

Georg Toepfer

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2018

<https://doi.org/10.25969/mediarep/18699>

Veröffentlichungsversion / published version  
Zeitschriftenartikel / journal article

### Empfohlene Zitierung / Suggested Citation:

Toepfer, Georg: From Anthropocene to Mediocene? On the Use and Abuse of Stratifying the Earth's Crust by Mapping Time into Space. In: *ZMK Zeitschrift für Medien- und Kulturforschung*. Mediocene, Jg. 9 (2018), Nr. 1, S. 73–84. DOI: <https://doi.org/10.25969/mediarep/18699>.

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## From *Anthropocene* to *Mediocene*?

On the Use and Abuse of Stratifying the Earth's Crust  
by Mapping Time into Space

Georg Toepfer

THE TERM *mediocene* comes as a surprise. As it was introduced in the title and announcement of a conference in Weimar, it obviously can be understood with reference to media and media processes. To be sure, we are living in an era of mass media in which communication and all kinds of decision making depend on media. However, there is another understanding of the term based on the old meaning of »media«, the 19<sup>th</sup> century understanding, which referred to the world surrounding us—to the environment. With this understanding in mind, the *mediocene* would be the era of the environment. This, too, sounds very familiar to us. We are living in the era of the environment; the environment has become important for us, it increasingly is at the focus of our attention, especially the media, in which and from which we live, the air, water, and biosphere surrounding us. My contribution is primarily about this understanding of media in the sense of the environment to which we are related.

Paradoxically, focusing on media may end up not with an emphasis, but with the disappearance, the dissolution of the environment. This is because media, as devices that connect things, tend to eliminate the environment as something which is outside of the system. The effect of media is to integrate everything into the system, to dissolve boundaries, to conceptualize systems as being co-produced by their communications, i. e. by their environment. The overall effect of this binding everything together is the loss of the outside. Thus, media in the sense of connecting devices tend to eliminate the medium in the sense of the environment of a system. Or, to put it in another way: The *mediocene* as the era of the environment, or of environmental concern, is being eradicated by the *mediocene* as the era of media processes.

Although the first component in the new term *mediocene*, the medium, seems to be the more interesting one, I would like to get started with the second component of this neologism, with the *-cene*. This component is most often used in the sense of »era, age, a period of time following after another period of time.« But, as a little knowledge of Greek reveals, this is not the literal meaning of *-cene*.

## 1. *cene*-Terminology

In a letter dated January 21, 1831, the eminent geologist Charles Lyell asked the Reverend William Whewell from Cambridge for advice on naming the different strata of the Tertiary formations around Europe. In this letter there was a little table. It was a hierarchical division of the most recent periods of earth history into several formations.<sup>1</sup> On the highest level, there were first contemporary formations, and second tertiary formations. The tertiary formations, which as we know now cover the period from 65 million to 2.6 million years before present time, were divided by Lyell into the older »proliminal« and the more recent »liminal« period. For these he finally proposed another division into four periods: »asynchronous«, »eosynchronous«, »meiosynchronous«, and »pleiosynchronous.«

In the text of this letter, Lyell justifies his division of time by pointing out that he feels quite sure about Tertiary and Contemporary formations on the basis that only the latter contained human remains, »anthropites«, as he calls them. Lyell also wrote to Whewell that he was »quite sure« that his three groups of Eosynchronous, Meiosynchronous, and Pleiosynchronous are »natural.« Although he does not explain what he means by that, it seems obvious that what he means is that they were distinct formations on the basis of his methodology. What was his methodology? It consisted of comparing and counting fossils, especially of mollusks, in different regions around Europe. Lyell received his knowledge on these fossils mainly from Gérard-Paul Deshayes, a French conchologist whom Lyell visited in Paris in autumn 1830. Lyell called Deshayes »the strongest conchologist in Europe« and said that he was »acknowledged to be the Cuvier of tertiary shells.«<sup>2</sup> Furthermore, he possessed a private collection of over three thousand living and fossil mollusk species, and it was this collection that Lyell went to study with Deshayes in 1830. From Deshayes he learned to separate different geological layers on the basis of the mollusk fossils they contained. He observed the appearance and disappearance of different species, compared different layers, and characterized them by counting how many species they shared with the most recent layer, the contemporary formation.

