

Aux quatre Vents .

P. Bruegel Inv.

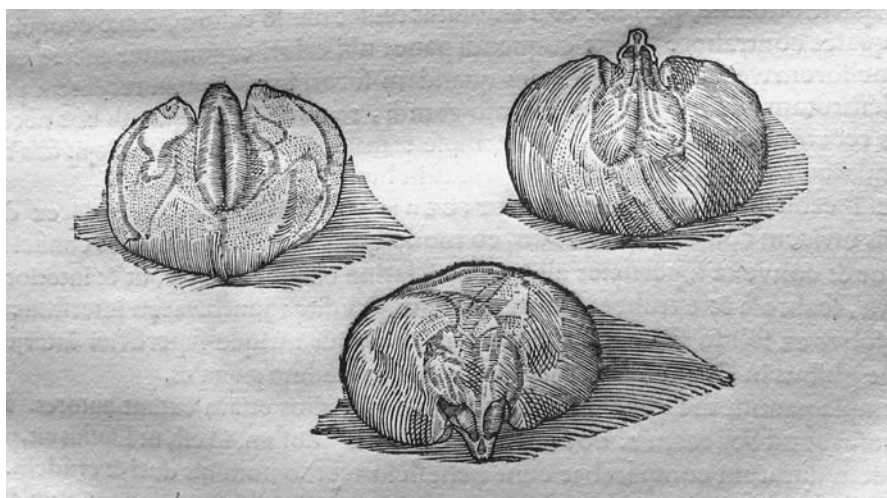


«What dare we conclude? That the Earth is animated?»¹ – Motivated by reports on strange eruptions of water and bad weather triggered by stones thrown into a bottomless lake, Ambrosius Rhodius (1605–1696) posed this question to the Danish collector and polyhistor Ole Worm (1588–1654). Worm was very interested in the earth's processes, and the main part of his famous collection consisted of stones and minerals.² We do not have Worm's answer to Rhodius' question, but the question itself suggests that, even if the animated earth idea was not generally accepted at the time, it was nevertheless taken into consideration. Similarly, in a letter sent to Worm, Arngrímur Jónsson (1568–1648) included two so-called eagle stones, which he described in animistic terms. He categorised them as ‹female› and, owing to their rattling noise, claimed they were ‹pregnant›. According to Jónsson, «when they are not in the ocean they cannot give birth».³ Recorded in Worm's collection was another seemingly fertile stone that bore the shape of both female and male genitalia (Fig. 1). The imagery on the stone was the work of nature, and Worm collected several natural objects with inherent artistic features. One of his most treasured items was a colourful marble ball with map-like features exhibiting the wonderful interaction between nature and art. In this article, I would like to examine how Worm dealt with this exhibit.⁴

Worm's collection was described in the catalogue *Museum Wormianum*, which was published in the year after his death. However, during his lifetime, Worm was involved in the publication process. In a letter to his son, Willum Worm (who was responsible for the publication of the catalogue in Holland), Worm emphasised the importance of accuracy: «... take good care that nothing will appear twice».⁵ It cannot be claimed that the *Museum Wormianum* collection or catalogue was progressive or inventive; instead, it relied on the format developed by sixteenth century collectors.⁶ Worm visited collections and became acquainted with collectors already in his youth, and it was from this large European network that he continued to learn and acquire objects throughout his life.⁷

Describing successive levels of complexity, the catalogue *Museum Wormianum* was divided into four books representing the three realms of nature (minerals, plants and animals) and, finally, the realm of man-made objects.⁸ The objects were categorised according to their materiality, and the main parts of the artificial objects were also grouped in this way; for example, the artificial fly with amber wings was listed together with a cup and dices of amber.

The marble ball mentioned above received a lengthy description in the chapter on stones artfully crafted by nature; however, this chapter was placed in the *De Artificiosis* section of the catalogue (chapter 3, book IV). Even though the stones were minerals and shaped by nature, their appearance gave them a posi-



