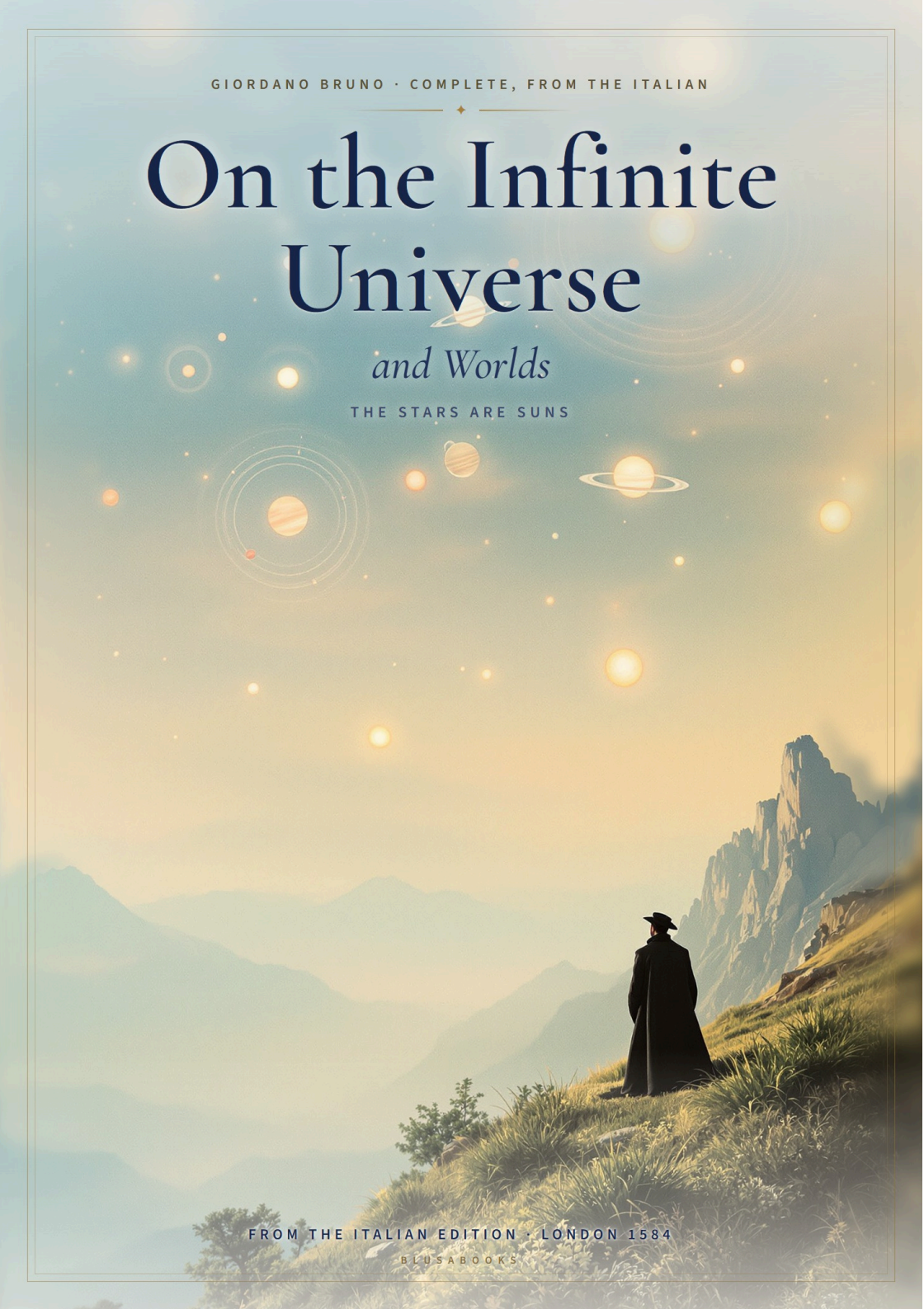
GIORDANO BRUNO · COMPLETE, FROM THE ITALIAN

On the Infinite Universe

and Worlds

THE STARS ARE SUNS



FROM THE ITALIAN EDITION · LONDON 1584

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BOOKS OF WISDOM · OTHER WORLDS



On the Infinite Universe and Worlds

London, 1584

Giordano Bruno’s five dialogues on a universe without edge or centre, on the stars as suns, and on the countless worlds around them. Complete in modern English from the Italian edition of 1584

BlusaBooks · MMXXVI

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Source: Giordano Bruno, *De l'infinito universo et mondi* (On the Infinite Universe and Worlds), “Stampato in Venetia” on the title page — in fact printed in London (John Charlewood), 1584. Rendered into modern English from the Italian, from images of the pages of this edition. Title page and woodcuts from the same edition.