By using this method, Lyell distinguished four tertiary formations. His quantitative criterion for their distinction was that the oldest layer, the Asynchronous formation, does not share any fossil mollusks with the contemporary formation; the Eosynchronous had about 1%, the Meiosynchronous about 30%, and the Pleio-

<sup>1</sup> Charles Lyell: [Letter to William Whewell, Jan. 21, 1831], in: Leonard G. Wilson: Charles Lyell. The Years to 1841. The Revolution in Geology, New Haven 1972, p. 305.

<sup>2</sup> Martin J.S. Rudwick: Worlds before Adam. The Reconstruction of Geohistory in the Age of Reform, Chicago 2008, p. 287.

synchronous about 65 to 95% of fossil species in common with the contemporary formation.

At that time not only Lyell used the method of counting the number of species in different locations and calculating the proportion of overlap with recent faunas. It was also used by the German geologist Heinrich Bronn who provided »statistical tables« in a book that appeared in 1831.<sup>3</sup> In this table, the last column gives the proportion of the fauna of one region relative to the recent fauna in decimal terms.

Bronn and Lyell performed these calculations and reached similar conclusions on how to divide the tertiary formation into subformations. Lyell, however, wasn't happy on how he named these strata. Therefore, he sought expert advice and wrote the letter I mentioned earlier to William Whewell. And Whewell responded after ten days, on January 31, 1831:

»The termination *synchronous* seems to me to be long, harsh, and inappropriate. For the fact to be described is not that the species are contemporary *with us*, the wretched materials for future *anthropites*; but that they are identical with *recent* species which we take for our type of comparison. I would therefore use a term expressing either *identical* or *recent*; perhaps better the last. Then your terms would be 1 aneous, 2 eoneous, 3 meioneous, 4 pleioneous.«<sup>4</sup>

However, in a postscript to this letter, Whewell added another proposal that he preferred to his first. He wrote: »It has occurred to me that *kainos* is a better word than *neos*, and I propose for your four terms, 1 acene, 2 eocene, 3 miocene, 4 pliocene.« These terms appeared to Whewell to be »shortest and best.«<sup>5</sup>

Lyell agreed with Whewell as he happily adopted this last proposal—and ever since, so do we. We may call this letter by Whewell, dated January 31, 1831, the birth of *cene*-terminology.

In his book, the third volume of the *Principles of Geology*, that appeared two years later, Lyell wrote: »We derive the term Pliocene from *pleion*, major, and *kainos*, recens [this is the Latin word], as the major part of the fossil testacea of this epoch are referrible to recent species.«<sup>6</sup> So this is the meaning of the term. The component *-cene* is derived from Greek *kainós* which means »new, fresh, recent.« *Pliocene* means »predominantly recent«, as most of the species found as fossils in these strata have survived to recent time. Correspondingly, *Miocene* means *meios*, or that few

<sup>3</sup> Heinrich Georg Bronn: Italiens Tertiär-Gebilde und deren organische Einschlüsse, Heidelberg 1831.

<sup>4</sup> William Whewell: [Letter to Charles Lyell, Jan. 31, 1831], in: Wilson: Charles Lyell (as note 1), p. 306.

<sup>5</sup> Ibid., p. 307.

<sup>6</sup> Charles Lyell: Principles of Geology, Vol. 3, London 1833, p. 53.

of the fossils in these strata are recent, and *Eocene* refers to the *eos*, the dawn or the faintly recognizable beginnings of recent fauna. Later, in the 1860s, this terminology was completed with the most recent term *Holocene*, which means »wholly or entirely recent« because all of its fossils belong to species still existing nowadays.