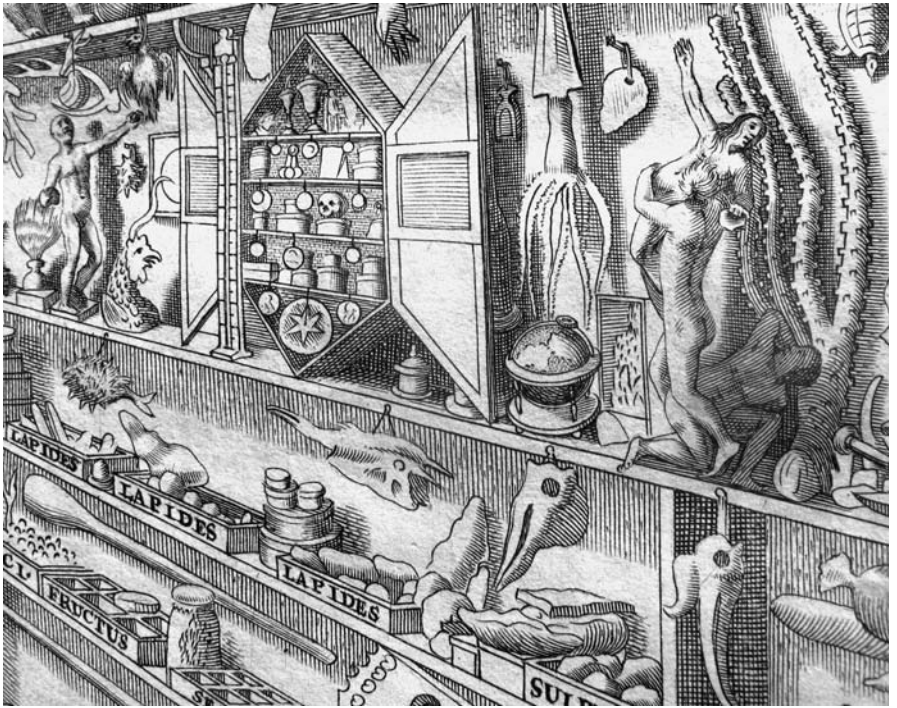
1 «Hysterolithos» depicted from three sides, in: Ole Worm, *Museum Wormianum*, Leiden 1655.

tion among the manufactured objects. Nevertheless, it was also an extraordinary piece of marble. To overcome this categorisation problem, Worm listed it twice in the catalogue.⁹ In the section of the artificial realm, Worm characterised it as follows:

I am the owner of a handsome Globe, exactly ball-shaped and polished, made of Florentine Marble. The circumference is ten inches. The yellow-purple spots mark various districts of the lands and islands, the grey colour the seas and waters, just like a Terrestrial Globe on which parts of the World are depicted. Besides it marks the Celestial Circles: The Arctic, the Antarctic, the Tropics, the Equinox, and others. For this I have made an Ebony pedestal with small ivory pillars, so you have all you need for an artistic globe, to show the most important parts of nature.¹⁰

In this passage, Worm promotes himself as the active «I» who owns the item, which he has framed as art by placing it on a pedestal. He describes the marble patterns as depictions of the world – land, islands and water – and, furthermore, he interprets the lines on its surface as images of the celestial circles. He uses the word «globe», and his description convincingly connects this item to globes and maps of the time. Many of such globes can be seen today in the *Globenmuseum* in Vienna.¹¹

The marble globe was a significant showpiece and received a central position in the frontispiece of the catalogue alongside Giovanni Bologna's *The Rape of the Sabin Women* (Fig. 2).¹² Worm presented his globe as a work of art; however, by providing a more down-to-earth description of it in chapter four, which focuses on various marble types (book I on minerals), he also recognised it simply as a piece of marble.¹³ Here it represents just one out of three pieces of the so called Florentine marble or *pietra paesina*: «There is also a kind of globe made of the same [kind of Florentine] marble that appropriately shows a plan of the land on the earth shaped by nature ...». Worm continues to claim that it is one of many artfully crafted stones, but that art has provided it with its ball-shaped and polished form only.¹⁴ In other words, the artisan had carved it out of the rock,



2 Ole Worm, *Museum Wormianum*, Leiden 1655, Frontispiece, Detail with the «handsome Globe [...] made of Florentine Marble».

but the map is the work of nature. Although he uses the word «globe» and not «piece» or «ball», compared to the quotation above, the natural origin of the object is addressed and emphasised to a greater extent. Here the overall message is that it is «shaped by nature», placing it neatly within the descriptions of marble types and, therefore, toning down the singular appearance it received in the section on «elaborated stones». While Worm draws attention to the globe's pedestal and cartographic likenesses in the first quotation, its ontological status and materiality is the main concern in the chapter on marble. In this section, it is described as a solid piece of marble that has been slightly manipulated so that it appears to contain images of islands and seas. In the following analysis, I will address this tension between Worm's emphasis on the globe's natural origin and his framing of it as a work of art.

When taken together, Worm's descriptions of the marble ball may signify two aspects of his passion for collecting: one was his profound affection for extraordinary materials that could overrule any artistic reworking – for example, Worm placed the description of a large piece of rock crystal (3 kg) in the section on crystal and not among artificial objects, even though it contained several relics and, among others, a depiction of Christ on the cross.¹⁵ The other aspect was to appear erudite and display his knowledge of traditions and trends, for example, by making references to antiquity or visual «games» of nature and art. This dual impetus could partly explain why he divided the description of the marble piece into two.

