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# DANTE AS AN ECOLOGIST AND POET IN THE WORLD. 'DIVINE ILLUSTRATIONS' BY GUSTAVE DORÉ. AN OPEN ACCESS MULTIMEDIA PROJECT

Virginia Valzano\*, Gabriella Sartor\*\*

To Daniele Durante, to the Sea, to Love, to Life! Virginia, June 2021.

\*University of Salento – CEIT (Centro Euromediterraneo di Innovazione Tecnologica per i Beni Culturali e Ambientali e la Biomedicina), Italy.

\*\*Third Age University "Paolo Naliato", Udine, Italy

#### Abstract

This multimidial work aims at facilitating the widest knowledge, accessible to all, of Dante's poetry and of his love and respect for Nature. The audio-video recording of the essay and the digital animation of Doré's illustrations, accompanied by original background music, makes the scenes depicted by the artist and the high message of Dante, poet and ecologist, more topical and engaging, especially for the younger generations. It is a multimedia product capable of combining the beauty of Dante's work and Doré's illustrations with the rich cultural heritage of Salento music within an accurate scientific framework: therefore, a product where literature, arts and music interact and are explored through new technologies, thus providing the users with a new way to enjoy the invaluable cultural legacy which the Divine Comedy represents for all the Italians as well as enthusiasts of the great Poet worldwide.

#### Keywords

Dante Alighieri, Divine Comedy, Dante poet and ecologist, Gustave Doré, Divine Comedy illustrations, Digital animation, Nature in Dante, Biodiversity in the Divine Comedy, Cultural and Environmental Heritage.

### 1. Introduction

"Dante as an ecologist and poet in the world. 'Divine illustrations' by Gustave Doré" is an openaccess multimedia project aimed at facilitating the widest knowledge, accessible to all, of Dante's poetry and of his love and respect for Nature in all its components, forms and manifestations, as it emerges from every Cantica of the Divine Comedy.

In the essay "Dante an ecologist ante litteram" (see Section 3), by quoting a great number of admirable tercets by the Supreme Poet's, accompanied by our comments and the resulting reflections, we highlight his vision of Nature and his attitude of absolute novelty. From the essay, Dante emerges as a great observer of the environment, continuously formulating hypotheses, searching for causes and transformations of what surrounds him, centuries ahead of the formalization of the scientific method. Therefore, by pointing out Dante's modernity and relevance for our times, we argue that he can be defined as an ecologist ante litteram.

The audio-video recording of the essay, with the narrator's voice accompanied by an original musical background created ad hoc, has the aim of further facilitating, through pleasant listening, the knowledge of Dante, ecologist and poet, animated by a great love for Nature.

The work also focuses on the illustrations of the Divine Comedy by the great French engraver Gustave Doré (see Section 4), which we desired to bring to life through the animation of the images, accompanied by original music from Salento, at the top of the world folk music charts, with the aim of making the scenes depicted by the artist and the high message of Dante, as a poet and ecologist, more topical and engaging, especially for the younger generations.

A multimedia product in various formats (including MP4), freely accessible to all, was thus created by using digital image acquisition and processing, graphic animation and video editing systems (see Section 5).

Our hope is that governments and new generations will become increasingly aware of the

importance of a sustainable development and act accordingly.

The following chapter (2) is the presentation that Massimo Bray made of the project.

# 2. Presentation of the multimedia project

This year, 2021, marks Dante's 700th anniversary, and never like this year, Dante's figure and work have given rise to a surge of reappropriation and collective identification at all levels, all over Italy.

In such a difficult year, in a situation of such unprecedented emergency that has been sorely putting our Country to test, we have all rediscovered our identity as a value in which we can mutually identify, we have been looking for the coordinates that might reinforce our ties to the community and we have found them in beauty. The beauty of our culture and our landscape, which our Founding Fathers bound in the same article of the Constitution in such a forward-looking way, making them complementary and thus committing us to protecting and defending both culture and landscape.

During the most critical stages of the pandemic, the whole of Italy identified once more with its heritage, traditions, symbols, with its capacity to create and share culture, also thanks to the great number of initiatives organized by taking advantage of the means of communication provided by the Internet and the social media, where an increasing number of cultural events and contents have been made accessible to all users.

In this context, Dante could not but play a prominent role: as a matter of fact, the beauty of nature is a crucial aspect in his philosophical, theological and aesthetic reflection.

"The Love that moves the sun and the other stars", is the last verse of the immortal Poem, and it is really extraordinary to notice how this hendecasyllable is capable of fascinating us still today: the cosmos, Dante tells us, is moved by a positive will, by a love that we all should feel towards it, and above all towards our planet, so full of beauty, yet severely suffering from the relentless exploitation of its resources.

For this reason the Supreme Poet well deserves the definition of "ecologist and poet in the world", given by Virginia Valzano and Gabriella

Sartor in this open access multimedia project, centered on the illustrations of the *Comedy* created by the great French engraver Gustave Doré between 1861 and 1868; works of high visual power that enjoyed and still enjoy great fame and publishing success. Thanks to this innovative project these masterpieces are today presented to the public in a new guise.

Thanks to the potentialities provided by the digital world, the images are transformed into animations accompanied by a background of music created ad hoc by the Maestro Andrea Gargiulo from the association MusicalnGioco, as well as by the music composed by Mauro Durante from Canzoniere Grecanico Salentino together with Daniele Durante, art director of the Foundation La Notte della Taranta, who prematurely passed away recently, to whom the whole project is dedicated and whose unrelenting commitment I remember with affection and emotion.

The dense essay "Dante an ecologist ante litteram" which accompanies and comments on the images, guides us through Dante's vision of nature that "... arouses his continuous interest, stimulates his spirit of observation, suggests hypotheses and encourages him to know more". <sup>1</sup>

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 project, which benefits from Antonio Della Rocca's voice, was carried out by activating a wide partnership involving a great number of Apulian research centers, cultural and environmental associations, the CAFRE Research Centre of Pisa University<sup>2</sup>, the AIB (Italian Association of

<sup>&</sup>lt;sup>1</sup> Valzano & Sartor (2021), see below Section 2.

