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ERNST HEINRICH PHILIPP AUGUST HAECKEL - ABOUT THE ART OF NATUREARE BEAUTY AND INTELLIGENCE ATTRIBUTES OF MATTER?

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Abstract

Ernst Haeckel can be considered the greatest partisan of evolutionism. He did not adhere only to the ideas of Darwin, but he brought sufficiently strong arguments based on which he contributed to the substantiation of the theory of evolution.

Outstanding zoologist, embryologist and ace of the animal morphology and comparative anatomy, Haeckel had an intellectual structure of encyclopedic type; he managed to master the whole and to "dissect" the parties up to the elucidation of truth.

As a zoologist, he achieved the monumental monograph of Radiolaria, presenting thousands of species, among which 150 species new to science.

In order to achieve the monograph of Radiolaria, Haeckel proposed himself to make scientific drawings in which to surprise with precision the skeletal structures of the researched species so that, by using of these in the preparation of keys for the identification of species, to facilitate the easier identification of all species.

Being an exceptional painter and engraver, Haeckel managed to provide an ideal method for determining the species of this group to the researchers taking into account the precision of presenting the reality in the realized drawings according to the natural material. The scientific drawings were so perfectly realized that through them you can recognize the morphological characteristics of the body and those structural ones of the skeleton of each species.

A scientific drawing is not a work of art, no a presentation of nature in the manner of a certain artistic style, even if it is executed with artistic craftsmanship.

In fact, what did Ernst Haeckel want to prove to us when he realized these sketches? Did he want to present us his artistic mastery, the symmetry and perfection of proportion, the impressive embroidery of the siliceous networks, the imperial refinement of some forms? If it had been made according to his own imagination, it would have deserved high appreciation. But Ernst Haeckel did not want that.

No self-pride nor vanity nor overestimating of his qualities of great artist Haeckel wanted to prove us when he executed such figures and published them in his book, unique in the history of science, Kunstformen der Natura. The author proposed himself to discover to the whole world what we now discover, through him, the artwork of nature. He wanted to convince us about the fact that beauty or aesthetics, how you want to express it, is an attribute of nature.

We must understand that nature is the first and largest creator of art. He discovered art in the fossilized miniature "trinkets" before man's appearance, in the structure and disposition of colonial diatoms algae, in the structure of fungi, corals, and lichens. Nature loves beauty and this is embodied in the animated or

unanimated material structures.

Haeckel wanted to demonstrate us, and he succeeded beyond measure, that nature is intelligently structured and loves aesthetics. But we must follow not only unsurpassed art of the designer, but also the perfection of structures.

The aesthetic is a language of nature, using certain codes that must be deciphered and capitalized.

Key words*:* Ernst Haeckel, Nature Intelligence Matter.

Introduction

Ernst Haeckel can be considered the greatest partisan of evolutionism. He did not adhere only to the ideas of Darwin, but he brought sufficiently strong arguments based on which he contributed to the substantiation of the theory of evolution.

Darwin's masterly book "**On the Origin of Species" (by Means of Natural Selection)**, published in 1839, was translated by Ernst Haeckel into the German language in 1860 and successfully spread among biologists, philosophers and not only. As a translator splits hairs to understand the most hidden meanings of a phrase, so Haeckel penetrated into the essence and logics of Darwin's thinking in order to give the necessary power to the persuasion of the arguments brought by Darwin in the substantiation of the theory of evolution and not to distort the truth.

Author, together with Professor Johannes Peter Müller, **of the fundamental biogenetic law - ontogeny is a short and quick recapitulation of phylogeny, Haeckel has elucidated many aspects of life**.

Outstanding zoologist, embryologist and ace of the animal morphology and comparative anatomy, Haeckel had an intellectual structure of encyclopaedic type; he managed to master the whole and to "dissect" the parties up to the elucidation of truth.

As a zoologist he achieved the monumental monograph of **Radiolaria**, presenting thousands of species, among which 150 species new to science. It seems that Radiolaria have the most complex siliceous skeletal structure in the entire kingdom **Protista**, set up even by him. He searched very carefully both living species and the fossil ones. It is known the fact that the siliceous skeletons of radiolarian form hard rocks, highly porous, called radiolarians. Being soaked they are imbued with T.N.T. (Trinitroglycerine) forming **dynamite**.

In order to achieve the monograph of Radiolaria, Haeckel proposed himself to make scientific drawings in which to surprise with precision the skeletal structures of the researched species so that, by using of these in the preparation of keys for the identification of species, to facilitate the easier identification of all species.

Being an exceptional painter and engraver, Haeckel managed to provide an ideal method for determining the species of this group to the researchers taking into account the precision of presenting the reality in the realized drawings according to the natural material. The scientific drawings were so perfectly realized that through them you can recognize the morphological characteristics of the body and those structural ones of the skeleton of each species.

May be I can become tiring, but I focus on these elements to make everyone understand what a scientific drawing means and what is its function. In my teaching experience, I have met some bizarre situations; some students (true, few in number) used to make scientific drawings according to different microscopic preparations, without fully understanding what they must emphasize in their drawings (what they must see). Thus, studying the primary structure of a stem at the microscope, the students had to highlight and present in their drawings, accurately, the structural features of the epidermal cells, the parenchymal ones, wooden or liberian, their position and spatial relationships.

Copying exactly the images they investigated in the microscopic field of the preparation the students achieved a drawing in which they illustrated the structure of the primary stem of the respective plant, but bizarrely, in their drawing you could easily recognize, around the structure of the primary stem, also a mite image superimposed on this structure. It is about the drawing of a mite that was caught by chance in the microscopic preparation. The students did not understand exactly what they had to see in the respective preparation, and to render in the drawing; they could not to discern between two realities, the section through the primary stem and a mite.

A scientific drawing is not a work of art, no a presentation of nature in the manner of a certain artistic style, even if it is executed with artistic craftsmanship.

Watch carefully Plates I and II in which there are presented different species of radiolarians, more precisely the structural characteristics of the siliceous skeleton of these species. The drawing in the middle (the second figure) is a living individual; we observe the fine radia, which are seen through the hyaline protoplasm, even if the body contour is not defined. In other drawings, there are presented only the skeletal structures. What beautiful structures! Real gewgaws of nature! These skeletal structures, impressive by beauty and complexity, represent the support of a cytoplasmic mass simply structured. The Great Benvenuto Cellini, the goldsmith of the jewellers, would have had reason of envy to the address of the author.

In fact, what did Ernst Haeckel want to prove to us when he realized these sketches? Did he want to present us his artistic mastery, the symmetry and perfection of proportion, the impressive embroidery of the siliceous networks, the imperial refinement of some forms? If it had been made according to his

own imagination, it would have deserved high appreciation. But Ernst Haeckel did not want that.

But in Plates III, IV and V why did he realize, going up to impressive details, the skeletal structure of a Radiolaria, of a Foraminifera and a of some Siphonophorae? What do these scientific drawings have in common? I cannot afford to use another term because the mission of these drawings is now to facilitate the recognition of the respective species.

And yet, did not Ernst Haeckel go too far when he placed the drawings representing some species of copepods (Crustacea) in natural colours (Plate VI) in a frame like a picture?

No self-pride nor vanity nor overestimating of his qualities of great artist Haeckel wanted to prove us when he executed such figures and published them in his book, unique in the history of science, **Kunstformen der Natura**. The author proposed himself to discover to the whole world what we now discover, through him, **the artwork of nature**. He wanted to convince us about the fact that beauty or aesthetics, how you want to express it, is an attribute of nature.

We must understand that nature is the first and largest creator of art. He discovered art in the fossilized miniature "trinkets" before man's appearance, in the structure and disposition of colonial diatoms algae (Plate VII), in the structure of fungi (Plate VIII), corals (Plate IX), and lichens (Plate X). Nature loves beauty and this is embodied in the animated or unanimated material structures.

Haeckel wanted to demonstrate us, and he succeeded beyond measure, that nature is intelligently structured and loves aesthetics. But we must follow not only unsurpassed art of the designer, but also the perfection of structures.

ARE BEAUTY AND INTELLIGENCE ATTRIBUTES OF MATTER?