Worm's profound interest in examining matters and expounding their properties is evident in his correspondence, where he often makes requests for objects or materials he is eager to obtain, for instance, luminous meat or a stone with the scent of flowers.¹⁶ In his laboratory, he carried out experiments on the objects he managed to acquire in order to define their properties and ontology as well as to dismiss or affirm claims made in the past. The most famous of his claims based on physical examination is that the unicorn horn is actually a narwhale tusk.¹⁷ In the study of minerals, he sought knowledge on the origin of fossils, petrification, the production of stones in the earth, and he also touched upon the idea of marble being soft before being excavated.¹⁸ Worm stated in a letter that a debated body function should not be discussed but required «your own inspection».¹⁹ From this point of view, the visual traces of the formation process, which were embedded in the material, could have aroused his interest in the marble ball. An important precondition for his inspection of things was that the study of nature was considered a study of God and his work.²⁰ In line with the doctrine of signatures, in order to reveal the secrets of nature Worm interpreted visual signs thought to be placed by God.²¹ In *Museum Wormianum*, he declares: «Rightfully, God is called the cause of all things, but since he does not immediately induce effects in nature but acts through natural causes, it is the job of the physician to find these causes».²² Being the «physician», he put himself in a prominent position as a primary interpreter of God's grand masterpiece, where God is present but mediated through nature. The question is how the concept of «nature's art» worked in this context. Were the images believed to be created by a personified *Natura* – nature as a kind of artist with license from God? Alternatively, were the images intended by God but dependent on nature's production, with all its flaws and deviations?

By exhibiting «nature's art» and addressing the phenomenon in his writings, Worm implicitly confirmed the old idea of *natura pictrix* – the image-making nature.²³ In his writing, Worm refers to the concept of «*lusus naturae*» – the idea of nature playing or joking – and it is this kind of idea that made the marble «globe» into a wonder and collectable.²⁴ Since antiquity, analogies between nature and art have been recognised and described. Some of the most notable and paraphrased examples are Pliny the Elder's report on the portrait of Silenus that appeared in a sliced stone, Apollo and the nine muses in an agate, and so on.²⁵ «Nature's art» was highly esteemed in the late sixteenth century, and the interplay between nature and art was particularly cultivated and refined in gardens, curiosity cabinets, and the decorative arts. Worm's acquirement of the marble ball points to the fact that the tradition of finding structures in nature resembling images was still popular in the seventeenth century.²⁶ In this case, representations of «parts of the World» had appeared on the surface when the stone was carved out, and the framing of the little marble globe seems to work as a statement on Worm's knowledge of the tradition. Contrary to the image-bearing fossils that Worm exposed to various treatments in his laboratory, the marble ball was placed on a pedestal and exhibited proudly; because of this, it bypassed the laboratory and was located as an artefact in the museum. However, Worm's reception of extraordinary stones remains ambiguous, since he concludes in one of the chapters with a description of stone with the smell of violets, among others: «The inventive Nature [*polydædala*] hides in her womb many things that we will

never be able to explain».²⁷ By describing nature as «inventive» and as having a womb, Worm displays his knowledge of ideas belonging to an animated worldview. In a letter, Worm writes, «In wondrous ways does nature play its game, where it takes aid in the petrifying juice or air».²⁸ Nature «plays» and «takes» and is thus presented as an agent making use of physical effects.

Were these ways of describing nature just a use of metaphors and conventional phrases, or did he mean more by it? Were the metaphors pure embellishment and part of a rhetorical play? Unfortunately, it is difficult to provide a direct answer to these questions; however, it is still worthwhile and illuminating to explore Worm's handling of the marble ball and other related themes.

Worm's academic reflections on the concept of nature are preserved in his manuscript expounding Cicero's *Cato Major*, which he wrote in his early years as a university lecturer.²⁹ However, unfortunately, even these do not shed much light on how he perceived «nature's art». The philologist H.D. Schepelern has composed a list of the six definitions of nature that appear in Worm's reflections:

- 1) The spirit of God as the master builder and father of all things, that which the philosophers call *Natura naturans*. This is the attitude that Cato adopts in correspondence with the Stoics by saying that he follows nature as a God. The concept can be divided into *Natura universalis*, which is nothing but God, and *Natura Particularis*, which is sometimes referred to as *Natura naturata*
- 2) The quintessence or meaning of all things
- 3) *The collected unity of all things created*, in accordance with Aristotle's *Metaphysica* 12 c. 7, 38
- 4) *Natural causes*, as when we say that God and nature never act without purpose, or that nature does not allow vacuum
- 5) *The temperament of every spirited being*, in the manner that the doctors talk of humour as a mixture of the four elements
- 6) The creation of living creatures³⁰