<sup>&</sup>lt;sup>2</sup> CAFRE: Centro interdipartimentale per l'Aggiornamento, la Formazione e la Ricerca Educativa (Inter-department Centre for Updating, Education and Research) Pisa University.

Libraries)<sup>3</sup>, several local bodies, as well as a number of cultural associations.

The result is a multimedia product capable of combining the beauty of Dante's work and Doré's illustrations with the rich cultural heritage of Salento music within an accurate scientific framework: therefore, a product where literature, arts and music interact and are explored through new technologies, thus providing the users with a new way to enjoy the invaluable cultural legacy which the *Divine Comedy* represents for all the Italians.<sup>4</sup>

# 3. Dante an ecologist ante litteram

In his Divine Comedy, Dante, thanks to his extraordinary descriptive and evocative skills, holds us still in enchantment in front of the images of nature, through a choice of colors, sounds, echoes and rhythms that only a poet like him is able to create.

Gold and fine silver, and scarlet and pearl-white, The Indian wood resplendent and serene, Fresh emerald the moment it is broken,

By herbage and by flowers within that hollow Planted, each one in color would be vanquished, As by its greater vanquished is the less.

Nor in that place had nature painted only, But the sweetness of a thousand odors Made there a mingled fragrance and unknown. Purgatory VII, 73-81

Nevertheless, he is a medieval man. Dante holds the dual medieval Christian conception by which nature with its beauty is believed to be a divine creature and regarded as an anticipation of the beauties of the afterlife. A book that needs to be 'read', decoded and interpreted with its wide range of symbols.

Despite being full of symbolic and allegoric meanings, nature arouses his continuous interest, stimulates his spirit of observation, suggests hypotheses and encourages him to know more.

We witness an absolute novelty and a surprising modernity in this great Poet who lived in the Middle Ages, thanks to his attitude of continuously searching for causes and transformations of what surrounds him.

The verses by which he describes the variety of the celestial vault, the light, the shadows, the reflections of water and its distribution over the Earth, the rain, the rainbow, the origins and the power of the wind, the calm or stormy sea, the tides, the plains, the hills, the minerals, the animal world and the plant world, are the fruits of a great poetry, and together they constitute an appeal to a deep respect for nature, to a need to know its constitutive elements and the laws that rule its development.

Paradise I, 103-105

With the attitude of a modern environmental scientist, of a great observer, several centuries earlier than the formalization of the scientific method, Dante is curious, he observes, speculates, argues in his dialogues with Beatrice, asking her question after question, while they ascend to heaven!

Evermore nature, if it fortune find Discordant to it, like each other seed Out of its region, maketh evil thrift;

Paradise VIII, 139-141

Dante gives the natural environment a precious role, by suggesting us to take care of it and to give up the ferocity towards the Earth that assails us, since he considers it a threshing-floor, a garden to be cherished, whose essential relations of balance have to be respected, otherwise the survival of nature, as well as ours, will be threatened.

The threshing-floor that maketh us so proud, To me revolving with the eternal Twins, Was all apparent made from hill to harbor!

Then to the beauteous eyes mine eyes I turned.

Paradise XXII, 151-154

<sup>&</sup>lt;sup>3</sup> AIB: Associazione Italiana Biblioteche (Italian Association of Libraries).

<sup>&</sup>lt;sup>4</sup> Presentation by Massimo Bray, General Director of the Institute of the Italian Encyclopedia Treccani, Council Member for Culture, Protection and Development of Cultural

Enterprises, Tourism, Development and Tourism Enterprise of Apulia Region, former Minister of Cultural Heritage, Activities and Tourism in the Italian Government.

English transaltion by Giovanna Gallo.

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, we argue that Dante can be defined as an ecologist ante litteram.

An example of Dante's attention to the environment, which can be altered not only by natural forces but also by human reckless interventions, can be found in the simile where he compares the infernal ravine to a landslide on the upper course of the river Adige.

Such as that ruin which in the flank Smote, on this side of Trent, the Adige, Either by earthquake or by failing stay,

For from the mountain's top from which it moved, Unto the plain the cliff is shattered so, Some path 't would give to him who was above;

Even such was the descent of that ravine,

Inferno XII, 4-10

In his unearthly journey, Dante makes constant references to nature, described in every detail, thanks to his direct experiences, sometimes embedded in similes. He feels the charm of nature and a sense of longing, as he is an exile.

Plants, flowers and fruits he observes in relation to their habitat and their botanic features.

Among the plants and trees we find fir, pine, hash, Turkey oak, oak, plane, linden, fig, mulberry, apple, thornbushes, olive, vines, as well as flax, papyrus plant, and bay and myrtle trees.

Dante gives ample space to trees, endowing them with a symbolic value and describing them

with a wealth of information about their species and seasons.

He talks in botanic terms even in the episode of Charon, where the souls of the damned who throw themselves from the shore onto the boat of the infernal ferryman are compared with the leaves that fall one after the other in the Autumn.

As in the autumn-time the leaves fall off, First one then another, till the branch Unto the earth surrenders all its spoils;

In similar wise the evil seeds of Adam Throw themselves from that margin one by one, At signals, as a bird unto its lure.

Inferno III, 112-117

In the Comedy there are three forests; the first one, where the Poet finds himself at the beginning of his journey, is dark, rough and stern.

Midway upon the journey of our life I found myself within a forest dark, For the straightforward pathway had been lost.

Ah me! How hard a thing it is to say What was this forest savage, rough, and stern, Which in the very thought renews the fear.

Inferno I, 1-6

The second one is the forest of the suicides of a dusky color, where the trees have gnarled branches, devoid of fruits and full of poisonous thorns.

Not foliage green, but of a dusky color, Not branches smooth, but gnarled and intertangles, Not apple-trees were there, but thorns with poison.

Inferno XIII, 4-6

In this forest the souls of the damned are imprisoned in the trees. Dante breaks a branchlet from one of these trees (where Pier delle Vigne is imprisoned) and soon laments and blood come out of it. In this episode there is a simile in which the Poet reveals himself as an acute observer of a natural phenomenon, the combustion of green wood.

