

BIODIVERSITY IN DANTE ALIGHIERI'S DIVINE COMEDY

Antonella Toni*

*University of Salento, Italy.

Abstract

Dante Alighieri's *Divine Comedy* constitutes a sublime example of how Biodiversity is sung and celebrated in poetry. It expresses the Supreme Poet's interest, wonder, awe and respect for Nature in all its forms and manifestations. The first part of the paper contains the introduction in which Dante is presented as an attentive keen observer and connoisseur of the world of nature. The second part presents a series of Critical Studies, aimed at demonstrating the presence of Nature and Biodiversity in the *Divine Comedy*. Among the contributions mentioned are the most recent works by Angelo Manitta, Alberto Casadei, Aldo Caterino, Margherita Azzari, Laura Pasquini, Giuseppe Ledda and, finally, the works and multimedia projects by Virginia Valzano and Gabriella Sartor in which the thesis of Dante as Poet and Ecologist *ante litteram* is amply demonstrated.

Keywords

Biodiversity, Nature, Dante Alighieri, *Divine Comedy*, Biodiversity in Dante Alighieri, Biodiversity in *Divine Comedy*

1. Introduction

Dante Alighieri's *Divine Comedy* constitutes a sublime example of how Biodiversity is sung and celebrated in poetry.

It expresses the Supreme Poet's interest, wonder, awe and respect for Nature in all its forms and manifestations.

In the *Divine Comedy* there are many references to nature, animals, plants and natural phenomena. Dante was not a botanist or a scientist, but he had a profound understanding of the natural world, which enabled him to be meticulous and precise in his descriptions of flora, fauna, and natural phenomena, as well as in his depictions of landscapes and the creation of allegories.

The poet observes nature, flora, fauna and marine life, light, air, water, wind, colours, stars and the sky with an attentive eye for detail, colour and movement, and from all this he draws insights into high poetry.

It conveys his wonder and curiosity about every element of Nature and reminds us of the right and duty of man to maintain a relationship of harmony and respect with Nature, not only as a creature of God, but also as a repository of beauty and Biodiversity.

An analysis of the cultural context in which Dante conceived the *Commedia* reveals a surprising evolution in his position regarding his particular relationship with Nature.

For the time, and for the dominant religious culture, Dante shows an incredible and continuous attention to every element of the natural world. This enables us to identify an innovative approach and appoint him as a special observer of all aspects related to it.

In recent years, an increasing number of studies have emerged that explore this dantesque theme, offering insights into the Poet's extensive knowledge of natural heritage. These studies not only elucidate the allegorical descriptions but also highlight numerous other instances that illustrate the Poet's modern relationship with nature, which was not merely regarded as a divine entity but also appreciated in itself.

2. Critical Studies

In the panorama of contributions aimed at dealing with the presence of Nature in the *Divine Comedy*, we cite a few, without intending to underestimate the value of those not mentioned, due to space limitations.

One of the significant contributions is provided by Angelo Manitta, essayist, storyteller and editor of the magazines "Il Convivio" and "Letteratura e Pensiero", through his book entitled "*Dante e la Botanica della Selva Oscura. Piante arboree nella «Commedia»*" (2022).

The research project commences with an examination of the initial forest in Dante's *Commedia*, the "selva oscura", and subsequently concentrates on the diverse array of arboreal species and flora referenced by Dante, either directly or through the numerous naturalistic similes; grasses that are typically regarded as weeds are also present in the area, and the Poet dedicates considerable attention to them. These include marsh reed, bulrush, clover, fescue, nettle, couch grass, and others, all of which he examines in great detail.

Another contribution is provided by Alberto Casadei, one of Dante's most illustrious scholars and professor of Italian Literature at the University of Pisa, with his book "*Le selve di Dante. Piante sacre e boschi fatali nella «Divina Commedia»*" (2021). In this text, the author deals with the theme of the three forests that Dante describes in the Poem. The author's objective is to illustrate how the Poet moves from the allegorical meanings that characterise the elements of the "dark forest" to the descriptions of the other two forests, rendered with numerous realistic details drawn from the observation of naturalistic environments familiar to Him. Thus, the forest of suicides and the "divine forest" surprise the reader with their numerous references to physical and geographical reality.

