublin, Ireland, from 1612 to 1633. Apparently, even though sincere, he was a rather narrow-minded Calvinist, translator also of the King James Bible Version [4].

Nevertheless, Bruno's stay in England was fruitful. During that time, he completed and published some of his most important works, the six Italian Dialogues, including the cosmological tracts, *La Cena de le Ceneri* (The Ash Wednesday Supper, 1584), *De la Causa, Principio et Uno* (On Cause, Principle and Unity, 1584), *De l'Infinito, Universo e Mondi* (On the Infinite, Universe and Worlds, 1584) as well as *Lo Spaccio de la Bestia Trionfante* (The Expulsion of the Triumphant Beast, 1584) and *De gl' Heroici Furori* (On the Heroic Frenzies, 1585). Some of these were printed by John Charlewood. However, Bruno’s works in London, notably *The Ash Wednesday Supper*, were deemed offensive. Once again, Bruno’s controversial views and tactless language lost him the support of his friends.

**Last years of wandering (1585–1592)**

In October 1585, after the French embassy in London was attacked by a mob, Bruno returned to Paris with the ambassador Castelnau, finding a tense political situation. Moreover, his 120 theses against Aristotelian natural science and his pamphlets against the mathematician Fabrizio Mordente soon put him in ill favor. In 1586, following a violent quarrel about Mordente’s invention, the differential compass, he left France for Germany [5].

In Germany, he failed to obtain a teaching position at Marburg, but was granted permission to teach at Wittenberg, where he lectured on Aristotle for
two years. However, with a change of intellectual climate there, he was no longer welcome, and proceeded in 1588 to Prague, where he obtained some support from Rudolf II, but no teaching position. He went on to serve briefly as a professor in Helmstedt, but had to flee again when he was excommunicated by the Lutherans. Rudolf II (1552–1612), a member of the House of Habsburg, was Holy Roman Emperor (1576–1612), King of Hungary and Croatia (as Rudolf I, 1572–1608), King of Bohemia (1575–1608/1611), and Archduke of Austria (1576–1608).

During this period in Prague, Bruno produced several Latin works, including *De Magia* (On Magic), *Theses De Magia* (Theses On Magic) and *De Vinculis In Genere* (A General Account of Bonding). All these were apparently transcribed or recorded by an assistant between 1589 and 1590. He also published *De Imaginum, Signorum, et Idearum Compositione* (On The Composition of Images, Signs and Ideas) in 1591. That year, he was in Frankfurt, too. Apparently, during the Frankfurt Book Fair, he received an invitation to Venice from the patrician Giovanni Mocenigo, who wished to be instructed in the art of memory, and also heard of a vacant chair in mathematics at the University of Padua. At the time, the Inquisition seemed to be losing some of its strictness, and because Venice was the most liberal state in Italy, Bruno was lulled into making the fatal mistake of returning to Italy.

In a way, that step marked the beginning of the end. He went first to Padua, where he taught briefly, and applied unsuccessfully for the chair of mathematics, which was given instead to Galileo Galilei one year later. Bruno accepted Mocenigo’s invitation and moved to Venice in March 1592. For about two months he served as an in-house tutor to Mocenigo. When Bruno announced his plan to leave Venice, the latter, who was unhappy with the teachings he had received and had apparently come to dislike Bruno, denounced him to the Venetian Inquisition, and Bruno was arrested on May 22, 1592. Among the numerous charges of blasphemy and heresy brought against him in Venice, based on Mocenigo’s denunciation, was his belief in the plurality of worlds, as well as accusations of misconduct. Bruno defended himself skillfully, stressing the philosophical character of some of his positions, denying others and admitting that he had had doubts on some matters of dogma. The Roman Inquisition requested his transfer to Rome. After several months of argument, the Venetian authorities consented, and Bruno was sent to Rome in February 1593.

**Imprisonment, trial, and execution (1593–1600)**

During the seven years of his trial in Rome, Bruno was held in confinement. Some important documents about the trial are lost, but others have been preserved, among them a summary of the proceedings that was rediscovered in 1940. The numerous charges against Bruno, based on some of his books as well as on witness accounts, included blasphemy, immoral conduct, and heresy in matters of dogmatic theology and involved some of the basic doctrines of his philosophy and cosmology.

The Inquisition found him guilty, and he was burned at the stake in Rome’s Campo di Fiori in 1600. After his death, he gained considerable fame, being particularly celebrated by 19th- and early 20th-century commentators who regarded him as a martyr for science, although historians have debated the extent to which his heresy trial was a response to his astronomical views or to other aspects of his philosophy and theology (Figures 1 and 2).

**Discussion**

While Bruno was distinguished for outstanding ability, his taste for free thinking and forbidden books soon caused him difficulties. Given the controversy he caused in later life, it is surprising that he was able to remain within the monastic system for 11 years. In his testimony to Venetian inquisitors during his trial, many years later, he says that proceedings were twice taken against him for having cast away images of the saints, retaining only a

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**Figure 1.** Trial of Giordano Bruno by the Roman Inquisition. Bronze relief by Ettore Ferrari, Campo di Fiori, Rome.
crucifix, and for having recommended controversial texts to a novice. Such behavior could perhaps be overlooked, but Bruno’s situation became much more serious when a copy of the banned writings of Erasmus, annotated by him, was discovered hidden in his convent privy. When he learned that an indictment was being prepared against him in Naples, he fled. Erasmus of Rotterdam (1466–1536), humanist, Catholic priest, and stringent social critic, supported ideas about the Church that brought reactions against him. Indirectly, Bruno paid a price, too.