Then stretched I forth my hand a little forward, And plucked a branchlet off from a great thorn; And the trunk cried, "Why dost thou mangle me?" Inferno XIII, 31-33

As out of a green brand, that is on fire

At one of the ends, and from the other drips And hisses with the wind that is escaping;

So from that splinter issued forth together Both words and blood; whereat I let the tip Fall, and stood like a man who is afraid.

Inferno XIII, 40-45

The third one is the "divine forest", with a "softly-breathing air", and with a gentle wind and birds singing on the branches, which is compared with the wood of "Chiassi", today's Classe, south of Ravenna.

In the "divine forest" Dante lays his attentive eye on the foliage blowing in the wind and bowing towards the shadow cast by the Holy Mountain. The wind is gentle so as not to disturb the birdsong.

Since the description is highly analytical, we may infer that Dante was thinking of a pinewood he directly observed south of Ravenna: the pinewood of Classe.

A softly-breathing air, that no mutation Had in itself, upon the forehead smote me No heavier blow than of a gentle wind,

Whereat the branches, lightly tremulous, Did all of them bow downward toward that side Where its first shadow casts the Holy Mountain;

Yet not from their upright direction swayed, So that the little birds upon their tops Should leave the practice of each art of theirs;

But with full ravishment the hours of prime, Singing, received they in the midst of leaves, That ever bore a burden to their rhymes,

Such as from branch to branch goes gathering on Through the pine forest on the shore of Chiassi, When Eolus unlooses the Sirocco.

Purgatory XXVIII, 7-21

Flowers are seldom represented in the Poem; Dante highlights their colors, shapes and scents and uses them in some similes just to present the state of mind of the characters.

Here we mention the image of the "flowerets", bowed down and closed by the chilly night, which are uplifted and opened by the earliest morning sun. Through this image Dante expresses his newfound courage within the dark forest when he hears the news that three women will help him in his journey, the Virgin Mary, Saint Lucia and Beatrice.

Even as the flowerets, by nocturnal chill, Bowed down and closed, when the sun whitens them, Uplift themselves all open on their stems;

Such I became with my exhausted strength, Inferno II, 127-130

In the divine forest of the earthly Paradise, Dante depicts nature as full of blossoming branches, with a meadow full of flowers on which Matilda lightly walks, grazing it.

With feet I stayed, and with mine eyes I passed Beyond the rivulet, to look upon The great variety of the fresh may.

And there appeared to me (even as appears Suddenly something that doth turn aside Through very wonder every other thought)

A lady all alone, who went along
Singing and culling floweret after floweret,
With which her pathway was all painted over.
Purgatory XXVIII, 34-42

As turns herself, with feet together pressed And to the ground, a lady who is dancing, And hardly puts one foot before the other,

On the vermilion and the yellow flowerets She turned towards me, not in other wise Than maiden who her modest eyes casts down; Purgatory XXVIII, 52-57

We find the triumph of flowers in the symbolic procession of the earthly Paradise, where the Griffin (Jesus Christ) who drags the chariot, stops under the largest tree (the tree of Good and Evil). The tree is barren, but as soon as he ties the chariot using one of its branches, leaves begin to sprout from it and everything becomes luxuriant.

In the same manner as our trees (when downward Falls the great light, with that together mingled Which after the celestial Lasca shines)

Begin to swell, and then renew themselves, Each one with its own color, ere the Sun Harness his steeds beneath another star:

Less than of rose and more than violet
A hue disclosing, was renewed the tree
That had erewhile its boughs so desolate.

Purgatory XXXII, 52-60

Once more, Dante, the medieval Christian, reveals himself as a great observer and admirer of nature.

Even in the heavenly Paradise, when Beatrice leads him to the white rose of the blessed, Dante displays his naturalistic observation, faithful to reality.

Into the yellow of the Rose Eternal That spreads, and multiplies, and breathes an odor Of praise unto the ever-vernal Sun,

Paradise XXX, 124-126

Dante does not miss the opportunity to enhance several aspects of nature extraordinary beauty, yet he does not neglect to lay his eyes on more humble plants, mentioning their names, their use, transformation and habitat, among which are the crabgrass, the nettle, the fescue, the swamp reed, the clover, the tares whose seeds are food for birds, in particular the doves, the rushes that in the "washy ooze" of the Purgatory beach, with their flexibility, acquiesce the shock of the water and the strength of the wind.

This little island round about its base Below there, yonder, where the billow beats it, Doth rushes bear upon its washy ooze;

No other plant that putteth forth the leaf, Or that doth indurate, can there have life, Because it yieldeth not unto the shocks.

Purgatory I, 100-105

Therefore, Dante invites us to safeguard the natural specimens and to respect their geologic and climatic texture. He gives us lessons in ecology, way ahead of his time!

In the Divine Comedy nature is characterized by a great vitality, and is portrayed in constant motion, as we can see in his description of animals.

Dante presents the world of animals with striking originality by observing them through the eyes of a naturalist and ethologist.

In his description, he emphasizes not only their symbolic value – an "operation" to which his condition as a medieval Christian man leads him – but also their physical characteristics and their behaviors, often dynamic, depending on their relationship with the environment and the characters encountered.

Animals are presented in an increasing richness of precious particulars, which he uses to depict in words their aspect, behavior, their signs of aggressiveness or of tenderness. As a wise director, the Poet focusses on their relevant

features, without neglecting either the context or the light/shadow of the scene!

Dante actually encounters some animals, whereas he places other ones in similes.

At the beginning of his journey, in the "forest dark", three wild beasts appear and frighten him with their aggressive attitudes: "a panther light and swift exceedingly, which with a spotted skin was covered o'er", a lion that advances against him "With head uplifted, and with ravenous hunger", and "a she-wolf, that with all hungerings seemed to be laden in her meagreness".