The great Jacques Monod received the Nobel Prize because he found and argued the role of chance in the emergence of life and of the evolutionary process. But I must declare, without fear that I shall make mistakes, that I shall be charged for this, that in all these structures, chance cannot find itself the right place.

Some models realized by nature represent true patents of it. They are taken at different levels of evolution of the living world, but they are resumed with the same accuracy also in the structure of crystals, certain hurricanes, constellations and even in the flight of the falcon in its descent for the catch of the prey. How can these be creations of hazard (Plate XII)? How can the logarithmic spirals, of a divine beauty we encounter everywhere, not only in the animated world, but even in the unanimated world be creations of hazard? How can the animated and unanimated structures of the world of a rare beauty be

products of hazard and subdued to the law of numbers of Fibonacci (Plate XIII)?

The aesthetic is a language of nature, using certain codes that must be deciphered and capitalized.

Why are the flowers beautiful? Who are they beautiful for?

Of course, we could pretend that for the human being, because it is the only species that can appreciate beauty. Let's put away the immeasurable egos of the human being and begin to think about nature differently: the flowers appeared on the Earth before of the man and they were so beautiful. Rather we accept that beauty is a natural language that works like a biosemiotic code, which allows communication between peers and between species. Many plants depend in their existence on the presence of some pollinating insects, which ensure their perpetuation through followers. Flowers must use all the means of "advertisement" to make their presence felt and to attract species or those species that represent a vital necessity. There are some flowers that are not pollinated than by one species of animal, be it an insect, a bat or a bird (humming birds).

The beauty is in the biosemiotic language, a signal, an insistent call of the species that can ensure the process of pollination, followed then by that of fecundation. The signal is launched in the ether, but it cannot be decoded but by a few species. Therefore the beauty of flowers is so varied (Plate XV).

The form of flowers, the structure of petals and their colour, the disposition of anthers, stamen and of simple or complex structured stigma demonstrate us that the signal is often sent only to a single species. The special structure of flowers, the form and structure of the nectar gland, not to mention the flavour and sweetness of nectar, this unrefusable elixir, represent peculiar biosemiotic signals.

The very diversified and very different appreciated smell also presents a special importance in the invitation of the wanted guest. The pollinating species has to come in contact with the pollen and to transport it on the stigma of other flowers, because the cross pollination has an essential significance in the reproduction of plants.

If you want to convince yourself how smart is the structured nature, observe how in the process of coevolution, some flowers have undergone special structural modifications, according to the morphological characteristics of the pollinating species. Look, to convince yourself, how varied the form and length of the beak of some humming birds are (Plate XVI) and the proboscis of some butterflies, depending on the structural features of the flowers they pollinate (Plate XVII).

Thus, we penetrate into the deep mysteries of nature. We are obliged to understand the depth and accuracy of the biosemiotic dialogue taking place

between the plant and its pollinator species. It is like a butterfly which has long proboscis would require the plant to make the nectar spur as longer and the gland as deeper in order not to compete with other species.

These species, which depend on their existence to one another, forms a **biosystem**. We do not need other evidences of the coevolution process than the deciphering of such naturally occurring biosystems.

Again, we come back to our discussion about hazard and necessity and, again, we convince ourselves about the intelligence of nature, and we discover that intelligence is embodied.

We cannot see that among plants there is a competition for the winning of pollinators (it is about entomophilous plants).

We tend to believe that such thoughts are sprung from the personal imagination and that, in reality, things are not so. We can think in this way only when we do not realize the intelligence of nature.

Numerous orchids have the flowers pollinated only by one species. It is so powerful such a formed biosystem that we can say, without reservation, that the two species depend on one another in their existence.

If this finding is a reality, then how can a flower not lose its partner? What evolutionary strategies could be used?

In order to strengthen such a relationship and achieve a strong motivation of the pollinating species to visit it, the plant appeals to some incredible strategies. They have outlined in the process of coevolution.

Let's look carefully at the structure of the flower of the orchid Ophrys insectifera. This orchid is pollinated by just one species Gorytis (Agrogorytes) of Hymenoptera (Plate XVIII).

In Gorytis we meet the phenomenon of **protandy** (males hatch about two weeks before the females). They do not know this thing, and go in search of females. The search is stimulated primarily by the flowers of Ophrys insectifera imitating by the structure of a petal, the form and colour of the female of Ophrys insectifera. Without reaching to details, the flowers imitate perfectly the females of the pollinating species. Males discover them and consider them as being real; they sit over them and realize a mating. Of course, it is a false mating, because the imitated females function like some inflatable females. However, some males even deposit spermatozoons on the metamorphosed petals.

Moreover than that, in order to deceive best the males and to attract them as much, the plants synthesize the same sex pheromone exuding also by the females of Gorytis. Thus, the address is provided with accuracy. In this situation, the message is addressed directly to the males of Gorytis, whom we can follow in their action (Plate XIX).

After two weeks from the hatching of males, there also appear the females of Gorytis. These are discovered by males and it begins the natural mating between the two partners. Until the appearance of the females, the males have already pollinated the flowers of Ophrys. If there remain some, it is not a problem, as they will be visited by some wandering males, by some "philanderers" who are still searching for females. The process is facilitated also by the fact that the females of Gorytis accept mating with several males.

But what can we say about the males who laid down spermatozoons before the appearance of the females in the false mating with the petals? There is no loss because spermatozoons need a period of maturation, so that they have not lost anything.

What we presented is not a story. How can we however understand and accept it? We must start from the finding that intelligence is an attribute of matter and that it is embodied, that in the process of coevolution, all these were well developed and there has always been a semiotic dialogue, which functioned properly and that it has perfected in the long process of coevolution.

We want, we do not want, we must accept today the fantastic, unbelievable discovery, and yet true, that plants have affective experiences and enter into dialogue with the peers, with other species and with the universe in which they live. Flowers know that they are beautiful and seek to become increasingly beautiful and they succeed to achieve their most vital necessities through their beauty.

Beauty, intelligence and communication capacity are parts of the strategies through which life as a cosmic phenomenon ensures its immortality.

If you are still in doubt about such explanations we invite you to watch other interesting aspects, if not even more enigmatic.

The phenomenon of mimicry is widespread in nature and has precise functions. There are very strong or poisonous animals who hunt without being hunted. Let us not exaggerate **any "godfather" has its "godfather"**!

How strong and cruel crocodiles are! We tend to believe that no one can attack them. But I have seen many images with crocodiles attacked and eaten by tigers.

If we people, who belong to the species Homo sapiens, are aware of what happens in nature and learn to know the other species too and nature in its whole, we must stop believing that the rest of the species in nature are stupid and that the world, in general, is silly. Nothing is more false.

Ethology as a science has revealed to us the intelligence of the living. Gradually, I have understood that it is not about the intelligence of the living, but of matter. Ethology demonstrates us (even if some of our neighbours refuse to accept such a demonstration) that the anthill is actually a **superorganism** and that its intelligence goes beyond any imagination of the human mind about

anthill. Ethology teaches us in all respects what it means and how it functions the hierarchical structure of individuals in the societies (communities) of the animal world.

If we speak today about the intelligence of cells, organs, organisms, or even of supraorganismic structures, then we should get out from the rigidities of the classical thinking and go as fast in the area of modern thinking, which reveals to us another realty of life, cosmos and matter.

Only in this way we can understand that beauty, intelligence, communication capacity, emotional experiences and all, all others are attributes of matter.

Using to the refusal the metaphor about the wolf dressed in sheep's clothing, we think like **Pico della Mirandola** that man is like a chameleon, a being that oscillates between Devil and God.

It will be much easier for us to understand the world and the phenomenon of mimesis, if we bring near to the **phenomenological method** of Dufrene.

We will discover that mimesis was not discovered by man although this outlines him certain laws, mimesis has been discovered and used by nature on a surprisingly large scale.

It is considered that the logics of mimesis is based on the concept of nature that the hidden and working force of nature unconsciously taken by the artistic act, leads to the end through its methods in a perfect way.

In this sense, the phenomenological aesthetics of Dufrene considers that "*nature becomes an area of essences within which it is operated the transition between the formal and material. Precategorical, the feeling or the imagination of sensibility and poetic, that contains with all in the* ***natural matrix of nature***" (Dufrenne, 1976).