In a meeting with students held on 26 October 2021 in Novi Ligure, Professor Casadei clearly stated: *«the environmental Dante has been studied little»*, encouraging young people to study this topic.

Another scholar, Aldo Caterino, scientific assistant at the Naval Museum in Genoa and author of essays on the history of seafaring, dwelt on Dante's knowledge of the sea. In his work entitled "*Dante and the Arts of the Sea*" (2020), he pursues the objective of tracing every reference to the sea in the Divine Comedy, focusing his attention on the richness of the verses inspired by it.

In an original and pertinent manner, the text acknowledges the poet's knowledge of the marine environment, navigation and related trades, which Dante could only have acquired under two

conditions: a great interest in that environment and direct experience of it. The text is also interesting for its rich iconography, which the author has taken from manuscripts kept in the most prestigious libraries.

Margherita Azzari, full professor at the University of Florence, in the context of her studies in historical geography and environmental geography, has taken an interest in the natural environments described by Dante in the poem and has carried out in-depth research on the subject, resulting in the writing of this book "*Natura e Paesaggio nella Divina Commedia*" (2012).

In it, she paused to reflect on the man of Dante's time, who *«lives his place in the world, in physical reality, as a momentary condition, a passage, in view of the eternal happiness to be attained in Paradise after a religiously lived life. The things that surround him have no intrinsic value... Man is, thus, like a traveller who has set himself a distant goal... who passes through the things of nature with an eye to something else, striving, if anything, to catch the sign of God in them»* (Azzari, 2012, p. 7).

What the author notes with surprise, however, is the extreme attention Dante pays to aspects of nature presented with the eye of a geographer, be they landscapes or natural phenomena. Margherita Azzari entitles the first chapter "*Gli umbriferi prefazi. La geografia di Dante tra scienza e teologia*", foreshadowing her thesis of Dante as a medieval man, yes, but also as a modern observer of the world, both as a divine creature and as the depositary of a value in himself.

Laura Pasquini, professor of Medieval Art History at the Alma Mater Studiorum of the University of Bologna, who is interested in the artistic production of the Middle Ages, has paid particular attention to Dante's iconography.

In 2020 she published the volume "*«Pigliare occhi, per aver la mente». Dante, la Commedia e le arti figurative*". It deals with the theme of Dante's journey to the three otherworldly realms through an unprecedented itinerary, with references to works of art such as mosaics, frescoes and sculptures, which Dante admired and which undoubtedly influenced the stylistic and thematic choices of the *Commedia*. A work full of references to the verses and surprising hypotheses about Dante's imagination and the iconic suggestions he experienced during his travels, considered as sources of inspiration for poetic invention. For a curious and cultured observer like Dante, the cities

of Florence, Rome, Padua, Ravenna and Venice represented a generous terrain of images to be reworked with his creativity.

The author, moreover, does not stop at emphasising the value of figurative models for the Poet, but, above all, he maintains the ability to assimilate realistic references and precise recollections of natural environments, resulting in descriptions not only of the highest poetry, but also of a veracity that cannot be traced back to scriptural sources. There are many examples of this, among which the reference to the "*pineta in su 'l lito di Chiassi*" (Purgatorio XXVIII, v. 20), the realistic description of which creeps into the garden of Eden.

Pasquini writes that Dante there "introduces nature, the true, experienced, breathed, directly experienced nature" (op. cit. pag. 141). The text has an iconographic set of over one hundred colour images.