Within the 14.233 verses the Divine Comedy, Dante refers to many animals with his usual curiosity and the mind of a scholar: the dog that "quiet grows soon as his food he gnaws", and the she-mastiffs "ravenous, and swift of foot"; the frogs who "across the water scatter all abroad" when they see the hostile snake; the fish, the dolphins who warn the mariners of danger "by arching of the back"; the frogs who "stand only with their muzzles out"; the duck who dives under the water at the sight of the ravenous falcon, disappointed when he loses his quarry; the gadflies, the hornets and the worms who torment the slothful souls; the snakes, the ox who licks his nose; the hungry boar who runs out of the sty; the silkworm and the butterfly, the ants who within their "brown battalions muzzle to muzzle one ant meets the other"; the glow-worms who flame along the valley, admired by the farmer from the hill where he rests, when, in the evening "the fly gives place unto the gnat".

As many as the hind, who on the hill Rests at the time when he who lights the world His countenance keeps least concealed from us,

Whileas the fly gives place unto the gnat, Seeth the glow-worms down along the valley, Perchance there where he ploughs and makes his vintage;

Inferno XXVI, 25-30

Some animals, whose characteristics Dante observes so carefully, often become, in the similes, precious opportunities to present the characters' states of mind. A significant example is the image of the sheep that "stand timidly ... simple and quiet", and Dante is charmed by their tenderness.

As the sheep come issuing forth from out the fold By one and twos and threes, and the others stand Timidly, holding down their eyes and nostrils And what the foremost does the others do, Huddling themselves against her, is she stops, Simple and quiet and the wherefore know not;

Purgatory III, 79-84

Highly tender verses are also those of the lark "that in the air expatiates, first singing and then silent with content of the last sweetness that doth satisfy her".

The detailed descriptions and the terms of endearment highlight Dante's love for animals as well as his extraordinary observational skills.

Another beautiful simile is the one where Dante compares the host of angels who move relentlessly, gliding towards the rose of the blessed and ascending again, with a swarm of bees that "sinks in flowers" and then goes back to the hive where its labor is transformed into honey.

Even as a swarm of bees, that sinks in flowers One moment, and the next returns again To where its love abideth evermore.

Paradise XXXI, 7-9

Dante willingly focusses his attention on birds that captivate him with their movement, their agile flight, and their singing; the intelligence of the falcon; the beauty of the eagle's feathers, their charm.

Many birds are found in the similes in the Canto of the lustful: the starlings that fly "in large band and full", the migratory cranes that move, "making in air a long line of themselves", and the doves "called onward by desire", with open and steady wings to the sweet nest", with which Paolo and Francesca are compared, "those two, who go together, and seem upon the wind to be so light." An image of great sweetness that expresses the power of love that still unites Paolo and Francesca in the infernal hurricane.

As turtle-doves, called onward by desire, With open and steady wings to the sweet nest Fly through the air by their volition borne,

So came they from the band where Dido is, Approaching us athwart the air malign, So strong was the affectionate appeal.

Inferno V, 82-87

Within the three Cantiche we find many birds with different allegoric functions. The doves, for example, are given the attribute of being easily scared as they fly away at the first noise, leaving their food behind.

Even as when, collecting grain or tares, The doves, together at their pasture met, Quiet, nor showing their accustomed pride,

If aught appear of which they are afraid, Upon a sudden leave their food alone, Because they are assailed by greater care;

Purgatory II, 124-129

Another example is represented by the doves that show "affection" and compassion.

In the same way as, when a dove alights Near his companion, both of them pour forth, Circling about and murmuring, their affection,

So one beheld I by the other grand Prince glorified to be with welcome greeted, Lauding the food that there above is eaten.

Paradise XXV, 19-24

Dante emphasizes the great affective load of the bird that looks forward to the dawn, in order to find food for her "sweet brood". Verses such as these reveal admiration for parental love, and are described in great detail.

Even as a bird, 'mid the beloved leaves, Quiet upon the nest of her sweet brood Throughout the night, that hideth all things from us,

Who, that she may behold their longed-for looks And find the food wherewith to nourish them, In which, to her, grave labors grateful are,

Anticipates the time on open spray And with an ardent longing waits the sun, Gazing intent as soon as breaks the dawn:

Paradise XXIII, 1-9

In the wonderful world of nature described in the Divine Comedy, water has a dominant presence, with its abundance and variety, and is observed in wonder, with an extraordinary ability to see it both globally and analytically, paying great attention to the rules that protect its life.

The verses containing images and metaphors of water, bear witness to the love that Dante, as a poet and scientist, feels for this element of nature, essential for every living being, and, at the same time, constitute examples of extremely high poetry.

From the very beginning of his journey, Dante uses the image of water to introduce Virgil as a spring that swells a wide river of words.

"Now, art thou that Virgilius and that fountain Which spreads abroad so wide a river of speech?" Inferno I, 79-80

His characters move in a natural environment where water is given great importance, with its distribution over the Earth and in all its variations.

Some are presented through the image of the waterways of the geographical places where they lived.

From the dialogues emerge memories of places, described with high fidelity and with strong emotional charge.

Francesca talks about her land by using a periphrasis where the Po and its tributaries are the main characters.

Sitteth the city, wherein I was born, Upon the sea-shore where the Po descends To rest in peace with all his retinue.

Inferno V, 97-99

Cunizza describes the Treviso area by recalling three rivers.

The character of Saint Francis of Assisi is placed in an area bathed by the rivers Topino and Chiascio.

Dante presents Folco of Marseilles through a geographic periphrasis by quoting the rivers Ebro and Magra, and providing a beautiful description of the Mediterranean sea where Dante, as a poet and ecologist ante litteram, reveals once more his geographic knowledge.

"The greatest of the valleys where the water Expands itself," forthwith its words began, "That sea excepted which the earth engarlands,

Between discordant shores against the sun Extends so far, that it meridian makes Where it was wont before to make the horizon.

I was a dweller on that valley's shore 'Twixt Ebro and Magra that with journey short Doth from the Tuscan part the Genoese.

Paradise IX, 82-90

The description of the lake Garda basin, Benaco, is ample and detailed with a series of geographic observations and the citation of the river Mincio, emissary of the lake and tributary of the Po.

Above in beauteous Italy lies a lake At the Alp's foot that shuts in Germany Over Tyrol, and has the name Benaco.

By a thousand springs, I think, and more, is bathed, 'Twixt Garda and Val Comonica, Pennino, With water that grows stagnant in that lake. Inferno XX, 61-66

Sitteth Peschiera, fortress fair and strong, To front the Brescians and the Bergamasks, Where round about the bank descendeth lowest.