Consequently, *Mediocene* literally means »Media of the recent time, recent media.« As it is a word combining a Latin and a Greek component, Lyell would not have liked it; he often opposed words which are, as he called them, a »bastard offspring of Greek and Latin.«<sup>7</sup> But this is not what I wanted to point out. We now have many »bastard words« of that kind. In addition, the component *-cene* often is taken to mean »era, age, period of time.« So, bearing this in mind, *mediocene* might be a good term because one is easily able get a quick idea of its intended meaning.

My main point in this section is that the geological practice of dividing time into a sequence or series of succeeding phases heavily depends on deposits, their quantification, and their change in time. A geological stratum could thus be characterized by a set of typical species, its characteristic fauna, *Leitfossilien*, guiding fossils, as they were called a few years later.<sup>8</sup> One example is mollusk shells selected by Deshayes as characteristic of the »Pliocene Tertiary Period.« This regular change of forms in the fossils of succeeding geological layers introduced a temporal dimension into the research field known as natural history. Traditionally, despite the use of the term »history«, this field had no temporal dimension. It simply comprised the descriptive knowledge of natural objects and the practices of collecting, observing, and systematizing them.

This understanding changed fundamentally, two generations before Lyell, in the last decades of the eighteenth century. The decisive steps were taken in the 1770s, most prominently by the French naturalist Georges Buffon, who advanced a temporal understanding of natural history in the initial sentences of his book *Epochs of Nature*. Here, he compared the history of nature to the history of mankind. He speaks of nature's archive in analogy to civic archives, and this comparison refers particularly to the level of methods, the techniques of accessing the past, and the interpretation of its remnants. In both kinds of historiography it is necessary, according to Buffon, to screen, decipher, and interpret the historical remains. In his words, »in natural history it is necessary to excavate the world's archives [les archives du monde], to extract ancient monuments from the earth's entrails, to collect their remains, and to assemble in a body of evidence all the marks of physical changes that are able to take us back to the different ages of nature.«<sup>9</sup>

<sup>7</sup> Ibid.

<sup>8</sup> Julius Ewald and Ernst Beyrich: Ueber die Kreide-Formation im südlichen Frankreich, in: Archiv für Mineralogie, Geognosie, Bergbau und Hüttenkunde 12 (1839), pp. 559-567: 562.

<sup>9</sup> Georges Buffon: Les époques de la nature, Paris 1778, p. 1.

Reconstructing the ages of nature—this was the geologist's program for the next decades. It resulted in numerous tables, diagrams, and charts of the stratigraphy of the earth, starting with James Hutton's sketch of geological strata at Siccar Point in 1788.<sup>10</sup>

The iconic logic of these pictures is diagrammatic because it consists in mapping non-spatial relations into space—in the case of geological stratification, it is the sequence of time mapped into space. The temporal sequence of different kinds of fossils is mapped as a spatial sequence of deposits. This is first done by nature, so one may think of the geological process of depositing strata as a diagrammatic operation by itself: mapping non-spatial relations into space. And this operation is reproduced in the geologists' charts that assign names and a time scale to the different strata. The criterion for age is the amount of similarity between the older fossils and the more recent ones. This logic was already established in the early years of the 19<sup>th</sup> century, e.g. by Heinrich Steffens,<sup>11</sup> and it was quantitatively applied by Charles Lyell in his Plio-/Mio-/Eocene-terminology beginning in 1831.