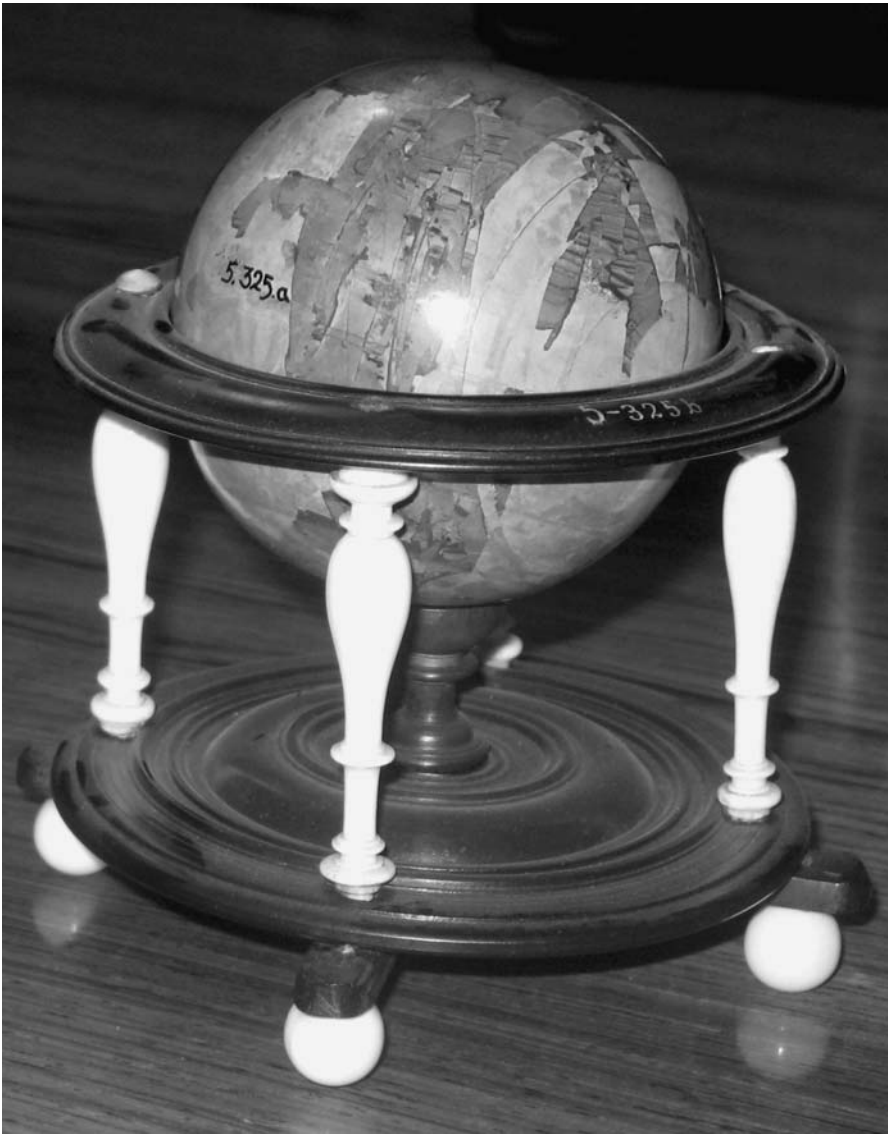
Following these sections, Worm discusses the ways in which Jesuit Petrus Fonseca (1528–1599) and Aristotle use the term «*natura*». At this point, it is important to bear in mind that Worm's manuscript forms part of a lecture, and it could be argued that its content is suited to this purpose. Nevertheless, the manuscript demonstrates that Worm understood the concept of nature in all its variety and that he knew how to clarify it according to the conventions of a university lecture. Not surprisingly, the above list displays the significance of God in nature, and it also refers to important antique philosophers. However, it does not provide an answer to the question of how Worms dealt conceptually with the idea of an art-making nature. His later collecting style and references in his writings testify that he was interested in nature's inventive skills, but his academic exposition of the concept of nature does not reveal how this fitted into the overall picture.³¹

Exhibition versus experiment

Worm's remark that some of nature's creations are beyond explanation contrasts with his otherwise persistent and hands-on investigation into the secrets of natural phenomena. Compared to the energy Worm invested in scrutinising fossils and attempting to explain their origin, the marble ball is treated more as an impasse to revealing the secrets of nature.³² In the section on marble types, Worm already explains how marble as such was created by exhalations of water vapour and thought to be soft when excavated.³³ The reason for both highlight-

ing and ‹giving up› cases like the marble ball might be that it illustrates what nature can achieve – with images of land and seas – but the material itself was well known. The ontology of fossils was still a debated topic at the time, whereas marble was not in comparison. Most likely, Worm valued the marble ball as a type of cultural object in the social sphere of the early modern museum. Placed on the shelf, it might have served as a conversation piece for visitors engaging in sophisticated discussions about art and nature. It may have stimulated conversation on art forms, as the merchant and art dealer Philipp Hainhofer (1578–1647) remarked whilst describing the effect of Pomeranian art cabinet at the delivery ceremony in 1617.³⁴ Like many of the other objects, the marble ball gave Worm the opportunity to give a scholarly performance; in text and most likely in person. The study of nature’s inventive powers had a long history in the interpretation of nature, and this history enhanced the value of the marble ball. As its owner and interpreter, Worm positioned himself as erudite and as part of Europe’s intellectual elite.