There of necessity must fall whatever In bosom of Benaco cannot stay, And grows a river down through verdant pastures.

Soon as the water doth begin to run, No more Benaco is it called, but Mincio, Far as Governo, where it falls in Po.

Inferno XX, 70-78

Surely Dante cannot neglect the description of the "rivulets" which, descending from the Casentin, pour their water into the river Arno:

The rivulets, that from the verdant hills Of Cassentin descend down into Arno, Making their channels to be cold and moist,

Ever before me stand, and not in vain;

Inferno XXX, 64-67

The rivers that are described in the earthly Paradise, Lethe and Eunoe, on whose origins Dante questions Matilda, besides being full of symbolic value, confirm the Poet's great attention to the natural environment.

And lo! My further course a stream cut off, Which tow'red the left hand with its little waves Bent down the grass that on its margin sprang.

All waters that on earth most limpid are Would seem to have within themselves some mixture Compared with that which nothing doth conceal,

Although it moves on with a brown, brown current Under the shade perpetual, that never Ray of the sun lets in, nor of the moon.

Purgatory XXVIII, 25-33

Moreover, some tercets bear witness to his remarkable knowledge of the hydrologic cycle.

The water which thou seest spring not from vein Restored by vapor that the cold condenses, Like to a stream that gains or loses breath;

But issues from a fountain safe and certain, Which by the will of God as much regains As it discharges, open on two sides.

Purgatory XXVIII, 121-126

As a true scientist, Dante, is not content with the explanation provided by an authoritative voice such as Stazio's. He keeps on asking questions.

Throughout his extraordinary journey in the heavenly Paradise among angels and blessed souls, he does not miss the chance to ask Beatrice for explanations on the astronomic and natural phenomena, one question after another. In 1320 he even wrote a dissertation "Questio de aqua et terra", which he discussed in Verona.

In the wonderful world of nature, the sea, its vastness and iridescence, its stillness and tempestuous strength, casts a spell on Dante.

The references to the marine environment vary in length, at times they are just short mentions. Nonetheless they are always characterized by high precision of words and images: the description of sea experiences, incorporated in similes, reveals Dante's profound knowledge of the phases by which those experiences occur, and together with the terminology used to illustrate them, provides us with a proof of his great interest in the marine environment.

His love for nature and his usual spirit of observation enable him to reconstruct sea events and to create similes that are surprisingly close to reality.

A significant example is provided by the description of the busy Venetian Arsenal, during the winter season, the effort required to smear boiling pitch over the side shells of the ships. Dante evokes this image in a detailed simile, where the comparison between the dark bolgia of the swindlers immersed in the boiling pitch and the pitch used in the busy "arzanà de' Vinitiani" gradually expands in a picture rich in details.

In order to express the degree of extreme suffering experienced by those sinners, Dante offers us one of the most famous similes, where he recalls one of the most picturesque and lively place on the coasts of the Venetian laguna.

As in the Arsenal of the Venetians

Boils in the winter the tenacious pitch To smear their unsound vessels o'er again,

For sail they cannot; and instead thereof One makes his vessel new, and one recaulks The ribs of that which many a voyage has made;

One hammers at the prow, one at the stern, This one makes oars, and that one cordage twists, Another mends the mainsail and the mizzen;

Thus, not by fire, but by the art divine, Was boiling down below there a dense pitch Which upon every side the bank belimed.

I saw it, but I did not see within it Aught but the bubbles that the boiling raised, And all swell up and resubside compressed.

Inferno XXI, 7-21

From these tercets Dante emerges as a keen observer who is curious, involved in the labor of the seaman, who finds a source of life in the sea and therefore takes great care of the tools that are precious and make his sea voyages safe.

The maritime world, the sea, the ships and the art of sailing are often featured in the Divine Comedy with functions and meanings that can be either real or symbolic.

The sea is a natural place that entices men to set sail, so as not to deprive themselves of the knowledge of what is beyond the horizon, "following the sun", which nonetheless requires also an awareness of the risks it may pose.

The vessel must be solid, the crew must be young, vigorous and well trained, the route and the area must be known, the sea currents and weather conditions evaluated.

The Greek hero, Ulysses, tells Dante and Virgilio about his voyage: the waters are not smooth like those off the coast of the Venetian laguna; here, the sea is high, the kind of sea that lures every man who pursues knowledge and discovery.

But I put forth on the high open sea With one sole ship, and that small company By which I never had deserted been.

Inferno XXVI, 100-102

The sea may be treacherous, especially when a storm breaks out and the tools required for the navigation are not available.

For out of the new land a whirlwind rose, And smote upon the fore part of the ship.

Three times it made it whirl with all the waters, At the fourth time it made the stern uplift, And the prow downward go, as pleased Another,

Until the sea above us closed again.

Inferno XXVI, 136-142

The sea dominates the whole event with the immensity of its presence, with the fury of its storms.

Dante devotes also a tercet to the tide, a natural phenomenon, as further proof of his scientific interest. He demonstrates his understanding of its cause by linking it to lunar attraction. The surface of the seawater changes, is unstable, just like luck. In the following verses he describes the phenomenon by a fine simile:

And as the turning of the lunar heaven Covers and bares the shores without a pause, In the like manner fortune does with Florence.

Paradise XVI, 82-83

Dante's journey in the afterworld is somewhat a sea voyage, which he observes around the mountainous isle of the Purgatory. He recalls it in the tercet at the beginning of the second Cantica where he uses the term "little vessel".

To run o'er better waters hoists its sail The little vessel of my genius now, That leaves behind itself a sea so cruel;

Purgatory I, 1-3

The immensity of the sea always arouses in him great interest and wonder. We find another evocative description in one of the best known similes of the Divine Comedy.

The dawn was vanquishing the matin hour Which fled before it, so that from afar I recognized the trembling of the sea.

Purgatory I, 115-117

Dante uses images related to the sea also in some curious similes by which the Poet describes Pluto, Lucifer and Antaeus.

Pluto, the keeper of the circle of the avaricious and the prodigal, who falls down when rebuked by Virgil, is compared to the mast of a ship snapped by the storm.