Giuseppe Ledda, full professor of Italian Literature at the University of Bologna, where he teaches Dante's Literature and Criticism and Dante's Literature and Philology, co-director of the journal *L'Alighieri*, member of the Steering Committee of the journal *Studi Danteschi* and of the Scientific Council of the Società Dantesca Italiana, in his book "*Il bestiario dell'aldilà. Gli animali nella Commedia di Dante*" (2019), a 311-page volume, analyses one of the most numerous and varied presences in the *Commedia*, that of animals, presented by Dante both directly and within similes, as a second term of comparison.

Wild beasts, birds, (starlings, cranes, doves) in the first cantos of *Inferno*, to continue with dogs, swine, frogs, oxen, dolphins, otters, mice, ducks, fireflies, fish, storks, goats, beavers, eels, falcons, swans, lizards, snakes, snails and many others, to end with bees, used in the comparison with the angels of the Empire.

Giuseppe Ledda notes in the descriptions a great use of animals by Dante, who could draw on the vast naturalistic literature: the bestiaries and encyclopaedias, excellent sources from which not only the precise descriptions but also the symbolic and allegorical meanings could be derived.

In this regard, the author pauses to point out that Dante's use in the similes of certain animals, to which the culture of the time assigned negative meanings, should not be interpreted as his negative judgement of the character in question. Through the comparison with an animal, Dante intends to present a sinner as effectively as

possible. Similes with animals are also used to present the souls in Purgatory and Paradise.

This demonstrates the absence of negative criticism, and instead reveals Dante's interest in the animal world, not only as part of Creation, but also as an element of nature to be observed in its appearance, characteristics and behaviour.

Giuseppe Ledda's volume represents not only the culmination of the scholar's many years of research, but also a starting point for broadening the horizons of Dante's knowledge and respect for nature.

There are an increasing number of contributions aimed at demonstrating the exceptional wealth of knowledge that Dante possessed about the plant and animal world. They also show the presence of Nature and Biodiversity in the *Divine Comedy*. Over the years, Dante has been defined as a naturalist, ethologist, environmentalist and, recently, Poet and Ecologist ante litteram.

The thesis of Poet and Ecologist ante litteram, amply demonstrated, is contained in the works and multimedia projects realised in this field, starting in 2020, by Virginia Valzano, Director of the CEIT (Euro-Mediterranean Centre of Technological Innovation for Cultural and Environmental Heritage and Biomedicine) at the University of Salento, Founder and Editor in Chief of the scientific journal *SCIRES-IT-SCientific REsearch and Information Technology*, and Gabriella Sartor, teacher of literary subjects, passionate about Dante and art criticism, both committed to projects for the defence of human rights and the preservation of Biodiversity.

Below some of their works are mentioned.

1. "*Dante ecologo e poeta nel mondo. Illustrazioni 'divine' di Gustave Doré*" is an open access multimedia Project created, with the collaboration of other authors, on the occasion of the second edition of *Dantedì* and the 700th anniversary of his death and published in 2021 by digital publisher ClioEdu. It is freely accessible at www.clioedu.it/dante-ecologo-poeta (Valzano, Sartor, Biliotti, et al.).

The dense essay "*Dante ecologo ante litteram*", contained in the publication, which accompanies and comments on the verses and images, guides us through Dante's vision of nature: a nature that arouses his continuous interest, stimulates his spirit of observation, suggests hypotheses and encourages him to know more".

As the authors affirm and demonstrate, «*in the three Cantiche of the Divine Comedy, already from the incipit, "Midway upon the journey of our life, / I found myself within a forest dark", emerges Dante's interest in and respect for the environment, for nature in all its forms and manifestations, which he observes with great wonder and curiosity, with the eyes of a researcher, a naturalist.*

The naturalistic descriptions are often provided by using subtle details that reveal his deep awareness of all the Medieval knowledge and, at the same time, his love and total respect for nature, observed with great originality, by highlighting the interactions and balance between living and non-living beings and their environment, by speculating about what might improve its quality, by discouraging humankind from altering the balance existing between the various elements of the environment».

For this reason, they argue that Dante can be defined as an ecologist ante litteram.