In his other writings, Worm made references to and quoted a wide repertoire of texts. Besides being well read, he tested the claims he encountered with hands-on experiments, and he incorporated the results of these experiments in his assessments and argumentation. As a professor at the university in Copenhagen, he lectured and wrote dissertations in a typical manner, but his teaching was supplemented by the work he did with the students where they were supposed to encounter actual objects.³⁵ He navigated the field of inherited ideals and a growing experimental culture that would become dominant in the development of knowledge about nature. In this way, Worm and his work form an interesting case to study the tension between old and new ideas and methods at the time. For example, Worm argues that Pliny the Elder is incorrect about the ontology of a certain kind of stone, but he recognises the curing effect of bloodstone on violent haemorrhage.³⁶ This was in line with the doctrine of signatures that was based on the assumption that God had concealed layers of meaning in nature in a network of correspondances. By interpreting visual appearances, knowledge on curing effects could be enclosed and put into use. Likewise, petrified shark’s teeth appear in *Museum Wormianum* and Worm considered them to be antidote. Not only because they were thought to be petrified tongues of snakes or dragons also in line with the doctrine of signatures, but also because he had made experiments on poisoned kittens.³⁷ Again, Rhodius’ report on bad weather tricked by human actions, such as throwing stones in a lake, was most likely addressed to Worm, because he requested all kinds of information on materials and actions in nature. Magical events and objects, folklore wisdom and habits, as well as scholarly retrieved concepts and statements; this was all valuable to Worm in the process of collecting, studying, assessing and evaluating. Even though Worm was open to all kinds of information, he did not necessarily subscribe to the worldview or notions associated with them. This might be the case with ‹nature’s art› and the marble globe. He was captivated by its appearance and peculiarity, as well as the cultural history of ‹nature’s art›, but his philosophical attachment seems rather superficial. Worm’s letters in particular testify that he focused his attention on objects – their materiality and physical properties. His main concern was to acquire the materials, to define, test, and prove their properties, to compare the results to known accounts and, eventually, to exhibit or exchange the object.



3 Ole Worm's *Marble globe* on pedestal.

The marble «globe» revisited

Worm's intriguing description of the marble ball leaves us with the question of how much the interpretation of it as a naturally created marble globe is exaggerated. Fortunately, the piece has survived together with its pedestal (Fig. 3), and it is now in the collection of The Royal Danish *Kunstkammer* at Rosenborg Castle, Copenhagen.³⁸

On inspection, it proves to be a solid piece of *pietra paesina*, a lime stone breccia from Tolfa in Italy, and the colourful surface is actually naturally created with no added paint.³⁹ It is, even today, an exceptional piece of marble, and it is only



4 *Marble globe* detail of «The Asian Continent» with scratch.



5 *Marble globe* detail of «Celestial Circles».

slightly damaged by a scratch on the surface (Fig. 4). Worm wrote that it depicts «the most important parts of the world»; however, it is not clear whether he means that entire parts of land are omitted or whether there is a lack of detail. When you turn the object in the hand, the similarity to land, oceans and circles is easily recognisable, due to the green-grey areas and the angular pattern of a yellow-brown colour. Nevertheless, it is not easy to define the various sections and compare them with topographic representations from seventeenth century maps or globes.⁴⁰

An optic feature that makes the object even more convincing as a globe is that the patches of land and sea mix, but their large size makes it difficult to gain an overview of their entire shape. When rotated, the various sections seem momentarily familiar; however, if you follow the «coastlines» and shapes of land in an attempt to connect the different viewpoints, the resemblances to continents are easily lost. Circular light grey-beige lines – similar to celestial circles on globes – provide a kind of north/south-orientation, but many other lines also criss-cross the surface (Fig. 4+5). From one angle, the patterns can be interpreted as the Indian Ocean with Africa on the left and India as the protruding peninsula (Fig. 6). Turning the ball to the right, the outline of the «Suez Canal» can be viewed (Fig. 7), and what could be «Europe» is vaguely visible on the upper left side. Fig. 8 shows a clearer view of «Africa» and the «Mediterranean». A more difficult side to interpret is the one with the «Asian Continent», the diametrically opposite side showing «Africa» (Fig. 4+9). The uneven greyish colour convincingly resembles water and the yellow-brown patches imitate the structures of fields, irrespective of whether or not these are definable.

In general, the object is not a very accurate depiction of a globe, and we must conclude that Worm exaggerated its resemblance (at least this is how it appears to a modern viewer). Nevertheless, both its deviations and similarities cause it to initiate an act of interpretation. When Worm writes that it is both shaped by nature and resembles a globe, we are encouraged to study and judge it. Even today, the marble ball impels the beholder to scrutinise the surface for any human intervention, to feel its heaviness, and to marvel at the solid stone that bears traces of the moment at which its fluid matter and colours combined.