Lucifer, with his massive bulk, with three orders of wings, suggests him the image of ships with lateen sails.

Antaeus, who takes flight after laying down Dante and Virgil, evokes in him the image of the mast of a ship.

The marine environment, like every natural environment he loves so much, either deriving from direct knowledge, or from his wide cultural background, as well as from the tales of pilgrims and merchants, is a source of inspiration for Dante the poet, and an object of observation for Dante the ecologist.

He displays a high level of attention for all those aspects of reality that he observes both as a whole and in its details, with critical ability and judgement, entertaining doubts and questioning everything, and representing reality in an extremely precise way, rich in charm, by using the figurative power of language.

Dante as a poet, scientist, modern intellectual and ecologist ante litteram, goes always in search of the truth and the laws which govern nature, "eager already to search in and round". The instruments of intelligence encourage him to continuously discover highly interesting areas and to pursue "virtue and knowledge". He uses his words and knowledge to help humankind by preaching respect for the natural world. Through many verses of the Divine Comedy he denounces what does not work properly: his attention is focused on the sustainability of human intervention and on the consequences it has on a number of natural habitats, on biodiversity and, therefore, on ecosystems.

The descriptions of Nature within the Divine Comedy do not serve solely to make his journey in the afterworld credible, but also to remark the great importance he assigns to the natural environment. He involves all of us in the interpretation of a new path: looking at nature with curious eyes and loving it.

He sets some very important objectives: to share with us the wonder he feels in front of the beauty of the Earth, to make us reflect on the respect we should have for it, to urge us to take care of it and to abandon the "ferocity" which too often characterizes our relationship with Nature, whose gifts too often we do not appreciate.

Dante's teaching is remarkably up to date.

The high value of his verses and his modernity lay in his vindication of human right and duty to live in harmony with nature and with other human beings. The poetic images of his tercets evoke colors, odors, and voices where we can read a perennial message: the inalienable right to Love, to

"the Love that moves the sun and the other stars", as Dante reiterates in the last verse of Paradise.

We have to learn to respect Nature and to protect it with intelligence, so as to feel part of it.

Up to now we have pursued progress, economic growth without worrying about the devastation of nature, while we should plan our development following criteria of sustainability and care for the environment.

Our daily life should involve harmony with nature, as Dante teaches us, as well as ways of life that would not deteriorate it.

A number of scholars, scientists, ecologists, environmentalists, as well as religious authorities, have long been suggesting the pursuit of these objectives.

Pope Francis (Jorge M. Bergoglio), in his "Encyclical Praise Be to You, on care for our common home", calls everybody to an ecological conversion.

In this document, where all scientists who are committed to protecting the environment are acknowledged, he explains how human beings are part of the ecosystems and thus their behavior has an impact on them. Human beings are not outside Nature, they are part of it. They have to safeguard it. "Because all creatures are connected, each must be cherished with love and respect, for all of us as living creatures are dependent on one another" (Bergoglio, 2015).

Like many other scientists and ecologists, for many years Ferdinando Boero, eminent Professor of Zoology and Marine Biology, has been saying and trying to make everybody understand that we cannot give priority to economy over ecology, at the price of self-destruction.

"We have been demanding 'progress' and 'growth', by identifying them with development, regardless of the devastation of nature... We have been putting unsustainable pressure on it, which, however, sustains us. Without nature our species cannot survive... We must preserve our natural heritage and work towards restoring it wherever it has been destroyed. Biodiversity and the ecosystems have value, but are priceless, just like our health. No money can pay for our health, and if we lose it... Most diseases have environmental causes: in order to take care of our health and our wellbeing we need to take care of nature. Instead, we chose to cure the symptoms (diseases), neglecting the causes (the destruction of the environment)". (Boero, 2020).

Preserving nature, therefore, is of vital importance, "not for the sake of nature, but for our sake. Nature is perfectly capable of dealing with catastrophes".

Protecting biodiversity and ecosystems, our natural heritage, is one of the pillars of Next Generation EU, the European recovery Plan, which involves national plans of preparedness, recovery and resilience (Pnrr) following the guidelines of the New Green Deal: the environment seen as biodiversity and ecosystems to preserve, not only to exploit.

A worldwide radical change is needed, both practically and politically, so as to start a radical ecological shift involving human behavior as well as the production field.

We can no longer produce more than natural resources can provide, infinite growth is impossible.

Distribution of wealth, quality of life and protection of the Planet are the objectives of a sustainable growth, strongly excluding an economy without nature, based on selfish gain.

Dante tells us so, showing once more the relevance of his work today.

Beatrice impeaches human greed, which keeps humans with eyes down on the ground and prevents them from looking up to Heaven: the desire for good is innate in humans, but corruption and lack of safe guidance make them tainted and totally barren.

O covetousness, that mortals dost ingulf Beneath thee so, that no one hath the power Of drawing back his eyes from out thy waves!

Full fairly blossoms in mankind the will; But the uninterrupted rain converts Into abortive wildings the true plums.

Paradise XXVII, 121-126

Surely, today we would see Dante by our side in defense of the environment.

Following his teaching, we would like to imagine all the enemies of ecology in the Inferno.

In the tenth and last Bolgia, a few steps from Lucifer, among the forgers, responsible for their condition due to their covetousness and superficiality, prey to a number of loathsome and disfiguring illnesses, are some spirits lying face down on their bellies, or on each other's backs, some laying still and others crawling on all fours.

... to behold through that dark valley

The spirits languishing in divers heaps.

This on the belly, that upon the back One of the other lay, and others crawling Shifted themselves along the dismal road.

Inferno XXIX, 65-69

Some others, closer to Lucifer, endure more ferocious punishments, among the traitors to their country, in the ninth and last Circle of the Inferno, in the second zone of the frozen lake of Cocytus. Only the heads of these sinners emerge from the ice, their faces livid and their teeth chattering.

...... and saw before me
And underfoot a lake, that from the frost
The semblance had of glass, and not of water.
Inferno XXXII, 22-24

Livid, as far down as where shame appears, Were the disconsolate shades within the ice, Setting their teeth unto the note of storks.