Bruno defended himself as he had in Venice, insisting that he accepted the Church’s dogmatic teachings, but trying to preserve the basis of his philosophy. In particular, he held firm to his belief in the plurality of worlds, although he was admonished to abandon it. His trial was overseen by the Inquisitor Cardinal Bellarmine, who demanded a full recantation, which Bruno refused. On 20 January 1600, Pope Clement VIII declared Bruno a heretic, and the Inquisition issued a sentence of death. He is said to have made a threatening gesture towards his judges and to have replied: Perhaps you pronounce this sentence against me with greater fear than I receive it.

He was turned over to the secular authorities. On Ash Wednesday, 17 February 1600, in the Campo di Fiori (a central Roman market square), with his tongue imprisoned because of his wicked words, he was hung upside down naked before he was finally burned at the stake. His ashes were thrown into the Tiber River. All of Bruno’s works were placed on the Index Librorum Prohibitorum in 1603. Inquisition cardinals who judged Bruno were: Cardinal Bellarmino, Cardinal Madruzzo, Cardinal Camillo Borghese (later Pope Paul V), Domenico Cardinal Pinelli, Pompeio Cardinal Arrigoni, Cardinal Sfondrati, Pedro Cardinal De Dea Manuel, and Cardinal Santorio (Archbishop of Santa Severina) [6].

The earliest likeness of Bruno is an engraving published in 1715; it is considered the only known portrait of Bruno, perhaps a re-engraving made from a lost original, so providing the source for later images. The records of Bruno’s imprisonment by the Venetian inquisition in May 1592 describe him as a man of average height, with a hazel-colored beard and the appearance of being about 40 years of age. Alternately, a passage in a work by George Abbot indicates that Bruno was of diminutive stature: “When that Italian Didapper, who intituled himselfe Philotheus Iordanus Brunus Nolanus, magis elaboratae Theologiae Doctor, etc, with a name longer than his body....” The word didapper used by Abbot is a derisive term. Literally, it describes a small diving water bird frequenting rivers and fresh waters. Also, pejoratively it refers to one who disappears for a time and suddenly reappears [7].

Few astronomers of Bruno’s time accepted Copernicus’s heliocentric model. Among those who did were the German Michael Maestlin (1550–1631), Johannes Kepler (1571–1630), the Englishman Thomas Digges, and the Italian Galileo Galilei (1564–1642). In 1584, Bruno published two important philosophical dialogues (La Cena de le Ceneri and De l’Infinito, Universo et Mondi) in which he argued against the planetary spheres, as did Tycho Brahe in 1587, and affirmed the Copernican principle. In particular, to support the Copernican view and oppose the objection according to which the motion of the Earth would be perceived by means of the motion of winds, clouds, etc., in La Cena de le Ceneri, Bruno anticipates some of the arguments of Galilei on the relativity principle. Note that he also uses the example now known as Galileo’s ship. Bruno’s true, if partial, vindication would have to wait for the implications and impact of Newtonian cosmology. Bruno’s overall contribution to the birth of modern science is still controversial in several respects. Some scholars stress the importance of Bruno’s ideas about the universe being infinite and lacking geocentric structure. Others see in Bruno’s idea of multiple worlds a forerunner of quantum mechanics.

The Vatican has published few official statements about Bruno’s trial and execution. In 1942, Cardinal
Giovanni Mercati, who discovered a number of lost documents relating to Bruno’s trial, stated that the Church was perfectly justified in condemning him. On the 400th anniversary of Bruno’s death, in 2000, Cardinal Angelo Sodano declared Bruno’s death to be a *sad episode* but, despite his regret, he defended Bruno’s prosecutors (!!!), maintaining that the Inquisitors had the desire to serve freedom and promote the common good and did everything possible to save his life. In the same year, Pope John Paul II made a general apology for the use of violence that some have committed in the service of truth; regretfully, and to this date, no direct reference to Bruno’s case has even been mentioned.

Some authors have characterized Bruno as a martyr of science. They assert that, even though Bruno’s theological beliefs, or perceptions of them by others, were an important factor in his heresy trial, his Copernicanism and cosmological beliefs played a significant role in the outcome. Some historians, both admirers and critics of Bruno, basically agree that he was pompous and arrogant, showing little patience with anyone who even mildly disagreed with him. It has been suggested that Bruno’s experience of rejection when he visited Oxford University might have been Bruno’s manner, his language and his self-assertiveness, rather than his ideas that caused offence.

The website of the Vatican Secret Archives, discussing a summary of legal proceedings against Bruno in Rome, states: “In the same rooms where Giordano Bruno was questioned, for the same important reasons of the relationship between science and faith, at the dawning of the new astronomy and at the decline of Aristotle’s philosophy, sixteen years later, Cardinal Bellarmino, who then contested Bruno’s heretical theses, summoned Galileo Galilei, who also faced a famous inquisitorial trial, which, luckily for him, ended with a simple abjuration.”

**How charicaturesque looks** and sounds the medieval religious creationist concept of a geocentric universe under the current knowledge of astronomy, astrophysics, space exploration, and their astounding discoveries of a probable boundless and expanding universe. How many injustices, how many ecclesiastical powerful people blinded by crude beliefs and sheer ignorance! Our 21st-century times, even though loaded with bigger and challenging problems, show also innumerable ways out that constantly spur the largest universe ever produced, the Human Mind!

### References

5. V. Zaffino, “*Giordano Bruno and the proportional eight spike compass.*” 2018. [Online]. Available: https://www.academia.edu/15302296/Giordano_Bruno_and_the_Proportional_Eight_Spike_Compass