A particularly beautiful example of this diagrammatic logic of geological stratification can be found as the frontispiece of an 1851 textbook by the two American paleontologists Louis Agassiz and Augustus Gould.<sup>12</sup> In this circular diagram, the series of geological strata is indicated by different colours. It is not just a sequence, but also a differentiation of forms starting in the centre of the circle, with four basic body plans that unfold into diverse types as time passes. In contrast to a tree, which has roots and a top, the circle suggests a kind of equality among the forms, with no one being higher or lower than any other one. But obviously, this is not true in this case because at the top of this circle stands man, and he possesses the crown. Man, however, is not only at the top of this circle, he also is everywhere in the outermost layer of this circle, a ring shaded in grey, the »Human Epoch« as it is called (and as it was called by Lyell before).<sup>13</sup>

This epoch has been called the »Anthropocene« on the basis that human life has a massive impact, at least since the 20<sup>th</sup> century, on the functioning of the Earth-

<sup>10</sup> Jack Repcheck: *The Man Who Found Time. James Hutton and the Discovery of the Earth's Antiquity*, London 2003.

<sup>11</sup> Henrik Steffens: *Beyträge zur innern Naturgeschichte der Erde*, Freyberg 1801, p. 86: »[Die] ältern Versteinerungen sind zugleich diejenigen, die von den jetzt bekannten Thierformen am meisten abweichen«.

<sup>12</sup> Louis Agassiz and Augustus A. Gould: *Crust of the Earth as Related to Zoology*, in: *Outlines of Comparative Physiology*, ed. by Thomas Wright, London 1851, Frontispiece.

<sup>13</sup> Lyell: *Principles of Geology*, Vol. 3 (as note 6), p. 52: »Some authors apply the term contemporaneous to all the formations which have originated during the human epoch.«

system as a whole.<sup>14</sup> The question is whether the mediocene could be seen as a comparable geological epoch.

## 2. The Mediocene as a Geological Epoch?

The organizers of the conference in Weimar propose this view by considering »media and media-processes as epoch-making.«<sup>15</sup> They are a »determining force« and they leave a »permanent imprint on the world«, as they write in the conference outline.

One advantage of this view might be that it is less anthropocentric. The term »mediocene« does not focus on man as a biological species with a certain structure of its body that would leave characteristic deposits in geological strata. Rather, it refers to man as being part of a transformative process activating and bringing into contact many diverse things.

This also means that the mediocene, as I understand it, is not about individualized objects known as fossils. In the mediocene, the deposits consist of interrelated objects of inorganic, organic, and anthropogenic origin; the deposits are de-individualised forms that do not correspond to a single individual or species that once has been alive.

Another advantage of the term might be that it does not refer exclusively to material processes. Apparently, the mediocene is about media, and media always have a non-material dimension. One of their essential points seems to be that they establish relationships, and these can be fairly immaterial. In reviewing important media of the past, from railroad tracks to telephone wires to mobile phones, one can get the impression that there is a decreasing amount of matter involved. To be sure, all these media will leave their material traces—in particular the rare-earth elements residing in our mobile phones—in the geological record. However, in my understanding, material deposits are not the essence of the mediocene.

This even seems to be a distinguishing feature of the mediocene: In contrast to traditional geological strata, the mediocene does not primarily refer to deposits but to a shift in the importance of media. The story of the mediocene is not a story about deposits, but about entanglement. The new thing is not just a new deposit that is added to the shells and mineralized bones of fossil species, it is not that man's deposits can be found everywhere on the globe. This is true of many

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<sup>14</sup> Paul J. Crutzen and Eugene F. Stoermer: The »anthropocene«, in: *Global Change Newsletter* 41 (2000), pp. 17–18.

<sup>15</sup> Program for the Conference »The Mediocene«, Internationales Kollegs für Kulturtechnikforschung und Medienphilosophie (IKKM), Weimar, May 31 – June 2, 2017.

other organisms as well. The major change is that the environment becomes part of a singular managed global system. Thus, the new thing of the term refers to a shift in the relationship between life and its environment, a radical shift, a turning point. So the term introduces a dichotomy: we have, on the one hand, the *mediocene* and, on the other, everything before—the *amediocene*, if you will.