Each one his countenance held downward bent; From mouth the cold, from eyes the doleful heart Among the witness of itself procures.

Inferno XXXII, 34-39

...... I beheld two frozen in one hole, So that one head a hood was to the other; Inferno XXXII, 125-126

Love for Nature, with its immense beauty and richness, a paradise that needs to be preserved, triumphs in the Divine Comedy and in our hearts.

Already in 2020 we made this statement on the occasion of the first "Dantedì", in one of our female

dialogues, on "Nature in the Divine Comedy", published in the site of CEIT - EuroMediterranean Centre of Technological Innovation for Cultural and Environmental Heritage and for Bio-Medicine, founded and directed by Virginia Valzano at the University of Salento, and freely accessible at: http://www.ceit-

otranto.it/index.php/progetti/361-dantedì.

We will conclude this contribution on "Dante as an ecologist and a poet in the world" with three beautiful verses, hoping that we can really meet after the pandemic, so as to savor once again the beauty of Nature and to contribute to a sustainable development.

The beauteous planet, that to love incites, Was making all the orient to laugh,

Purgatory I, 19-20

Thence we came forth to rebehold the stars.

Inferno XXXIV, 139

The recording of the audio-video essay "Dante as an ecologist and a poet in the world", with the narrator voice of Antonio Della Rocca, accompanied by an original music background created ad hoc by the Maestro Andrea Gargiulo from the association MusicaInGioco<sup>5</sup>, has the purpose to favor, through a pleasant listening, a wider knowledge, accessible to all, of Dante's poetry and his love for Nature.

It is our hope that the governments who are responsible of creating the future, as well as the new generations, may acquire an increasing awareness of the importance of an indispensable eco-sustainable development and act accordingly.<sup>6</sup>

For the italian text of the Poem, the Authors referred to La Commedia secondo l'antica vulgata (4 voll.), edited by G. Petrocchi, Edizione Nazionale della Società Dantesca Italiana, Milano 1966-1967, available also online at the website of the Società Dantesca Italiana https://www.danteonline.it

English transalation by Giovanna Gallo.

The English translation of Dante's verses is taken from The Divine Comedy of Dante Aligheri. Translated by Henry Wadsworth Longfellow, Elsa Edition 2021, available at: https://www.academia.edu/45141605/The\_Divine\_Comedy\_of\_Dante\_Alighieri\_Translated\_by\_Henry\_Wadsworth\_Longfellow\_La\_Commedia\_Colorata\_Italian\_and\_English.

[Translator's note: Although Longfellow's translation is not quoted as often these days by English-speaking Dantists (and who therefore prefer more recent translations like Durling,

<sup>&</sup>lt;sup>5</sup> MusicaInGioco: Music 'n' Play is a non-profit association, founded in Apulia in 2010 by the musician Andrea Gargiulo with the aim of social promotion of children and young people through an innovative path of musical education. It is an orchestra for social inclusion, using music to unite differences bring diversities together and break down prejudice. Based on Abreu's "El Sistema" method, it offers free lessons and musical instruments to children and teenagers, especially those with socio-economic, personal or physical difficulties and/or different disabilities. In Apulia, the association has given more than 10.000 young people the opportunity to enjoy the beauty of music, leading to the creation of numerous orchestral and choral groups that have reached a high musical level. It now consists of nine youth orchestras working on two repertoires: classical music and jazz street bands. Some members of the Music 'n' Play orchestras have given performances all over Italy; the most important of which was the Christmas concert in 2016 at Palazzo Madama, in the presence of the President of the Republic, Sergio Mattarella.

<sup>&</sup>lt;sup>6</sup> Texts by Virginia Valzano and Gabriella Sartor. Coordination and production of the multimedia project by Virginia Valzano.

# 4. 'Divine illustrations' by Gustave Doré

Dante's journey into the three unearthly worlds has always fascinated and inspired scientists, scholars, artists and illustrators, who have tried to interpret and express, through their different languages, the atmosphere and the environment where the characters are placed. Among the others, Sandro Botticelli, Giovanni Stradano, Federico Zuccari, Galileo Galilei, William Blake, Gustave Doré, Salvador Dalì, Amos Nattini, Renato Guttuso, the architect Giuseppe Terragni, who during the years 1938-1940, with his unrealized project Danteum in Rome, tried to translate into spatial forms the places described in the otherworldly journey, and finally the contemporary sculptor Mario Zanoni with his "Divin Bestiario" dedicated to Dante on the 750th anniversary of his birth.

The most popular illustrations, from the nineteenth century to the present, are the evocative engravings by Gustave Doré, realized between 1861 and 1868, in particular 75 out of 135 engravings, devoted to the Inferno.

It was our desire to bring these illustrations to life by animating the images, through the use of the latest digital technologies and an original musical background, in order to bring up-to-date the scenes represented by Doré together with Dante's powerful poetic and ecologic message, thus making them more appealing for the young generations.

The illustrations of the Divine Comedy, such as those by Doré, have revealed, since their appearance, theatricality and dynamism, extraordinary skill at constructing wide sceneries and at giving value to every element depicted.

Digital animation, of course, emphasizes the representational, contemplative and dramatic power of Doré, an exceptional illustrator-interpreter of the great Poet's encounters with the characters and nature.

Doré's hand is guided by the filter of his visionary eye in drawing the lines, capable of

Martinez or Hollander among others), it continues to be regarded as a "classical" translation that respects well Dante's text and renders it precisely and accurately in poetic verse. In his translation of Dante's work, Longfellow was able to respect the metrics of the poem by using the hendecasyllable, not an easy task when translating Italian into English verse. Moreover, even if Dante's work is universal and his themes always relevant, and he is regarded as "the Father of the

creating rich sceneries, teeming with life and enveloped in deep silence, of capturing nocturnal, and crepuscular atmospheres, as well as dazzling bright backdrops.