In his presentation of the Project, Massimo Bray (Director General of the Istituto della Enciclopedia Italiana Treccani, former Minister for Heritage, Cultural Activities and Tourism of the Italian government) says:

«In his verses, the Poet describes with a great wealth of images and references the variety of celestial and earthly phenomena, meteorology, the geologic aspects and landscapes of the Earth, the animal, mineral and vegetable worlds. Besides being deeply evocative and having a cultural and aesthetic value, these verses represent, as the authors write, «an appeal to a deep respect for nature, to a need to know its constitutive elements and the laws that rule its development», thus highlighting Dante's attitude of «a modern environmental scientist, of a great observer, several centuries earlier than the formalization of the scientific method».

The Video-Documentary contains the audio-video recording of the essay, with an introduction by Massimo Bray, the narrative voice of journalist Antonio della Rocca and background music by Maestro Andrea Gargiulo.

The audio-video recording of the essay aims to facilitate, through pleasant listening, the widest knowledge, accessible to all, of Dante's poetry and his love and respect for Nature, which he observes with great wonder and curiosity, with the eyes of a researcher, a naturalist and describes with admirable verses.

The authors hope that governments and new generations will become increasingly aware of the importance of environmentally sustainable development and act accordingly.

The work also focuses on the illustrations of the Divine Comedy by the great French engraver Gustave Doré, which the authors have brought to life by animating the images using modern digital technology and an original musical soundtrack, with the aim of making the scenes depicted by the artist and the message of the poet and ecologist Dante more topical and engaging.

The digital animations of Dante's portrait and the 135 illustrations by Gustave Doré are accompanied by original and engaging music composed by Mauro Durante, leader of the Canzoniere Grecanico Salentino (at the top of the world's folk music charts) and Daniele Durante, former artistic director of the "Fondazione la Notte della Taranta" (the largest folk music festival in Europe), who died prematurely, and to whom the whole project is dedicated.

"Dante as an ecologist and poet in the world. 'Divine illustrations' by Gustave Doré. An open access multimedia project", writes Massimo Bray in his presentation, «is a multimedia product capable of combining the beauty of Dante's work and Doré's illustrations with an accurate scientific framework and the richness of the cultural heritage of Salento music: a product, therefore, capable of bringing together literature, art, music and in-depth study through new technologies, offering users a new way of looking at the priceless cultural legacy that the Divine Comedy represents for all Italians».

The video-documentary, published in Italian and English, won first place at the Italian eContent Award 2021 in the e-Culture & Tourism category, was nominated for the World Summit Award 2021, in the category Culture & Tourism, as the most innovative digital solution from Italy and represented Italy internationally.

An extensive and detailed description of the multimedia project, "Dante as an ecologist and poet in the world. 'Divine Illustrations' by Gustave Doré. An open access multimedia project", was published in 2021 in the scientific journal *SCIRES-IT - SCientific REsearch and Information Technology*.

In January 2022, the paper was recommended as "very good", of particular importance, by Faculty Opinions (H1 Connect, from July 2023)¹, an international community of leading scientists and

¹ Faculty Opinions becomes H1 Connect (from July 2023 H1 Connect is the new name for Faculty Opinions reflecting its

evolution as an expert-led knowledge sharing community for professionals in medicine and life sciences.)

researchers in the fields of life sciences, ecology and medicine, with the following reasons:

«This paper describes a multimedia project that aims at celebrating Dante's Divine Comedy by enhancing the historical illustrations of Gustave Doré, coupled with music and readings of the verses of the revered Italian poet, 700 hundred years after his death in 1321. The focus of the project is to excavate into Dante's poetical narration so as to extract all hints regarding the natural environment, demonstrating that Dante was an ecologist ahead of his time. We recommend this paper and the project because the renewed interest towards the environment, exemplified by the European New Green Deal, and the programmed Ecological Transition therein, have very distant roots in European culture. Unfortunately, these roots have been severed a long time ago when the humanities became separated from science, generating the so-called "two cultures" instead. During the Renaissance, this distinction was not perceived, as demonstrated by another Italian genius: Leonardo da Vinci, who operated in the high Renaissance, one century after Dante. This distinction between the arts and the sciences contributed to generating a decreased sensitivity towards the integrity of nature, considering it a matter for poets but not for scientists and technologists. The unification of cultures requires a reconciliation between different visions of a single reality, and this paper is an effective step in this direction».