In order to get a clearer understanding of this turning point, I would like to focus on the traditional understanding of the relationship between organism and environment.

### 3. The Organism and its Medium

In the German tradition of the philosophy of biology, especially in theories of the organism, the environment is usually depicted as being the complement of an organism. In diagrammatic representations, the organism is shown as a network of interrelated elements that is clearly separated from its surroundings and which forms a kind of integrated holistic system. However, despite its physical closure, the system of the organism is somehow related to its environment. There are activities from the organism that are directed towards its environment and there are reverse influences from the environment on the organism.

However, the main point in the classical understanding of organisms is that their environment is not part of the system. Although there are interactions between the organism and its environment, these interactions are clearly distinct from the interactions between the parts of the organism. Within the organism the parts mutually depend on each other, they stand in a relation of interdependence; no part would exist without the influence of the other parts of the system. In contrast to this, the relationship of the organism towards its environment is merely a unidirectional action or, in some cases, an interaction: The organism as a whole may depend on certain elements of its environment, but these elements do not necessarily depend on the organism. Most terrestrial organisms depend, for example, on the sun, but the sun does not depend on terrestrial organisms. Therefore, the sun is part of their environment and not of the organism itself.

This is the traditional view of the environment as a given, as something which does not form part of the system. However, many organisms are able to transform their environment to suit their needs. Well-known examples are these: Birds build their nests by using twigs and leaves they find in their environment, and beavers even log trees to construct their dams for protection and food supply. These are clear examples of «niche-construction», as biologists call it: animals constructing their own environment. In these cases, one may think of the animal together with the transformed parts of its environment as a system of a higher order. Like the



organism, it is a system of interdependent parts: the dam depends on the existence of the beaver, and the beaver in turn depends on its dam.

In man, this capacity to transform the environment has been brought to perfection. Some anthropologists—most notably Arnold Gehlen in his classic *Man, his Nature and Place in the World*—have even grounded their definition of what man is on this capacity. Gehlen wrote in 1940: »Man is incapable of surviving in truly natural and primitive conditions [...]. He must make up for his loss of means on his own by actively transforming the world to suit his own ends.«<sup>16</sup>

This transforming activity could also be expressed by saying that man converts the environment into a part of an encompassing system. To my understanding, this is the fundamental process of the mediocene. During this process, the environment changes its status from nature to culture or technology. Interestingly, this change has also taken place in the conceptual history of the term »medium«, to which I will now briefly turn.

#### 4. The Shift of Media from the Environment (Nature) to the System (Technology)

The 19<sup>th</sup> century meaning of the term »medium« was »environment«. It especially referred to the natural elements such as water, earth, fire, and air. To give just three arbitrary examples for this usage: »To maintain the living organism, a certain external medium must be present« (1863)<sup>17</sup>; »The external conditions of existence« is [...] the correct definition of the Medium« (1868)<sup>18</sup>; »[the] relation of Organism and Medium is [...] the most fundamental of biological data« (1868)<sup>19</sup>.

At the end of the century, when microorganisms were cultivated in the laboratory, the term was applied to the substance in which these organisms are cultured. These are the culture media. Media in general, then, are material structures and conditions in which living beings sustain and unfold their lives.

The term was so important for biology that an entire discipline, or at least sub-discipline, of biology was proposed for the branch of science that deals with the relationship between organisms and their environment. Its name was *Mesology*. The term was introduced in 1860 by the French naturalist and statistician Louis-Adolphe Bertillon. He defined mesology simply as the »science of the media« (*»science des milieux«*) or of the mutual relationship existing between living beings

<sup>16</sup> Arnold Gehlen: *Man, his Nature and Place in the World* (1940/62), translated by Clare McMillan and Karl Pillemer, New York 1988, p. 29.

<sup>17</sup> Transactions of the Medical Society of the State of New York 1863, p. 28.

<sup>18</sup> The Fortnightly Review 10 (1868), p. 64.