Typically, artists cut stone with elaborate or colourful patterns into slabs and added figurations with paint.⁴¹ Filippo Napoletano (1587–1629), for example, is famous for his paintings on stone slabs.⁴² The patterns in the stone often represent the background with a landscape, ocean or the outline of buildings, and the artist painted the central motif; a human figure, a ship, and so on. The marble ball is unique because it is three-dimensional and the natural structures are the main motif; the patterns are closer to the objects they are supposed to imitate and thus no paint is required.⁴³ Furthermore, it represents a map, which itself is an imitation and, in this way, it can be interpreted as a meta-comment on the production of images.

Dendritic marble – with a pattern that often resembled a row of trees in profile – was likewise popular in the seventeenth century; however, most often it played a minor function as an inlay in furniture. The inlay technique of *pietre dure* also provides examples of how to exploit the natural patterns and colours in stone in order to create images.⁴⁴ Pieces of stones are cut and put together, but in comparison to the use of *pietra paesina*, the components in themselves seldom



6 *Marble globe detail of 'The Indian Ocean'.*



7 *Marble globe detail of 'Suez Canal'.*



8 *Marble globe detail of 'Africa'.*



9 *Marble globe detail of 'The Asian Continent'.*

display whole parts of stone with distinct structures resembling imagery made by nature. Instead, cut and collected by the artist, the stones provided a pool of colours and patterns. Consequently, the imagery did not emerge from the matter but it was developed and mended according to the idea of the artist. The works of art do not show an inherent ‹potential image› that the artist could complete.⁴⁵ Nevertheless, we are still far from the modern understanding of the concept of ‹potential images›, which, to quote the art historian Dario Gamboni, is «a way of seeing and interpreting visual data that becomes actual with the viewer’s subjective participation».⁴⁶ Even if Worm believed the naturally made image to be a pleasing coincidence, it was still connected to a worldview in which God played a role and penetrated the world and nature. He might not have believed in a personified nature with creative abilities, but he still reflected on and worked with the doctrine of signatures. From this point of view, nature lost independence in its actions but ‹nature’s art› remained interesting; for a while at least.

Conclusion

Worm was born into a relatively wealthy merchant family from Aarhus in the province of Denmark but he was trained as a noble man. Besides being professor at Copenhagen University, the leading expert on runic letters and prehistoric Denmark, and that he several times was married into the academic elite of Denmark, the vivid letters give first and foremost a picture of a passionate collector. He was probably satisfied with his collection’s fame and its highly esteemed visitors but the exchange of knowledge and study of materials seem to have been valued higher than any political agenda.⁴⁷ He knew the structures of European collections but Worm did not have the obligations of a prince. Following his interest and the latest rumours of desirable objects, he untiringly made requests to family members and acquaintances. Rare as well as plain objects got his attention and in his hands they were transformed into both exhibits and objects for experiments.

Worm’s reception of the marble ball captured my attention because he appeared to be caught between traditions. He connects the marble ball to the history of nature’s inventive skills, but, at the same time, he envelops his comments on nature in a formalised vocabulary thick with metaphors and phrases. As a scholar, Worm navigated a field with a vast tradition and yet, meanwhile, he and others developed new methods and made new assessments; he contributed to the experimental culture and the critique of authoritative texts. The marble ‹globe› did not fit into this environment.

Questions such as Rhodius’, which was quoted at the beginning of this article, testify that ideas of an animated world were still present, and it may not be possible to answer the question of whether Worm’s use of the discourse on nature as an agent should be understood solely as part of an erudite play or if it reflected a kind of belief in literal conditions. Worm’s reception of the marble ball demonstrates nostalgia for a fascination with ‹nature’s art› and the belief in nature’s playfulness, but these concepts were close to collapse. They could not survive in the Copernican scholarly environment, which undermined the preconditions for nature’s license to play that was part of the static geocentric worldview.

The creative co-production between nature and art had been a topic in art and the study of nature for over a century, and had turned into a cliché. Re-

defined as coincidences, artistic creativity in nature did not make sense in the mapping and understanding of nature and its forces. Nature's play became the mistakes of nature, and the objects retreated to the upcoming realm of art and aesthetics.

Nature's play had already lost its significance by 1696. In the *Museum Regium* royal catalogue from 1696, in which Worm's collection was incorporated, it appears that the marble globe had been reduced to one among other pieces of marble in the description, and it was no longer present in the section on the artificial.⁴⁸ It was not presented as possessing affinities to works of art, but just as an accidental variation. No longer a marvel, it was reduced to marble. We could say that, in modern times, it was the pedestal that saved it from oblivion; framing it as a work of art and alluding to its earlier reception as a cultural object and not simply a piece of stone.

Notes

1 Ole Worm, *Breve fra og til Ole Worm 1607–1654*, Vol. II, translation H.D. Schepeleern, Copenhagen 1967, p. 239 (letter from Ambrosius Rhodius, 21.3.1641): «Hvad tør vi slutte heraf? Mon at Jorden er besjælet?»