Nothing in nature seems to escape his eye. His illustrations unleash continuous power, curiosity and joy in depicting:

- The lights and shadows, which seem impenetrable, yet they can evoke and highlight characters and their contexts;
- The mountain landscapes that he loved and frequented so much, of which he outlines the rocky paths, the crevasses, the cliffs, the hills and the greenery;
- The waters, depicted in their rush, stirred by Charon's oars and by the storm that engulfs Ulysses, or illustrated as the gentle and thin waves of a quiet sea, or of heavenly rivers;
- The woods, characterized depending on the event: landscapes that are states of mind, starting from the dark forest, rough and stern, the branches that look like claws in the wood of thorns of the suicides, and ending with the reassuring and soothing atmosphere of the divine forest, of which Doré illustrates even the blades of grass;
- The animals whose features and environment are highlighted.

His eye, curious of the wonders of the world, just like Dante's, whose poem he chose to illustrate, is able to linger on giants and evanescent souls, on the harmonious bodies of some characters, such as Paolo and Francesca united by passion, on slender and light female figures, or on statuesque and defiant like Farinata, illuminated by an intense ray of light in the depth of the Inferno, or in a fearful attitude, as is often the case with Dante and Virgil, or anxiously waiting, suffering, as well as attitudes of joy and sorrow.

His interest is always addressed to the backdrop where the events take place: majestic trees as well as humble undergrowth, branches blowing in the fierce wind or calm, high sea, rivers and little streams. Doré does not follow any criteria of priority in treating his illustrative

Italian language", being a man of the Middle Ages, the language he uses is not today's Italian. Therefore, as a translating strategy, I preferred not to use modern English translations, even if this may make the translation more "difficult" for the readers. After all, Dante can be difficult to read even for many Italians today!

rendering: each character and each natural element deserves the same attention.

The digital animations are accompanied by the music composed by Mauro Durante from Canzoniere Grecanico Salentino together with Daniele Durante, art director of the Foundation "La Notte della Taranta", who prematurely passed away recently, to whom the whole project is dedicated.

"La Notte della Taranta" is the biggest popular music festival in Europe, dedicated to the revival of the ancient dance of Salento "Pizzica", as well as to the fusion with other music styles.

The Canzoniere Grecanico Salentino, founded by the writer Rina Durante and the musician Daniele Durante, who later passed the leadership to his son Mauro, is the multi-award winning group at the top of the world folk music charts. <sup>7</sup>

## 5. The multimedia product

The multimedia project was carried out by Virginia Valzano and Gabriella Sartor with the collaboration of Sonia and Elisa Biliotti, Aurora Valzano and Alice D'Arpa, and by activating a wide partnership involving Apulian as well as national research centres, cultural and environmental associations.<sup>8</sup>

Massimo Bray contributed to the project with his "Presentation". 9

All the texts of the project were translated in English by Giovanna Gallo.

The multimedia product, as already mentioned, was created through the use of digital image acquisition and processing systems, graphic animation and video editing. It contains the audiovideo recording of the essay with the verses of the Divine Comedy in Italian<sup>10</sup>, read with

interpretative wisdom by Antonio Della Rocca, with the musical background created ad hoc by Andrea Gargiulo, which accompanies us through the vision of nature in Dante. It also contains the digital animation of Dante's portrait and of the 135 illustrations of the Divine Comedy by Gustave Doré<sup>11</sup>, created by Elio Paiano, accompanied by original and engaging music, composed by Mauro and Daniele Durante, full of energy, passion, rhythm and magic, which takes us on a journey from the past to the present to the rhythm of the tambourine, the beating heart of Salento's tradition.

It is a product in which literature, art and music interact and are explored by using new technologies, thus providing users with a new way of looking at the priceless cultural heritage that the Divine Comedy represents for all Italians and lovers of the Great Poet around the world.

The multimedia product, published in 2021 by the digital publisher CLIOedu, eISBN 979-1280503-12-1, licensed under CC-BY-NC-ND, is freely accessible at the following addresses:

IT: www.clioedu.it/dante-ecologo-poeta; https://vimeo.com/591495345;

EN-Teaser: www.clioedu.it/dante-ecologist-poet; https://vimeo.com/598144420.

Dante as an ecologist and poet in the world. 'Divine illustrations' by Gustave Doré. An open access multimedia project has been nominated for the World Summit Award 2021, in the category Culture & Tourism, as the most innovative digital solution from Italy.

Project carried out with the participation and contribution of CEIT (EuroMediterranean Centre of Technological Innovation for Cultural and Environmental Heritage and for Bio-Medicine) University of Salento, Department of Mathematics and Physics, University of Salento, Cavallino Diffused Museum, University of Salento, CIID (Inter-university Service Centre Didactic Innovation) Universities of Lecce, Bari and oggia, CAFRE (Inter-department Centre for Updating, Education and Research) Pisa University, Association "MusicalnGioco", Canzoniere Grecanico Salentino, CLIOedu, Lecce. Under the patronage of Bari Technical University, Province of Lecce, Municipality of Cavallino (Lecce), AIB-Italian Association of Libraries, Association Marevivo,

Association Toscani in FVG, Berna Committee - Dante Aligheri Society, CoNISMa (National Inter-university Consortium for Marine Sciences), Eco-museum of Gemonese Waters, Third Age University "Paolo Naliato", Udine. Supported by Udine Club for UNESCO, Editorial staff "L'Italia, l'Uomo, l'Ambiente".

<sup>&</sup>lt;sup>7</sup> Sections 1, 3, 4, 5 by Virginia Valzano and Gabriella Sartor. Section 2 by Massimo Bray.

 $<sup>^{\</sup>rm 8}$  Coordination and Production of the multimedia project by Virginia Valzano.

<sup>&</sup>lt;sup>9</sup> See above Section 2.

<sup>&</sup>lt;sup>10</sup> For the Italian text of the Poem, the Authors referred to *La Commedia secondo l'antica vulgata* (4 voll.), edited by G. Petrocchi, Edizione Nazionale della Società Dantesca Italiana, Milano 1966-1967, available also online at the website of the Società Dantesca Italiana https://www.danteonline.it.

<sup>&</sup>lt;sup>11</sup> For the digitalization of Gustave Doré's illustrations, the Authors used the 1868 edition, edited by Eugenio Camerini, *La Divina Commedia di Dante Alighieri illustrata da Gustave Doré*. Milano, Stabilimento dell'Editore Edoardo Sonzogno.

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