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FOREWORD

The book that opened the heavens. In 1584 a small book in Italian came out in London under the title *On the Infinite Universe and Worlds*. Its author claimed things that most of his contemporaries found both mad and dangerous: the universe has no edge and no centre; the stars are suns, as large as ours or larger; around them circle countless earths, and these too are inhabited. At that time the universities of Europe still taught the cosmos of Aristotle: the Earth stands motionless at the centre, transparent heavenly spheres turn around it carrying the Moon, the Sun and the planets, and on the very outside is the vault of the fixed stars, beyond which there is nothing, not even empty space. Giordano Bruno "tore open" that vault. Sixteen years later he was burned at the stake in Rome.

Who Bruno was. Filippo Bruno was born in 1548 at Nola near Naples, which is why he later called himself "the Nolan". At seventeen he entered the Dominican order in Naples, took the name Giordano, studied theology and became a priest. But he also read forbidden books and questioned dogmas, and in 1576, fearing a charge of heresy, he left the monastery and fled. Almost twenty years of exile followed: Geneva, Toulouse, Paris, where King Henri III admired his art of memory, then London, and later Wittenberg, Prague, Helmstedt and Frankfurt. Everywhere he lectured, argued with professors and wrote books, and everywhere he soon fell out with the local scholars.

In London with the ambassador. From 1583 to 1585 Bruno lived in London in the house of the French ambassador, Michel de Castelnau, Lord of Mauvissière, to whom this book is dedicated. At Oxford his lectures on Copernicus were mocked and broken off, but in the ambassador's house he had protection and peace. There, within two years, he wrote six dialogues in Italian, all his most famous works, among them *The Ash Wednesday Supper* (a defence of

Copernicus), *On Cause, Principle and Unity* and this book. The title page says "Printed in Venice", but that was a disguise: the book was printed in London by John Charlewood, and being in Italian it was meant for readers all over Europe.

Further than Copernicus. In 1543 Nicolaus Copernicus had placed the Sun at the centre of the universe and set the Earth moving around it. Bruno was one of the first to accept this teaching without reservation, but he went much further. For Copernicus the stars were still a single motionless sphere at the edge of the world. Bruno took that sphere away: the stars lie at different distances in infinite space, each of them is a sun, and our Sun is only one of them. In the universe there is no "up", no "down" and no centre; each world has its own centre of weight. Bruno took these ideas partly from the ancients, from Democritus, Epicurus and above all the Roman poet Lucretius, and from Nicholas of Cusa, but he wove them into one great vision of an infinite, living universe in which God shows himself in an infinite work.

Five dialogues. The book is a conversation. Philotheo is Bruno himself: ardent, certain, full of images and mockery. Elpino asks and understands; Fracastorio, named after the famous Italian physician and poet Girolamo Fracastoro, is a wise ally; Burchio is a stubborn, comic Aristotelian whose head cannot take in infinity, nor his stomach digest it. In the Fifth Dialogue Albertino arrives, a learned doctor who sets out all of Aristotle's arguments against many worlds, and in the end comes over to Philotheo's side. In the dedicatory epistle to the ambassador Bruno himself sums up all five dialogues and adds three sonnets about the mind that will "cleave the heavens and rise into the infinite".

The Inquisition and the year 1600. In 1591 Bruno accepted an invitation from the Venetian nobleman Giovanni Mocenigo and returned to Italy. In May of the following year Mocenigo denounced him to the Inquisition. In 1593 Bruno was taken to Rome, and his trial lasted seven years. He refused to recant. On 17 February 1600 he was burned at the stake in Rome, in the Campo de' Fiori; since 1889 his statue has stood there. Among the charges was the teaching of many worlds, but most of the charges concerned theology, and the complete records of

the trial have not survived. So we can honestly say only this much: this book and its ideas were part of what Bruno was tried for.