Anticipating though, with an enviable intuition Dufrene considers that: "*The world, that is natured Nature is full of meanings in the bud, and this before the human mind to know it, it is full of intentional calls condensed empirically to cognoscibility, affection, feelings or human senses. Nature is steeped of statements and objective vocation that determine the fan of a priori faculties*" (Dufrenne, 1976).

There is already printed in the texture of natured nature understood as world, a cognoscible, a sensible, a factual material, an essence of the desire and aestheticization, pre-reflective, pre-affective or pre-sensitive virtuality, calling after itself any experience, giving it forms that germinate the poetic images in numerous forms in an involuntary way with a solar clarity. In other words, we must understand that nature has all potencies and these germinate depending on certain factors.

We cannot think about J.B. Lamarck, who intuited with genius that animals have an internal trend towards progress. We find that this characteristic is not only of animals, but of matter as cosmic reality.

The ancients considered that the tragedy of the human being is given by the fact that the more he knows, the more the gulf of ignorance is open. Considered in the Bible as a true **king of creation**, the human being believed himself above nature, called to dominate it before truly knowing it. You cannot stay impressed but also intrigued when you realize that some practical occupations of people were and are used in nature successfully by some beings: fishing rod was used before being used by people even by fish; in the abyssal and hadal zones, those of total darkness, the angling rod is associated with light, more precisely with bioluminescence for the attraction of preys (Plate XX). The biological control (through biological struggle) of some parasitic fungi that attack the "mushroom gardens" of the ants demonstrates us the unsuspected potentialities of nature, more precisely the intelligence of nature.

The use of mimesis as a weapon against enemies or in other purposes must give much to think to human because the art of mimesis used by nature exceeds any imagination. Not even in this direction, nature cannot be exceeded.

What else can you believe when you see that an ordinary fly or an innocent and helpless butterfly dresses the cloth of a fierce and venomous wasp? (Plate XXI). But when a caterpillar is "huffed" to you in a costume of big and venomous snake (Plate XXII)?

What else can you believe about a spider that, in order to deceive its enemies, copies the form and colour of some bird droppings (Plate XXIII)?

We must understand that in all these cases the wearers of mask are aware of the role they play. The Individuals who mimic know that they have mimic warning colours and have "learned" to behave like that mimic models. The spider mimicking the droppings of some birds, even lives in which a certain species of bird her droppings. But the spider realizes that this mask has value only in the situation in which it does not move. These spiders are consumed by the respective birds. They are seen when they move. When they feel they are pursued by certain birds, they remain stone-still, drawing the legs and restoring the appearance of bird droppings. The respective birds do not consume their droppings and do not try to see if they were deceived.

Using the art of mimesis the spider emerges successfully from the predator field of vision, but no predator is so stupid that it can no longer find the food. It learns as well to have patience to watch several spiders in the same time and to locate precisely the food when it moves.

We speak here about the art of camouflage, of the use of metaphor in the most subtle form, of a real intelligence embodied in the structures of the living.

If we have penetrated into these mysteries can we also believe that it is

about happening? Can we also believe that hazard is guiding "beacon" in life and in cosmos?

The butterfly *Kalima inachist* mimics both the form and the colour of the leaves of trees in the middle of which it carries its existence; we think it does not impress us too much. To see, however, that *Phyllium* imitates the leaves of the plants on which it feeds taking into account yet their health and integrity (some leaves can be eaten by insects or can be covered by droppings of some insects) is something that tends to put you in trouble (Plate XXIII). The art of mimesis is a true art, not an imitation of the moment; it is not false. You cannot realize a perfect camouflage with an old coat among new coats and neither inversely. Imitation is subjected, with an amazing precision, to biostatistical laws. Mimicking insects must reproduce more or less the average state of the leaves to fulfill their role. And it is not sufficient. The insect that resembles a leaf must seek, in case of danger, the most natural possible position not to enter into disagreement with the assembly. If the leaves are struck by wind, they also have to swing at the same time. And again we reach to that which means the **intelligence of nature.**

Watch the art with which a lizard imitates a dead leaf during autumn (Plate XXV).

In order to disappear into the environment, to merge with it, to know how to use it effectively in the moments of hesitation, there are necessary boundless knowledge, perfect consciousness of the created situation, intelligence and great art.

Watch carefully Plates XXV, XXVI, XXVII and XXVI

It is a pity to live further into the darkness of knowledge, even if we are in full sun, in full light. I shall always be impressed by the art with which a butterfly wants to convince me that I do not see a butterfly but an owl, an owl head, that a seahorse shows to be a highly branched alga and that an Octopus turns into a stone on the bottom of the sea.

I could not ever imagine that the farce can be used as a strategy for survival. We encounter it nowadays everywhere but still we do not know how to treat it properly. There are people who are poor as church mice and can live only by begging. Most of them barely live. But there are some the so-called beggars who have made of begging a trade and who of this trade managed to gain great wealth. They do not know how to stop themselves and have gone so well in the role of a beggar that they do not know how to do anything else. The farce has done them their way.

There are in nature predators of high voracity. For catching the prey they use different types of farces. Like some beggars who beg on the big boulevards or in the centre of big cities, these predators are on the watch in the most wanted places, the most populated ones.

The most beautiful flowers, with the highest-rated nectar and most beautiful scents dispersed in the ether, are the most visited by the skilled pollinators. If you are a fierce predator and want to capitalize such a headway then you can only disguise in a flower and wait to be "pollinated". It sounds ironic that phrase, but here is not an irony, on the contrary, it is a clear reality: watch Plates XXIX and XXX. For finding with how much art some predatory species turned their body into flowers more or less similar on which they settled disappearing from the visual field of pollinators.

I tend to believe that nature likes much to play, it is ludicrous by its nature, it loves humour, namely good humour.

I have understood why *Ophrys insectifera* imitates with such an art the female of *Gorytes*. It has a huge advantage in survival. I do not understand why the flowers of some plants imitate some monkeys who frolic around them. Be careful! Not all monkeys, but only those who live in the same area with them (Plates XXXI and XXXII). Surely these species are accepted among them. I tend to believe that the monkeys enjoy when they see these flowers and suspect (but I admit that I do not know that even do some services to them).

I remind here about the plants whose flowers imitate the body of some birds. Mimesis works here too with great art (Plates XXXIII and XXXIV).

Surely nature enjoys like a child it meets such wind-swept flowers and dressed in golden light of the sun.

Have I exaggerating when interpreting nature in this way? Nature means LOVE. Nature is embodied God. How not to love beauty, how not to play, how not to taste the good quality of humour?

We feel obliged to go the love too among the attributes of nature or of matter.

Love realizes a natural symbiosis with beauty. Together, they form a unitary whole above the component parts.

We can appreciate that beauty represents that fundamental aesthetic value, which we owe everything is successful in art. Beauty is everything we like. But we must specify what kind of pleasure is about. Beauty is, as I said before, an attribute of nature, so we do not look for it only in art, but beyond art, in nature, society and even in human behaviour. We must agree with those who consider that beauty is the highest degree of perfection that can be achieved. I agree, but how can we realize a scale of beauty? Where should we start from? How to realize a scale of beauty so long as the beauty has dictatorial tendencies?

The beautiful accepted by everyone removes other competitors to beauty. In this situation, another beautiful can be considered ugly. Many beauties compete at Miss Universe, each in her own way. Only one will be declared Miss Universe. Would the others be ugly?

In his book **Aesthetic des Hablichen** (the Aesthetics of ugly), 1853,

Rosenkranz draws our attention on the great diversity of aesthetic phenomena and substantiates theoretically the presence and legitimacy of the ugly as antonym of beautiful. Rosenkranz defines the ugly as being negative. It could not exist the beautiful if it was not accompanied everywhere by ugly. What is interesting and kept in mind is the fact that Rosenkranz places the ugly between beautiful and comic. "*The comic is not possible without an ugly ingredient, which it absorbs and recomposes it in the freedom of beautiful. The beautiful passes through the ugly to get to the comic. The beautiful is, therefore, on arrival, the first boundary of ugliness. Beautiful excludes itself the ugliness; the comic, on the contrary, fraternizes with the ugliness, but always purges it of repulsive elements because it leaves to see its nullity, in comparison with the beautiful* " (Rosenkranz, 1853).