<sup>19</sup> Ibid., p. 63.

and their surroundings.<sup>20</sup> Bertillon thought of the medium, or milieu, as something on an equal footing with the organism. He was interested in the reciprocal relationship between organism and environment, the one influencing the other and vice versa. For biology, this was important at that time because Lamarckism, the inheritance of acquired characters, still was a valid option.

But this symmetrical understanding of the medium—not as an instrument but as a determining force—gradually disappeared since the end of the 19<sup>th</sup> century, when the term ›medium‹ was increasingly applied to the channels of mass communication, to newspapers, radio, television, etc. With this new understanding, media were seen predominantly as instruments, devices that were designed and used for intended purposes.

I have the impression that the idea of a *mediocene* goes back to the older, symmetrical understanding of the term ›media‹ in the 19<sup>th</sup> century, when they were not seen as instruments but as forces influencing and forming organisms. With this symmetrical understanding of organism and medium—one influencing and shaping the other—a new system of interaction and of interdependence is established—which is the *mediocene*. In the *mediocene*, media bind and couple things together, whether they are inorganic, organic, or anthropogenic. The result of this coupling is that the organisms, at least the human organisms, are amalgamated with their environments. Man becomes inseparable from his environment.

## 5. The »Dissolution of the Environment« and Universal Interrelatedness

»We are in everything«, as the German author Andreas Maier has put it in a melancholic essay with the title »Nature Was Yesterday.«<sup>21</sup> We are even in our songbirds in the garden, such as the robin. It is not pure nature anymore, it exists in habitats that we have created, and it is an object of our concern and care.

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<sup>20</sup> Louis-Adolphe Bertillon: *Revue de biologie*. Presse scientifique des deux mondes, in: *Revue universelle du mouvement des sciences pures et appliquées* 1 (1860), pp. 119-131: 124/5; cf. id.: *Mésologie*, in: *Dictionnaire encyclopédique des sciences médicales*, 2e série vol. 7 (1873), pp. 211-266: 211/2: »Mésologie [...]. Science des milieux, ou science qui a pour objet la connaissance des rapports qui relient les êtres vivants aux milieux dans lesquels ils sont plongés: c'est dire que cette science s'efforce de découvrir les influences réciproques que les deux termes en présence, le milieu et l'être immergé, exercent l'un sur l'autre, ainsi que les modifications qui résultent pour chacun d'eux.«

<sup>21</sup> Andreas Maier: *Natur war gestern*, in: *Die Zeit*, Nr. 13, March 24, 2011, p. 49: »Natur war gestern [...] Es gibt keine Wiese und kein Rotkehlchen mehr, die von uns unberührt wären. [...] Sie (Wiese, Rotkehlchen) sind, und ich meine es gar nicht metaphorisch, neuerdings nur noch Existenzen von unseren (technischen) Gnaden. [...] Es bedeutet,

This outcome of dedifferentiation can be seen as a product of media. Media are the devices that eradicate dichotomies, e. g. the dichotomy of nature and culture, or nature and technology. Bound together by media, one cannot tell anymore where nature starts and technology ends. As I understand it, in this activity of providing connections media are comparable to narratives: both supply relations, and put into contact.

By their capacity to bind things together, media make the medium disappear. In the mediocene the media are becoming part of the system. Consequently, the beginning of the mediocene is the point in history where the medium has vanished. In his 2013 Gifford Lectures *Facing Gaia*, Bruno Latour called this step the »dissolution of the environment.«<sup>22</sup> He writes:

»The humblest props now play a role, as if there were no distinction any more between main characters and the environment drawn around them. Except for deep molten rocks inside the Earth and deep space beyond the thermosphere, every single element of the background is brought to play its part in the foreground. Every thing that was a mere intermediary for transporting a strict concatenation of causes and consequences becomes a mediator adding its grain of salt to the narrative. In Lovelock's terms, life and climate evolve together and function as two sides of the same phenomenon.«<sup>23</sup>

The only true environment that is unaffected by the nature-culture system on earth and which still remains as untouched but essential environment is extraterrestrial. It comprises particularly the sun. The sun certainly remains environment because it is not altered by terrestrial agents. Perhaps this will change at some point in history; perhaps future intelligent beings on earth—or elsewhere—will be able to regulate the process of nuclear fusion which takes place in the sun. Then, the sun will also be part of one gigantic system which may have lost its environment completely.