What we know today. Bruno could not prove his ideas; he did not even have a telescope. Yet much of what he said turned out to be true. The stars really are suns; the first distance to a star was measured in 1838, and it was unimaginably large. In 1995 the first planet was found around another Sun-like star, and today several thousand such planets are known. Our Sun is one of hundreds of billions of stars in our Galaxy, and there are hundreds of billions of galaxies. The universe has no known centre. Whether it is infinite, science still does not know, and life beyond the Earth has not yet been found. But the question Bruno asked so loudly that he paid for it with his life has become one of the central questions of modern astronomy.

Our series "Other Worlds". This book belongs to a series in which, across the centuries, people imagine and explore other worlds: Lucian's *A True Story* (2nd century; No. 83), Kepler's *The Dream* (1634; No. 85), Wilkins's *The Discovery of a World in the Moon* (1638; No. 86), Godwin's *The Man in the Moone* (1638; No. 87), Cyrano de Bergerac's *The World in the Moon* (No. 88), Fontenelle's *Conversations on the Plurality of Worlds* (No. 90), Huygens's *Cosmotheoros* (1698; No. 91), Voltaire's *Micromegas* (1752; No. 92) and Swedenborg's *Earths in the Universe* (No. 93). Bruno's book is their philosophical heart: it was the first to say so forcefully that the worlds are countless.

Our edition. This is a complete rendering in modern English, sentence by sentence, from images of the pages of the Italian edition of 1584. Nothing has been left out or retold. Bruno's sharpness, his mockery of pedants, his theology and his Latin quotations are kept as they are in the original; the Latin is translated in the text, and a calm explanation, where needed, is given in footnotes at the foot of the page. The sonnets are rendered as verse, line by line. At the front of the book is the title page of 1584; in the text are woodcuts from the original and modern colour illustrations. At the end comes a commentary: "In plain words", "What Bruno argues against" and "What science says".

GIORDA-
NO BRVNO
Nolano.

De l' infinito vniuerſo
et Mondi.

All' illuſtriſſimo Signor di
Mauuiſsiero.

Stampato in Venetia.
Anno. M. D. LXXXIIII.

The original title page: "Giordano Bruno of Nola. On the Infinite Universe and Worlds. To the most illustrious Lord of Mauvissière. Printed in Venice, 1584" — in fact the book was printed in London

DEDICATORY EPISTLE

written to the most illustrious Lord Michel de Castelnau[*]*, Lord of Mauvissière, Concressault and Joinville, Knight of the Order of the Most Christian King, Councillor of his Privy Council, Captain of fifty men-at-arms, and Ambassador to the Most Serene Queen of England* If I, most illustrious Knight, drove the plough, grazed a flock, tended a garden or mended clothes, nobody would look at me, few would watch me, hardly anyone would reproach me, and I could easily please everybody. But because I survey the field of nature, care for the pasture of the soul, long to cultivate the mind, and am a Daedalus[†] in shaping the habits of the intellect, look what happens: whoever has spotted me threatens me, whoever has watched me attacks me, whoever has caught up with me bites me, whoever has seized me devours me. It is not one, not a few; it is many, it is almost all.

If you want to know why, I tell you the cause: I dislike the generality, I hate the vulgar herd, the multitude does not satisfy me — one alone has won my love. She is the one through whom I am free in subjection, content in pain, rich in want, and alive in death; through whom I do not envy those who are slaves in freedom, who suffer in their pleasures, are poor in their riches and dead in their life. For in their bodies they have the chain that binds them, in their spirit the hell that crushes them, in their soul the error that sickens them, in their mind the torpor that kills them. They have no greatness of soul to set them free, no patience to lift them up, no splendour to illuminate them, no knowledge to bring them to life.

[*] Michel de Castelnau (c. 1520–1592) was French ambassador in London from 1575 to 1585. Bruno lived in his embassy from 1583 to 1585, and all his Italian dialogues were written there.

[†] Daedalus, the master craftsman of Greek myth, builder of the Labyrinth and maker of wings. Bruno casts himself as an inventor and builder of the habits of the mind.

That is why I do not, like a weary man, draw back my foot from the hard road; nor, like a sluggard, drop my hands from the work before me; nor, like a man in despair, turn my back on the enemy who opposes me; nor, like one dazzled, turn my eyes from the divine object. And this although, for the most part, I find myself taken for a sophist, more eager to seem clever than to be truthful; for an ambitious man, more intent on raising a new and false sect than on confirming the ancient and true one; for a bird-catcher hunting the splendour of glory by spreading the darkness of errors; for a restless spirit who overturns the edifices of sound learning and sets himself up as the founder of engines of perversity.