Beauty and ugliness cannot be excluded completely; they lie in an eternal antithesis.

Rosenkranz distinguishes three phases of ugliness: nature, spirit and the ugliness in art.

In the monumental book the **History of ugliness** (2007), Umberto Eco presents us in its endless boundaries: "*Among demons, madmens, frightening enemies, and stirring presences, among ravishing abysses and deformities that touch the sublime and the living deads, we discover an iconographic plan extremely vast and often unexpected. To the extent that meeting one by one on the distance covered of these pages the ugliness of nature, the spiritual ugliness, asymmetry, disharmony, disfigurement, in a succession of clumsy, scary, silly, nasty, criminal, spectral, wizardly, polluted, dirty, obscene, frightful, rascal, monstrous, horrifying, clumsy, rotten, vile, disgraceful and wretched, the first foreign publisher who saw this opera exclaimed: "How beautiful is the ugliness!*" (Eco, 2007)

Why and where ugly animals appear in nature?

The ugliness may have certain functions in nature. Commonly, the most ferocious predatory animals expose some ugly aspects of the body to terrify the prey, to paralyze it of fear so that it can catch it easier.

In Plate XXXV we present a few predatory animals that use ugliness as a weapon of attack. In horror stories, the negative heroes are always ugly (hideous).

Ugliness is often associated with dark backgrounds, with caves, with large and hidden holes (camouflaged). In the muddy environments, there often live ugly, bizarre, particularly toxic and dangerous animals (Plate XXXVI).

Caves also shelter hideous animals, with dark colours and strident, awful screams. Fear is inspired on the one hand by the environment and on the other hand by the ugliness and terrible behaviour of predatory animals (Plate XXXVII).

The animals that have a nocturnal life associate the ugliness with the power, badness, the gloomy colours and the bizarre behaviour.

Ugliness can be given by aspect, colour, behaviour and audible signals of attack or warning (Plate XXXVIII).

Ugliness can be an obligatory attribute of the animals in the abyssal and hadal areas of the seas and oceans. Almost without exception, the face has a hideous aspect and the jaws (the buccal plate) are excessively big and sharp. Once caught, the prey has no way of salvation (Plate XXXIX).

Finally, the ugliness can occur as a game of nature too. The caricaturist aspect of the animal does not scare, but rather it provokes comic. We cannot deny the game of nature and sometimes we have to get into its game and keep up with it (Plate XL).

Beauty like intelligence, communication capacity, love, etc. are attributes of matter.

Nature is particularly beautiful in all possible structures, in time and space.

We have convinced ourselves about the beauties of miniature structures; let’s say of the microcosm. We must not neglect the beauty without equal of the macrocosm. We do not yet fully understand what the cosmos means and which is the boundleness of the infinite, but that does not mean that we cannot enjoy the beauty of the heaven vault during the night, a night without moon, which shows its greatness.

Let's penetrate a little in the beauty of stars, planets, novels, supernovas, galaxies and convince us once again, if else it is need, that nature is intelligently created and its beauty and love are intrinsic qualities. Let’s look at Plates XLI and XLII and follow attentively and eagerly what the art of nature means.

Regarding the Nature or the Existence of its dimensions oscillates between INFINITE and GOD.

Conclusions

Nature is intelligently structured and is intelligent in its essence. Intelligence is embodied in all its micro and macrocosmic structures.

Nature loves beauty and is an accomplished artist; it is totipotent and gives colour and essence to each season. It transforms the immaculate white of the snow in the raw green of the grass and leaves that give out to the sun through and cracking of the foliar buds. The immaculate white of the garlic mustard catches life in the cheeks of the petals painting them with the miraculous green of the chlorophyll. Being an unsurpassed master of the brush, spring mixes the green with yellow, the golden yellow with red, black and blue, assorts colours and dresses nature without making chromatic mistakes, without hurting the retina with stridency and the disharmony of colours.

In Nature you do not find black spots, colours do not dirty nature, but adorn it. If God has placed in the chromatic field of petals or in the network of ribs of the wings of butterflies called symbolically "flying petals" some spots, then these give frailty and nobility of the support, everything being in accordance with perfected, truly divine art (Plates XLIII and XLIV).

The stridency of colours in the feathering of parrots or of other birds signals us the diligence and virility of males.

The strident and contrasting colours that some persons, less introduced into the knowledge of nature, do not understand them and interpret them wrongly, do not represent disharmonies but a clear and well plainly language, that is nothing but a warning signal for those who invade their territory or tangle the affairs.

Spring revives nature; it does not rise because it was not dead. Nature does not die; it may enter into diapause of winter or **hiemal** and of summer or **aestival** and returns to activity with an increased vigour and with an impressive force, demanding the right to life and creating life. In Spring, flowers conquer the planet. It is a condensation of flowers so large that if we sat flower next to a flower we have covered the earthly globe entirely, the polar caps frozen forever included. By the symphony of colours and aromas emanated in the ether and with the sweetness and temptation of the nectar, flowers complete the paradisiac picture of the Spring and wake to life the entire nature.

Flowers do not represent anything else but the reproductive organs of plants (the gynoecium and the androecium). From the moment of their opening, the entomophilous flowers mobilize the huge army of pollinators.

So, Spring bursts of vitality generated by Spring open appetite of affection and love. Spring is the reawakening season of nature, love and procreation. Interestingly, in some countries, especially in those of Scandinavia, the human population receives a week of freedom from the authorities, a period destined to love and procreation intended to get into rhythm with nature.

The sex pheromones synthesized by the females of some animals, and even by some plants are associated with the songs and nuptial dances of the animals, so that nature is in full celebration. The wind swings the strings of the vegetal violins and blows in the "flute" of gamopetalous flowers. The sun gives light and heat generating life, leaving the moon, the stars and the night sky to master the fairy scene of night. Only Eminescu managed to gather all the beings to the joy of the bridal couple in the joy of love.

Nature seeks its rhythm. In Spring, all beings are called to the celebration of life. The Indians know best to get into the rhythms of nature and realize the golden equilibrium between body, mind and spirit.

Spring does not only dictate the rhythm of life to you, but it gives you all the remedies too by which to control your health.

Ayurveda, the traditional Indian medicine is a natural medicine proper to seasons, each season having the load, energy and its sacred and therapeutic power.

Why is Autumn so beautiful? What is the significance of its beauty?

Autumn "blooms" through the colourful leaves of the trees. It is realized a symphony of colours that transfers you in the paradisiac realms (Plates XLV and XLVI).

It is true that the leaves change their colour; avidly absorb the golden light of the sun and converts it into thousands of colours. Even if the tree leaves die and fall, the plants do not die, enter into hibernation, for the purification of the body and washing of all the impurity accumulated during summer in order to be able to stainlessly return in Spring righteously to a new life. Autumn is a passage from life to life. Nature does not die, but it is metamorphosed.

In Autumn, fruits are collected. They contain within them the seeds, ie the seeds of the future generations. The seeds grow in fruits that are the arks of the "words" that are to be embodied.

The fruits are not only tasty, flavourful and rich in nourishing substances; they are sacred, life-giving and sacrificing themselves for the liberation of the descendants. They contain the body and the blood of the creator of life and the new life does not proceed into the world if they are not consumed. The consumed seeds together with the flesh of fruits are not digested (only the kernel of olive tree is digested; it is not strong because the rough side is not formed of cellulose but of inulin), so that they are discharged from the digestive tract of the animals they can germinate freely.

The mission of fruits is to be consumed and to favour the spreading of seeds. Fruits do not help with anything the seeds in their entry into life, in germination, their function being as I have said, that of spreading of seeds.

Therefore, the plants are in a fierce competition to win consumers. This explains why the fruits are so beautiful, tasty, flavourful and nutritious; they invite us, like Christ, to consume them for the perpetuation of life, ie for the spreading of the seeds. The celebration of Autumn is that of conquering the area of life. Autumn is **before the celebration** of Renaissance of nature and perpetuation of life.