2 The collection was described most extensively in the catalogue Ole Worm's *Museum Wormianum*, Leiden 1655. Two minor catalogues were printed in 1642 and 1645. After Worm's death, the collection was integrated into the royal collection, and the surviving objects were presented in the catalogue *Museum Regium* from 1696. H.D. Schepeleern, *Museum Wormianum. Dets forudsætning og Tilblivelse*, Odense 1971, p. 166.

3 Worm 1967 (as note 1), p. 475, vol II.

4 This article is a revised version of the paper I gave at the conference «The Aesthetics of Marble», Max-Planck-Institute in Florence, May 2010. I am grateful for the comments from the audience, especially Stephen Campbell.

5 Worm 1967 (as note 1), Vol. III, no. 1763, 11.2.1654, p. 504.

6 In 1609, Worm visited Ferrante Imperato and Aldrovandis' museum as well as collections in Verona, Enkhuizen, and Kassel. Camilla Mordhorst, *Genstandsfortællinger. Fra Museum Wormianum til de moderne museer*, Copenhagen 2009, p. 34. In recent times, Camilla Mordhorst has written the most comprehensive study of Worm's collection and its development.

7 Worm 1967 (as note 1), Vols. I–III, Copenhagen 1965–68; Mordhorst 2009 (as note 6), p. 33–42.

8 *Ibid.*, p. 43 and p. 85.

9 *Ibid.*, p. 171.

10 Worm 1655 (as note 2), Book IV, chapter 3 «De Artificiois è Lapidibus elaboratis», p. 350: «Ex MARMORE FLORENTINO elegans mihi est GLOBUS exacte sphaericus & politus. In circumferentiâ decem uncias amplius, maculis suis flavo purpureis varios terrarum & insularum tractus, colore vero cinereo maria & aquas referens, ut Globo Terrestri, in quo Mundi partes depinguntur, plane similis sit. Circulos præterea exhibit Cælestes, Arcticum, Antarcticum, Tropicos, Æquinoctialem & alios. Huic Pedamentum ex Ebore cum columnulis ex ebore aptari curavi, ut nihil desit quod in Sphærâ terrestri artificiosâ desiderare quis possit, cum hic Naturæ priores partes sint deferendæ». Translation, see: Bente Gundestrup, *The Royal Danish Kunstskammer 1737*, Vols. I–III, The National Museum of Denmark, Copenhagen 1981 p. 202; Schepeleern 1971 (as note 2), p. 333 and Mordhorst 2009 (as note 6), p. 169.

11 <http://www.onb.ac.at/sammlungen/karten/globenmuseum.htm> 14-8-2013. The pedestal of Worm's marble globe was typical. Preserved at Rosenborg castle is also a red marble ball of the same size as Worm's globe with an equal pedestal. Its provenance is unclarified.

12 Mordhorst 2009 (as note 6), p. 171.

13 Worm 1655 (as note 2), Book I, section II, chapter 3, p. 44, «Pyrite, Molari, Cote».

14 *Ibid.* Chapter 16. «Est et eodem MARMORE globus quidam machinam orbis terrestrem à Naturâ effigiatam apte ostendens. De quo plura inter artificiosa è lapidibus elaborata dicendum; licet pari jure huc spectare possit, quia ab

arte nil nisi globosam figuram & polituram acceperit».

15 It is mentioned that it contains relics. «Amethysto, Crystallo, Fluribus, Lapide de Aventura». Worm 1655 (as note 2), p. 100; Schepelern 1971 (as note 2), p. 159; Gundestrup 1981 (as note 10), p. 181.

16 Worm 1967 (as note 1), Vol. II, p. 459 and p. 480.

17 Jole Schackelford, «Documenting the factual and the artifactual. Ole Worm and public knowledge», in: *Endeavour*, Vol. 23, issue 2, 1999, p. 65–17. The narwhale, see p. 67.

18 Schepelern 1971 (as note 2), p. 238.

19 Worm 1967 (as note 1), Vol. II, no. 1034, p. 351.

20 A similar way of understanding the study of nature as an approach to God was developed by Jean Bodin (1530–1596). Ann Blair, *Theater of Nature: Jean Bodin and Renaissance Science*, Princeton 1997.

21 The doctrine of signatures, see Mordhorst 2009 (as note 6), p. 177. Allan G. Debus and Michael T. Walton (eds.), *Reading the Book of Nature: The Other Side of the Scientific Revolution*, Missouri 1998.

22 Schepelern 1971 (as note 2), p. 290; Worm 1655 (as note 2), chapter on the Norwegian lemming thought to reproduce itself spontaneously, p. 331; Mordhorst 2009 (as note 6), p. 155. «Ganske vist kaldes Gud med Rette for årsagen til alle ting, men da han for at frembringe virkninger i naturen ikke handler umiddelbart men gennem naturlige årsager er det fysikerens opgave at finde disse».