So then, my lord, may the holy powers drive away from me all who hate me unjustly; may my God be ever gracious to me; may all the rulers of our world look on me with favour; may the stars so prepare the seed for the field and the field for the seed that the world may see a useful and glorious harvest from my labour — by awakening the spirit and opening the understanding of those who are deprived of light. For I most certainly do not pretend; and if I err, I do not believe I truly err. In speaking and in writing I do not argue for the love of victory in itself (for I hold every reputation and every victory where truth is absent to be hostile to God, utterly base and without a shred of honour); it is for the love of true wisdom and from devotion to true contemplation that I toil, crucify myself and torment myself.

This will be made plain by the demonstrative arguments, which rest on living reasons, which derive from well-ordered sense, which is informed by images that are not false — images that, like truthful ambassadors, detach themselves from the things of nature, making themselves present to those who seek them, open to those who gaze at them, clear to whoever grasps them, certain to whoever understands them. And here, then, I offer you my contemplation on the infinite universe and innumerable worlds.

Argument of the First Dialogue

In the first dialogue, then, you have, first, that the inconstancy of the senses shows they are not a principle of certainty and do not produce it except through a certain comparison and collation of one sensible thing with another and one sense with another; and from this it is inferred how truth resides in different subjects.

Second, the demonstration of the infinity of the universe begins, and the first argument is put forward: those who, by the labour of their imagination, wish to build walls around the world cannot make it come to an end. Third, the second argument is drawn from the fact that it is unfitting to say that the world is finite and exists in itself, since this befits the immense alone. Next, the third argument is drawn from the unfitting and impossible notion of the world as being in no place at all; for in that case it would follow that it has no being, since everything, whether corporeal or incorporeal, is in a place either corporeally or incorporeally. The fourth argument is taken from a very pressing demonstration, or question, put by the Epicureans:

> *Indeed, if all the space there is*
> *were now set down as finite, and someone ran forward*
> *to the very last edge and hurled a flying spear —*
> *would you have it, flung with mighty force,*
> *go where it was sent and fly far off,*
> *or do you think that something could stop it and stand in its way?*
> *For either there is something that blocks and hinders it*
> *from reaching where it was sent and settling at the end,*
> *or it flies on beyond — and then it did not start from the end.*[*]

[*] Lucretius, *On the Nature of Things* I, c. 968–983. Lucretius (1st century BC) was the poet of Epicurus' philosophy; Bruno makes this "spear thrown from the edge of the world" argument his own.

Fifth, that the definition of place given by Aristotle* does not fit the first, greatest and most universal place; that it is pointless to take as place the surface nearest and immediately touching what is contained, along with other such trivialities, which make place a mathematical rather than a physical thing.

Not to mention that between the surface of the container and the contained thing moving within it there must always be an intervening space, which has a better claim to be called place; and if we want to take only the surface of space, we shall have to go looking in the infinite for a finite place. Sixth, that by making the world finite we cannot escape the void, if the void is that in which there is nothing.

Seventh, that just as this space in which our world lies would be understood as void if this world were not in it, so too, wherever this world is not, there void is understood. Outside the world, then, this space does not differ from that one; therefore the capacity this one has, that one has too; therefore it also has actuality, because no capacity is eternal without actuality. Hence it eternally has actuality joined to it — indeed, it is itself actuality, because in what is eternal there is no difference between being and being able to be.

Eighth, that no sense denies the infinite. We cannot deny it merely because we do not grasp it with the senses; rather, since the senses are themselves grasped by it and reason comes to confirm it, we must affirm it. Indeed, if we consider further, the senses themselves present it as infinite: for we always see one thing enclosed by another, and never, with either the outer or the inner sense, do we perceive a thing not enclosed by another or by something like it.

> *For before our eyes one thing is seen to bound another:*
> *air walls off the hills, and the mountains the air,*
> *land bounds the sea, and the sea in turn all lands;*
> *but truly there is nothing to bound the All from outside;*

* In his *Physics* (Book IV) Aristotle defined place as the inner boundary surface of the containing body. Bruno asks: then what contains the whole world?