As it regards winter, its purity and beauty have other parameters. Winter symbolizes chastity, righteousness and cleaning from all the material and spiritual defilement. The mantle of snow covers all the filth and shows to the Heaven the clean face of the Earth.

Winter with the **Frost of Epiphany** freezes the springs, streams and the rivers of human nothingness, falseness and Satanism.

As the pyre escapes us of heretics, witchcraft and Satanism and the flood

washes the face of the world of all human misery, offering a new world and a new earth, so winter, with its frost cleans all the stain of the human being and dresses it with the purifying mantle of the snow.

Winter provides a material and spiritual transfiguration of the world and renders to Spring a new world and a new oath.

Winter represents the cleaning and purifying antechamber before entering the empire of empires.

Both in painting and sculpture and architecture there have appeared different artistic currents that present us the beautiful according to certain techniques and ways of working: mannerism, symbolism, realism, expressionism, Dadaism, surrealism, cubism, Rococo, Gothic art, etc. It is not the case to develop these aspects here and now. But we want to demonstrate that nature has diversified its art in such a way that if you lean on it you will certainly find all these art currents.

As a biologist, I have noticed that the naive art was in fashion, especially in some geologic periods. You cannot connect the presentation of Dinosaurs, Brontosaurs or Pterosaurs than the naive art. Surely many of our children if they were asked to imagine some fantastic animals would get to naïve art to render such animals (Plate XLIX).

The monumental art is found almost in all groups of animals. Interestingly, in many groups of animals, the primitive species are huge, and the superior ones increasingly smaller. In Arthropods, we can pass all the evolutionary series from Eurypteridae and Gigantostracs of 3-4 m long, up to mites of microscopic dimensions. The art of nature has its place here too on the podium (Plate L)

We have seen what nature can do; Let’s give to Caesar what is Caesar's, because without its brilliant talent and without its dedication in the discovering and presenting the art of nature, we have barely managed.

Ernst Haeckel loved nature so much, that he was able to integrate himself perfectly into it. His home, *Villa Medusa* has become a real picture gallery. The walls were covered with paintings, graphics and sculptures realized according to nature; a series of panels were executed with great art according to the model of nature (Plate LI) and some genealogical trees were exposed in his house in the same manner as at *Phyletische Muzeum*. The Museum dedicated to natural art *Naturkundemuseum* is unique in the world (Plate LII).

Ernst Haeckel not only loved nature and understood its mysteries, but he also taught us to follow him in this Empire.