2. "In viaggio con Dante. 'Vago già di cercar dentro e dintorno'. Un itinerario virtuale ad accesso aperto" was published in 2021 by the digital publisher ClioEdu and is freely accessible at www.clioedu.it/in-viaggio-con-dante (Valzano & Sartor, 2021).

In this publication, open-access like all the others, the authors embark on a journey with Dante, a virtual itinerary, started in 2020 with the establishment of "Dantedì" and articulated on various themes.

It contains a number of virtual female dialogues, including: "Female characters in the Divine Comedy", "Nature in the Divine Comedy", "Animals in the Divine Comedy", "Dante, us and nostalgia", "The smile in Dante's works".

In all the Dialogues, held virtually because of the "coronavirus" health emergency, there are personal reflections arising from a careful analysis of the content and stylistic choices, the fruit of Dante's genius, as well as from the considerable

intellectual experience manifested by the dialogue participants. There are also numerous elements of connection between Dante's text and contemporary times, with enticing references to modern authors.

It also contains the essay "Dante ecologist and poet in the world. 'Divine Illustrations' by Gustave Doré" (published in 2021 as part of the multimedia project of the same name we have already mentioned), with an introduction by Massimo Bray, accompanied by 135 images of Gustave Doré's illustrations.

3. "Dante's journey in the Botanical Garden. A multimedia application" is a multimedia project realised and published in 2022 by the authors themselves, Virginia Valzano and Gabriella Sartor, in collaboration with Rita Accogli, Responsible of the Botanical Garden Museum of the University of Salento, and Maurizio Romani, researcher at the Institute for Bioeconomics of the CNR in Florence, and with the contribution of Maria Regina Maggiore of the Library of the Department of Biological and Environmental Sciences and Technologies of the University of Salento.

The Project focuses on the plants, herbs and flowers that Dante includes in the Divine Comedy, either directly or through similes and metaphors. The multimedia application was implemented in 2022 in the "Museo Orto Botanico" of the University of Salento.

The multimedia application, which can be replicated in other similar contexts, allows visitors to frame the QR code of the panel located near the plant of interest with the camera of their mobile device and automatically listen to the verses of the Divine Comedy related to that plant, skilfully recited and accompanied by pleasant background music, and to access other textual and multimedia information at their leisure and in real time: information on biodiversity, botanical insights, images, documents, audio and video clips on the reproductive cycle of plants, references to local traditions, historical and cultural references.

In addition, the multimedia application can be used on special occasions, such as to offer a floral gift, with a special card, printed using the project card for that flower: a gift with a dual value, cultural and naturalistic; a simple, original and fun way to spread our culture, love and respect for nature.

The Multimedia Project is accessible on the website of the CEIT (Euro-Mediterranean Centre

for Innovation Technology for the Cultural and Environmental Heritage and Biomedicine) and on the website of the Institute for Bioeconomics of the CNR, at the following addresses: <http://www.ceit-tranto.it/index.php/progetti/393>; <https://www.biofuturo.net/index.php/it/dantedi/il-progetto>.

An extensive and detailed description of the multimedia project was published in '*Dante's journey in the Botanical Garden*' in the scientific journal *SCIRES-IT - SCientific RESearch and Information Technology* (Valzano, Sartor, Romani, & Accogli, 2022).

The three multimedia projects of the authors presented here aim at a broader knowledge of Dante's poetry and his love and respect for Nature, as well as cultural, environmental and natural heritage.

The multimedia applications developed are functional for reaching a wide audience, with a particular focus on the new generations, who are more inclined to use digital technologies and are the main actors in the dissemination of cultural values.

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