23 Paula Findlen, «Jokes of Nature and Jokes of Knowledge: The Playfulness of Scientific Discourse in Early Modern Europe», in: *Renaissance Quarterly*, Vol. 43, no. 2 (Summer, 1990), p. 292–331. The concept of *natura pictrix*, p. 297.

24 Worm 1655 (as note 2), p. 81; On the concept of *illus naturae*, see Findlen 1990 (as note 23), p. 292; Mordhorst 2009 (as note 6), p. 146.

25 H. W. Janson, «The «Image Made by Chance» in Renaissance Thought», in: *Essays in Honor of Erwin Panofsky*, Millard Meiss (ed.), Zürich 1960 and New York 1961, p. 254–266, especially p. 255.

26 The marble piece was not mentioned in the small-scale catalogues printed in 1642 and 1645, so it can be assumed that he acquired it subsequently. I have not been able find any further information on how and from whom Worm obtained the marble ball.

27 Worm 1655 (as note 2), Book I, section II, chapter 2, «De Saxo», p. 38; Schepelern 1971 (as note 2), p. 237.

28 Worm 1967 (as note 1), Vol. III, no. 1227, p. 37.

29 Schepelern 1971 (as note 2), p. 100–103. The manuscript was written 1613–14 on

Cicero's *Cato Major* with sections on philosophy, nature, friendship, and memory.

30 Schepelern 1971 (as note 2), p. 101.

31 His letters, as well as the collection as such, refers to many different kinds of artificial-looking forms in nature. Mordhorst 2009 (as note 6), chapter 3.

32 Considerations on fossils: Worm 1967 (as note 1), Vol. III, no. 1462 and no. 1502, p. 219 and p. 247; Schepelern 1971 (as note 2), p. 244.

33 *Ibid.*, p. 238.

34 Julius Lessing, «Philipp Hainhofer under der Pommersche Kunstschränk», in: *Jahrbuch der Königlich Preussischen Kunstsammlungen*, Vol. IV, 1883, p. 3–18. «...und wir den ganzen Tag mit Beschawung der zwei Werkh [the Pomeranian art cabinet] bis in die Nacht zugebracht, so dass wir mit Wündlichern zur Tafel gingen und über Künstler und Künsten ob der Nachtmahlzeit viel Discours gehabt», p. 13.

35 Schepelern 1971 (as note 2), p. 126 and p. 157. Worm wrote in a letter that his audience was supposed to be able to touch and see the things. Worm 1967 (as note 1), Vol. II, no. 787, p. 132.

36 Pliny categorises it wrongly as a precious stone. Worm 1967 (as note 1), Vol. II, no. 1034, p. 351. On Worm's «mistakes», see: Schackelford 1999 (as note 17).

37 Schepelern 1971 (as note 2), p. 239–240. Worm's relative Thomas Bartholin (1616–1680) supposedly investigated the phenomenon of «tongue stones». See also Debus and Walton. On dragon stones, see: Spike Bucklow, *Alchemy of Paint: Art, Science and Secrets from the Middle Ages*, London u. a. 2009, p. 148–155.

38 Gundestrup 1981 (as note 109, p. 202; Jørn Hein, *The Treasury Collection at Rosenborg Castle: The Inventories 1696 and 1718*, Royal Heritage and Collecting in Denmark-Norway 1500–1900, Vols. I–III, Copenhagen 2009).

39 I am grateful to Hazze Nyström, Chief Conservator at Rosenborg Castle in Copenhagen, for the examination of the marble ball, photographs, and hospitality. The ball's measurements are: Ø: 7.4 cm; weight: 496.25 g; volume: c. 180 cm³; weight distribution c. 2.76 g/cm³.

40 It must be taken into account that early modern maps were conceived differently. See for instance, Alessandro Scafi, *Mapping Paradise: A History of Heaven on Earth*, Chicago 2006.

41 See Jurgis Baltrušaitis, *Aberrations: An Essay on the Legends of Form*, transl. R. Miller, London/Cambridge Mass. 1989. I use the word «artist» to encompass both artists and artisans.

42 Cristina Acidini Luchinat (ed.), *Bizzarrie di pietre dipinte dalle collezioni dei Medici*, Florence 2000.

43 Worm's globe is the only early modern example I know of.

44 Annamaria Giusti, *Pietre Dure: The Art of Semiprecious Stonework*, Los Angeles 2006.

45 The idea of latent images in materials is most famously described by Michelangelo as well as Leonardo. Jacob Wamberg, *Landscape as World Picture*, Vol. II, Aarhus 2009, p. 345ff. Leon Battista Alberti on «images made by nature», see Janson, 1960/61 (as note 25), p. 255: «...the fact that Nature herself produces images becomes the crowning argument for his claim that painting is a noble and «liberal» activity».

46 Dario Gamboni, *A Potential Image*, in: *Art Bulletin*, Vol. XCIV, issue 1 (March 2012), London 2002, p. 20–22.

47 Mordhorst 2009 (as note 6), p. 36.

48 *Ibid.*, p. 190.