PLATES

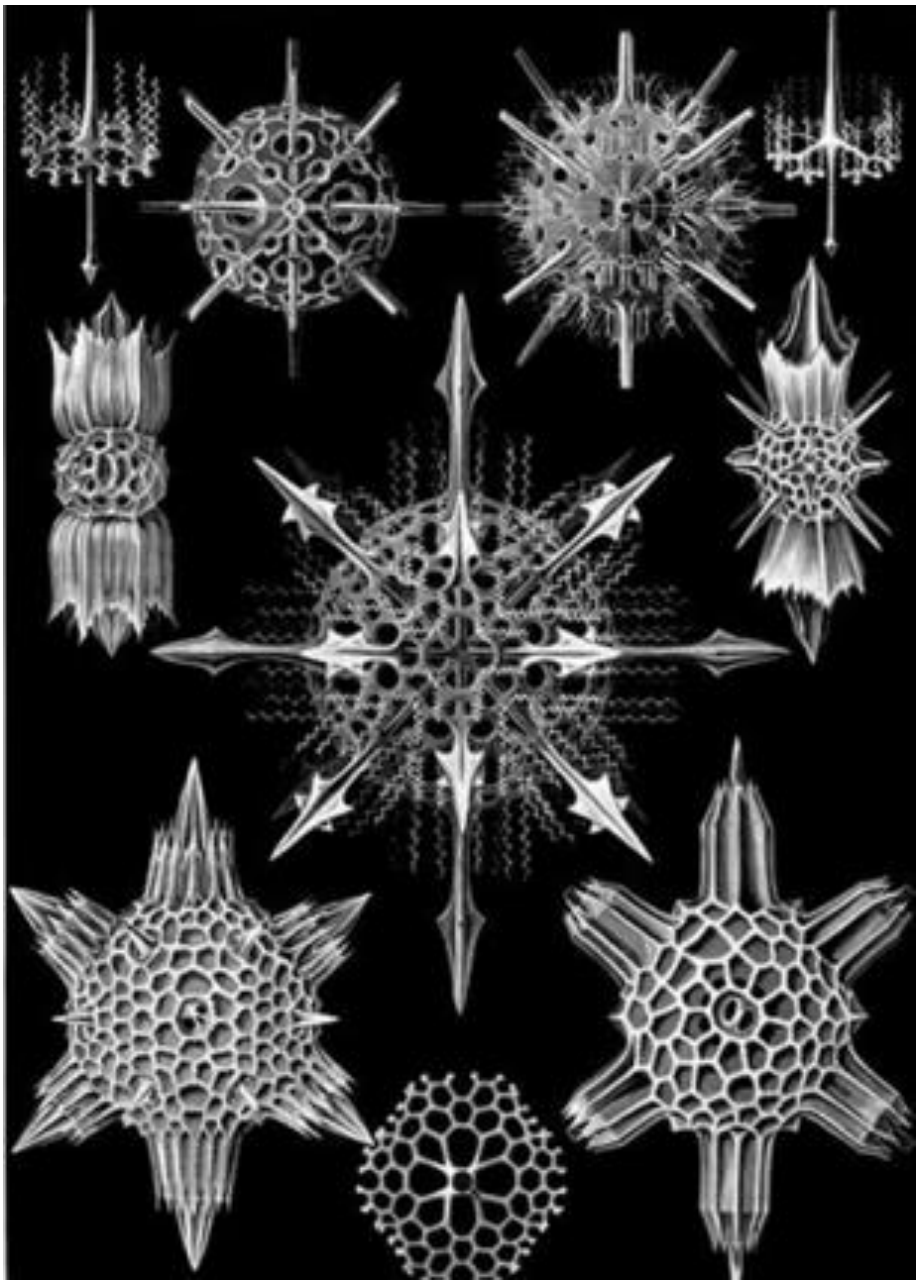

Plate I – Species of Radiolaria

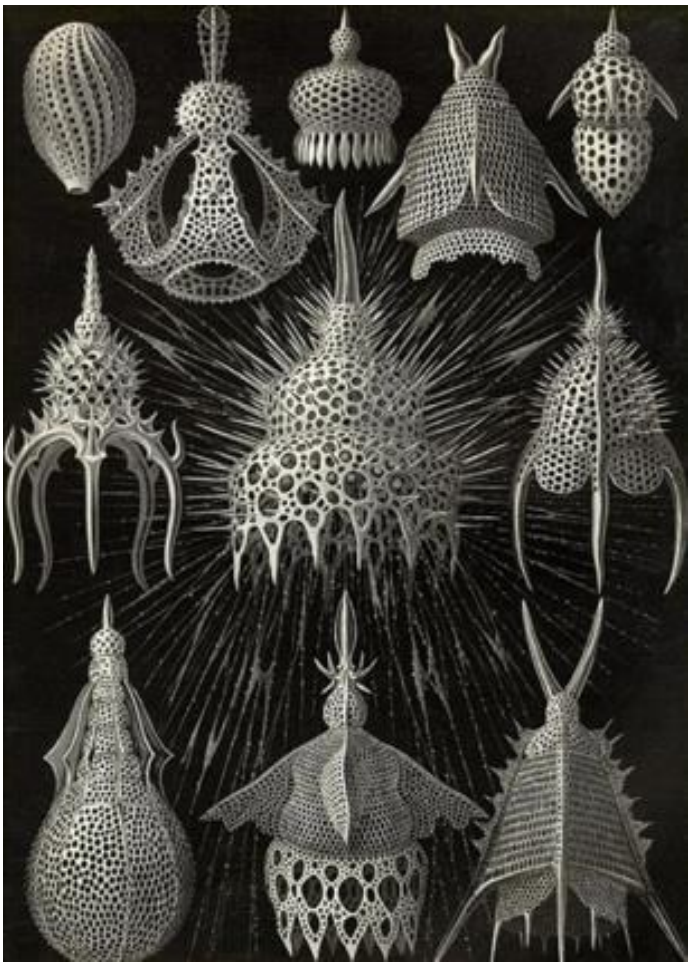

Plate II – Jewellery of nature – Radiolaria

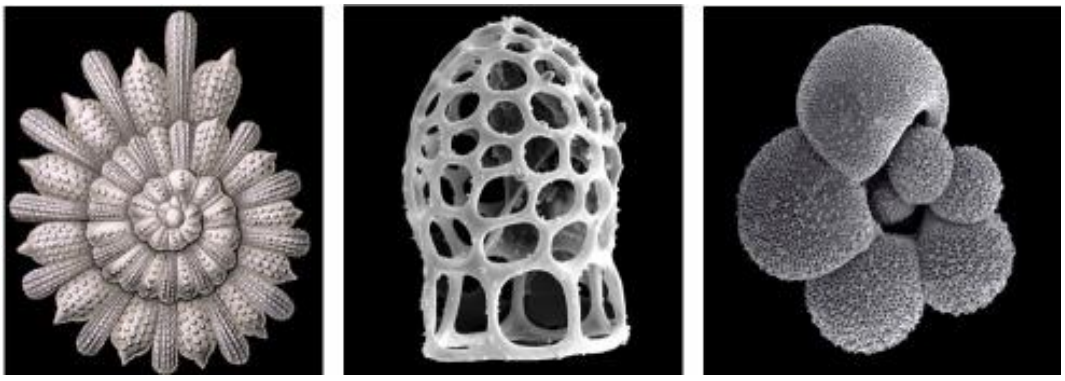

Plate III – Orders and beauty in foraminifera and radiolaria

Plate IV – Geometry, art and fantasy embodied in the structure of organisms

Plate V – Fantasy and colour in the colonies of Siphonophorae

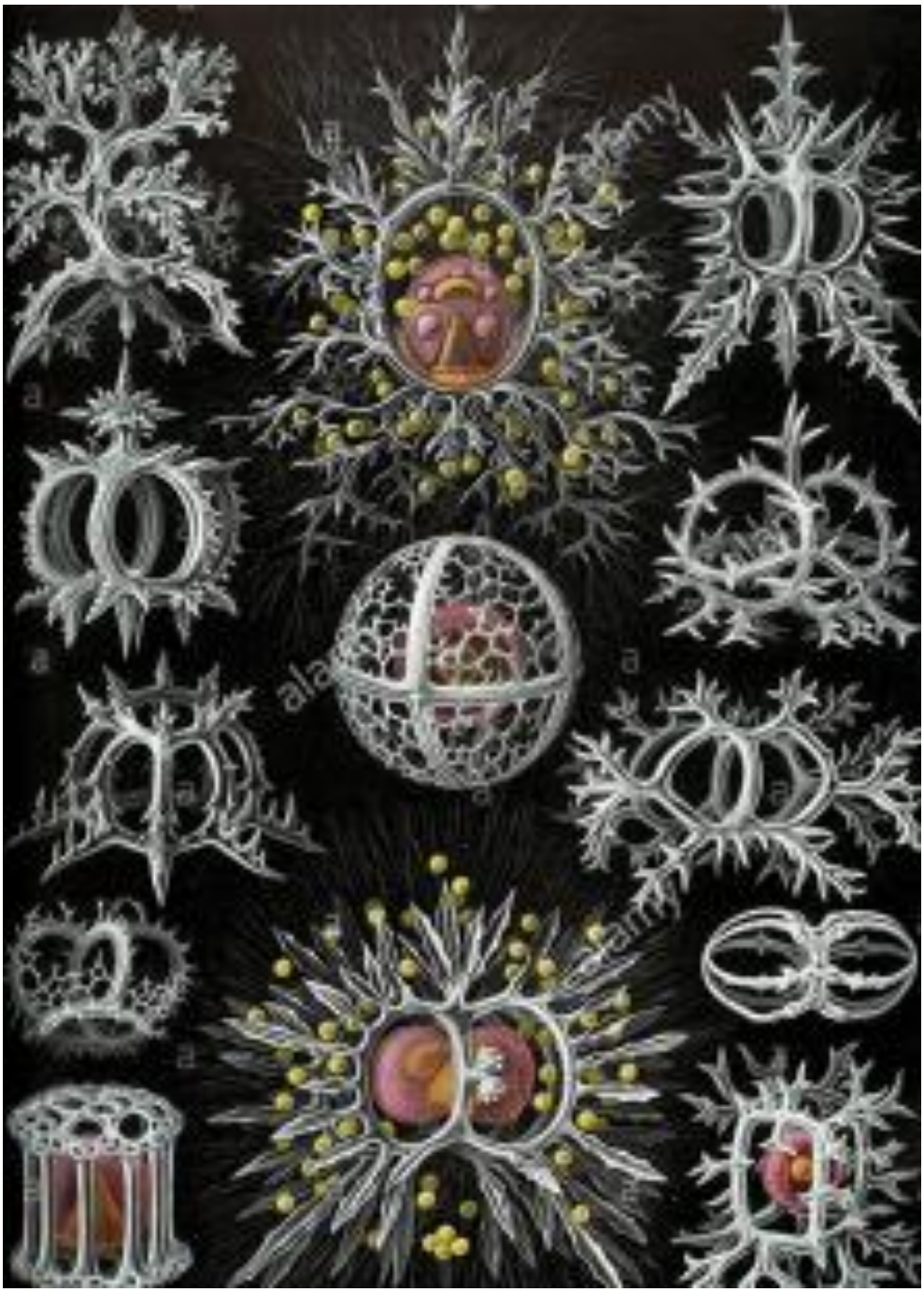

Plate VI – Radiolaria: imperial crowns and other jewellery

Plate VII – Votive painting: copepods in natural colours

Plate VIII – The fan is a patent of nature: algae of Diatomales

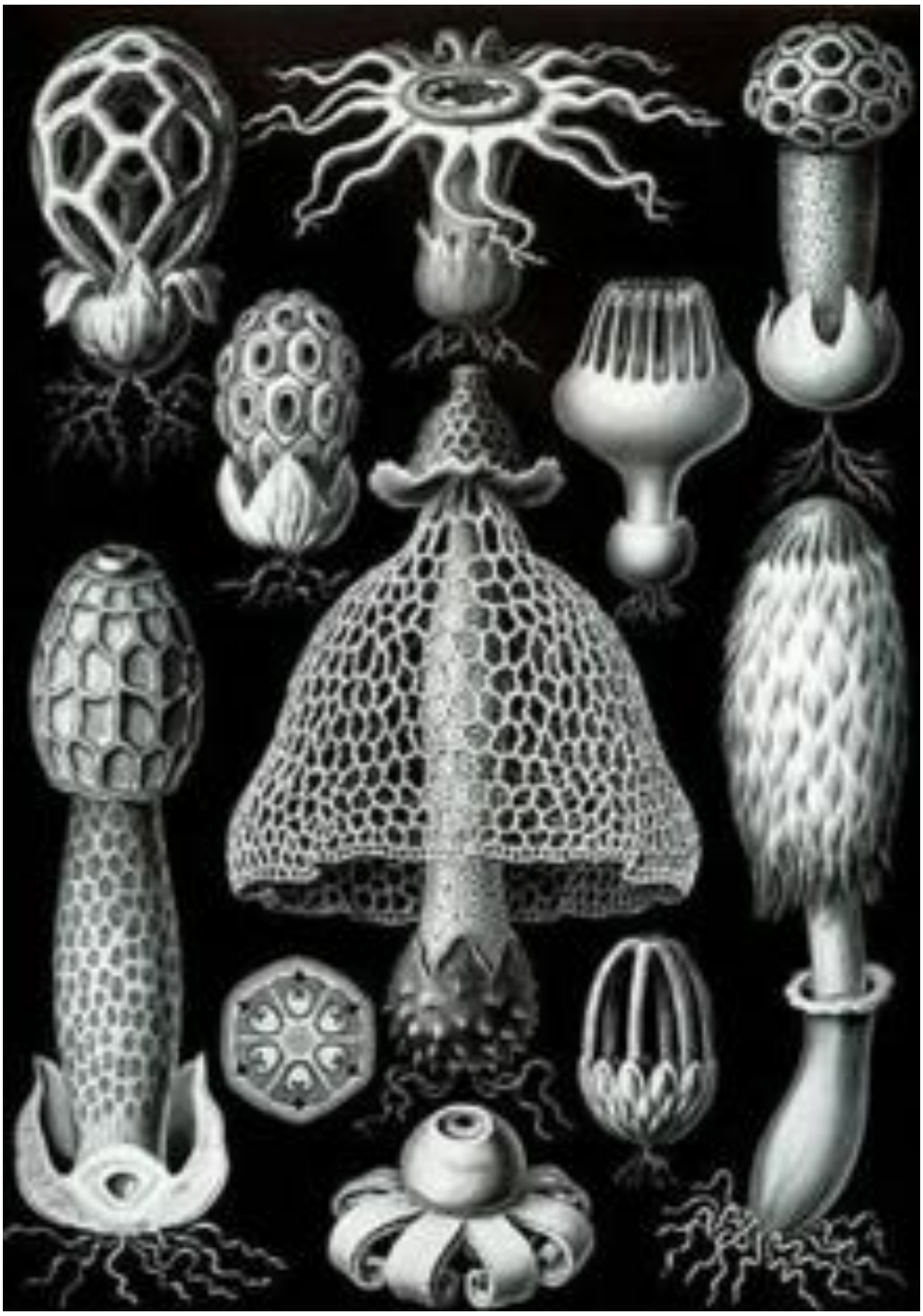

Plate IX – Fungal reproductive structures

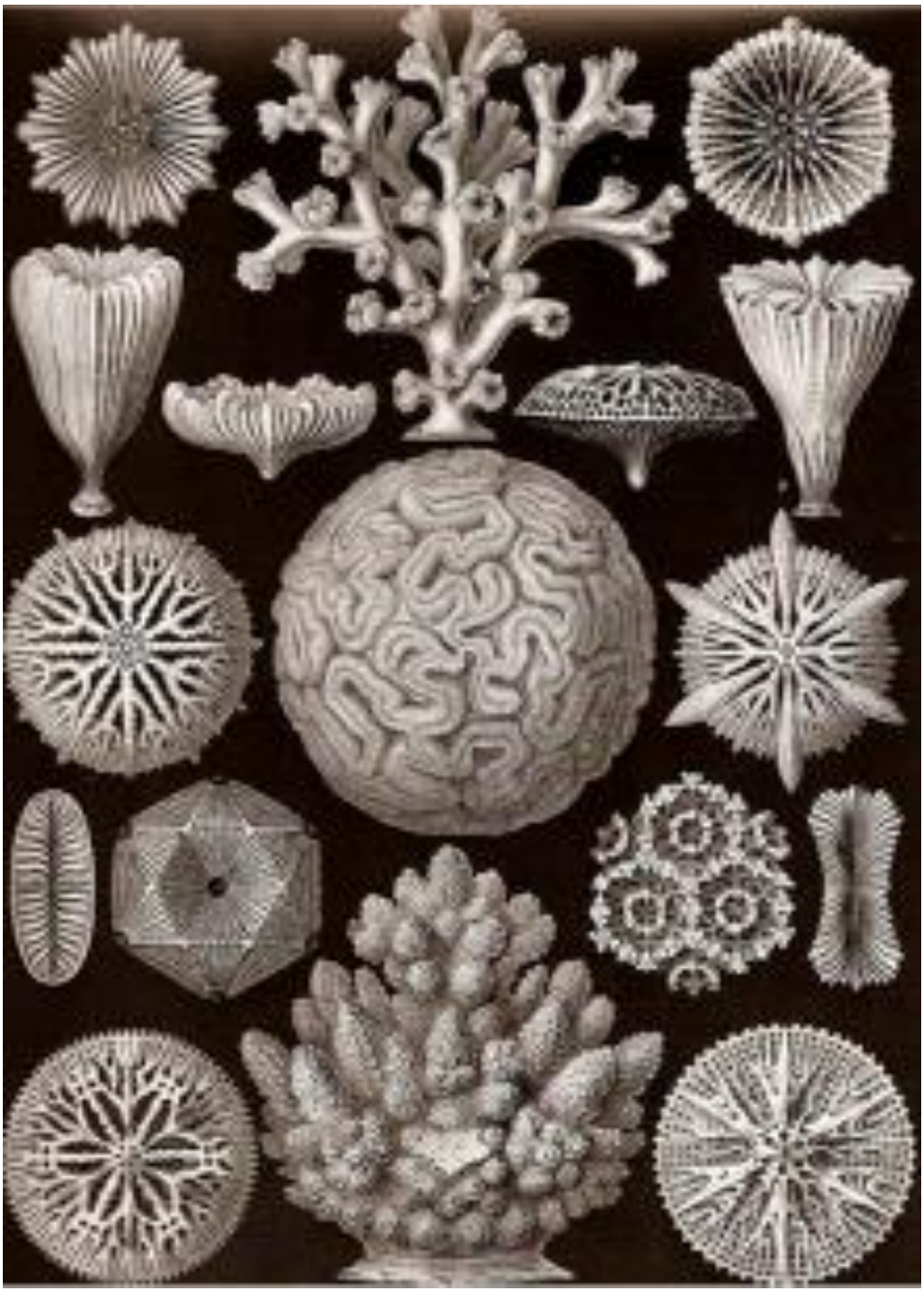

Plate X – Applied Geometry in Art: Jewellery of some polyps of hexacorals

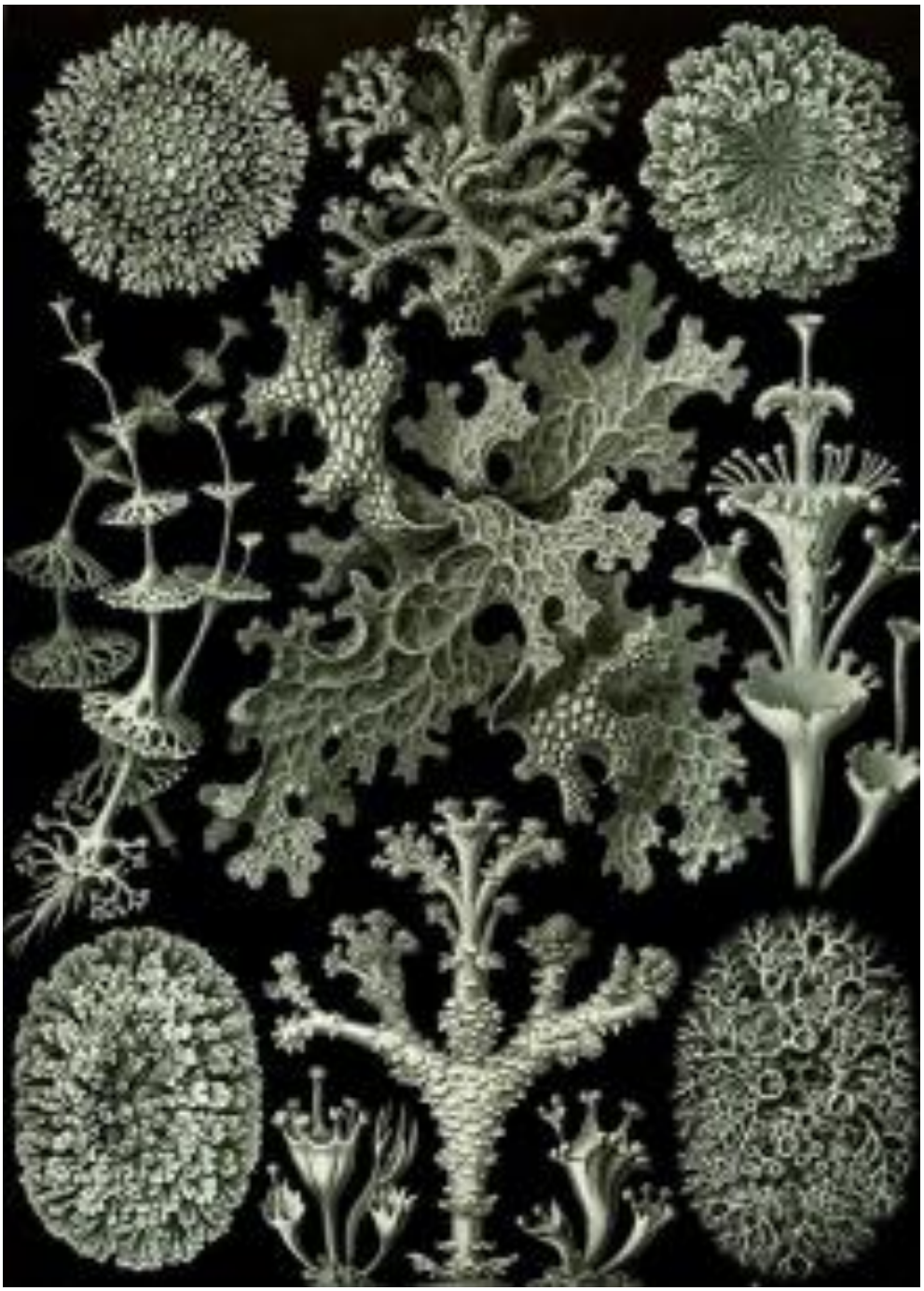

Plate XI – Different species of lichens – undying jewellery

Plate XII – Nature does not lack imagination - Mycetozoa

Plate XIII – Patent of nature - logarithmic spiral:
a. of the Nautilus shell; b. hurricane c. constellation

Plate XIV – The beauty of flowers

Plate XV – Huge ugly smelling flowers

Plate XVI – Biosystems: flowers and humming birds

Plate XVII – Biosystems: flowers and butterflies pollinators

Plate XVIII – *Ophrys insectifera* and *Gorytes*

Plate XIX – False pairing in *Gorytes*

Plate XX – Monkfish

Plate XXI – Mullerian Mimicry

Plate XXII – Caterpillars imitating species of snakes

Plate XXIII – Spiders imitating bird droppings

Plate XXIV – Kallima inachus and Phasmids imitating leaves

Plate XXV – A lizard that imitates a leaf during autumn

Plate XXVI – Disappeared animals into the environment

Plate XXVII – Animals that are confounded with the environment

Plate XXVIII – The Owl head butterfly and death's head

Plate XXIX – *Mantis* making the demonstration

Plate XXX – Mantidae that mimic the flowers with a perfect art

Plate XXXI – Nature a brilliant sculptor

Plate XXXII – Flowers that mimic the body of monkeys

Plate XXXIII – Flowers that mimic some birds

Plate XXXIV – The Flower woman and fruits that mimic skulls

Plate XXXV – Monstrous predators - Dinosaurs

Plate XXXVI – Hideous frog

Plate XXXVII – Ugly animals from caves: vampire bats

Plate XXXVIII – Nocturnal ugly animals

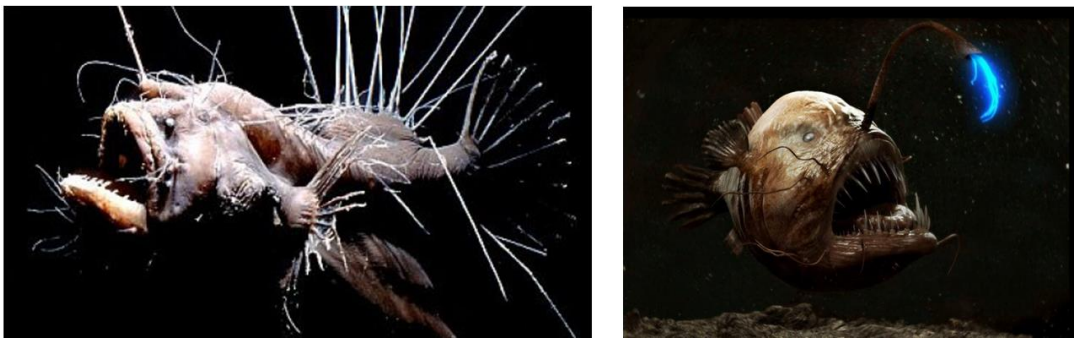

Plate XXXIX – The ugliness of abyssal animals

Plate XL – "The grumbler" or the "sadistic satisfaction"

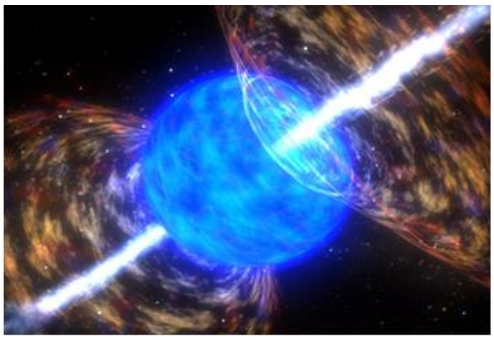

Plate XLI – The explosion of a supernova and the largest supernova



Plate XLII – Sunrise, sunset and aurora borealis

Plate XLIII – Spring

Plate XLIV – The joy of life in Spring

Plate XLV – Autumn

Plate XLVI – The richness of Autumn

Plate XLVII – The beauty of Winter

\Plate XLVIII – The purification of the organism in Winter

Plate XLIX – The naive Art nature- monkey and: young orangutan

Plate L - The monumental Art

Plate LI – Naturkundemuseum

Plate LII - Villa Medusa

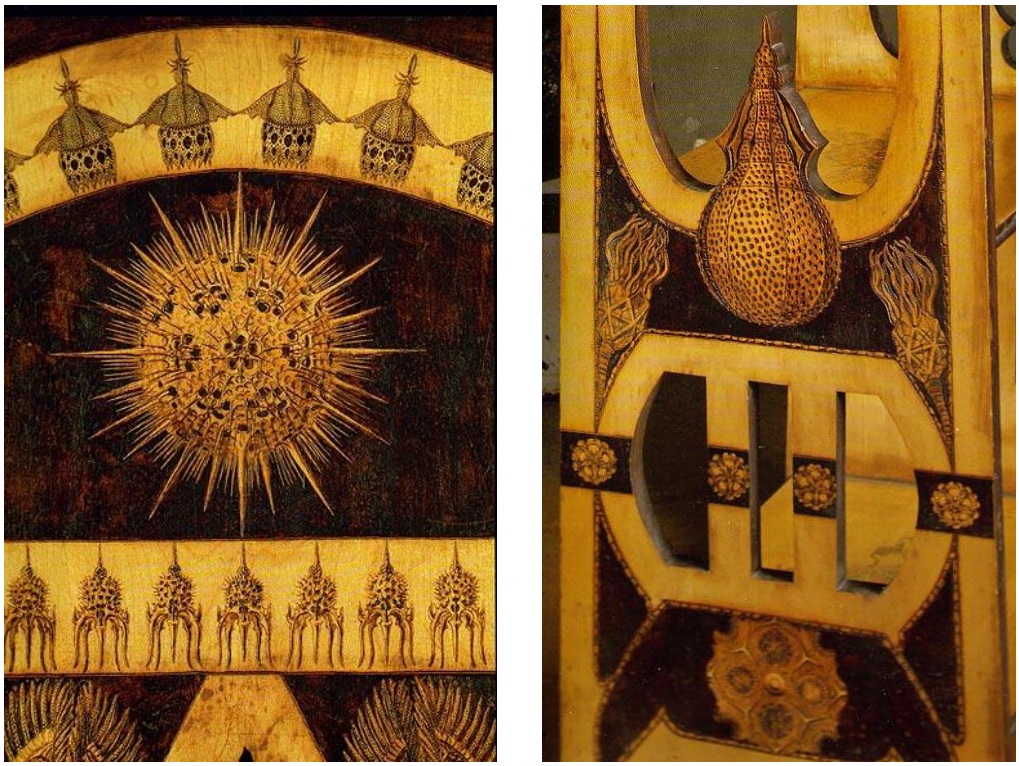

Plate LIII - Natural motives transposed into art – Villa Medusa

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