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dass ich nur noch in einem holistisch geschlossenen Menschenraum lebe, der bis an die Grenzen von Menschenwillen und Menschentaten und Menschensünden angefüllt ist. Dass ich in einer Welt lebe, in der ich, selbst wenn ich ein Rotkehlchen sehe, die gesamte zivilisatorische Menschheit in diesem Rotkehlchen mitsehen muss. [...] Es gibt nichts mehr ohne uns. Wir sind in allem.«

<sup>22</sup> However, this phrase does not appear in the version of the lecture which was published as a book with Cambridge University Press in 2017. It only occurred in the manuscript which circulated before the book was published: Bruno Latour: *Facing Gaia. Six Lectures on the Political Theology of Nature. Being the Gifford Lectures on Natural Religion*, Edinburgh, 18<sup>th</sup>–28<sup>th</sup> of February 2013, p. 69.

<sup>23</sup> *Ibid.*, p. 63. The version of this passage published in the book is much less clear; cf. Bruno Latour: *Facing Gaia. Eight Lectures on the New Climatic Regime* (2013), Cambridge 2017, Third Lecture.

In science fiction novels, worlds of this kind already exist, e.g. in Stanislaw Lem's *Solaris*. »Solaris« is the name of a distant planet that is almost completely covered with an ocean that appears to be a single planet-encompassing organism. Lem describes this organism in the following manner: »unlike terrestrial organisms, it had not taken hundreds of millions of years to adapt itself to its environment—culminating in the first representatives of a species endowed with reason—but dominated its environment immediately.«<sup>24</sup>

So Lem claims that this ocean-organism still has an environment, but that it is dominated or controlled by the ocean. Therefore, one might also think of an entity which is dominated not as an environment, but as a part of the organism. In Lem's imagination the ocean is even capable of exerting an active influence on the planet's orbital path.

This organism really seems to be a *Fechneria mirabilis*, as Ernst Jünger termed an individual superorganism of planetary dimensions.<sup>25</sup> And this naming *Fechneria* points to the fact that already in the 19<sup>th</sup> century there were visionary ideas about global systems of interdependence, a »terrestrial total organism« (*irdischer Gesamtorganismus*) as Gustav Theodor Fechner called it in 1848.<sup>26</sup>

This ecological idea of a global system of interconnectedness has now also been propagated by the Catholic Church. In the encyclical *Laudato si'*, published in 2015, Pope Francis puts forth an »integral ecology« which is characterized by these claims: »everything is interrelated« (120), »Nature cannot be regarded as something separate from ourselves or as a mere setting in which we live. We are part of nature, included in it and thus in constant interaction with it.« (139); [there is a] »universal fraternity« (228); »[t]he world, created according to the divine model, is a web of relationships. [...] Everything is interconnected.« (240)<sup>27</sup>

All non-human beings are explicitly included in this picture of interconnectedness. An intrinsic value is even assigned to non-human species. This is a remarkably modern approach inspired by ecological thinking of our time. However, it seems to be difficult to understand how this could be a Catholic position, since the

<sup>24</sup> Stanislaw Lem: *Solaris* (1961), translated by Joanna Kilmartin and Steve Cox, London 1971, Chapter 2.

<sup>25</sup> Ernst Jünger: *Grenzgänge* (1965), in: *Sämtliche Werke*, Bd. 13, Essays VII, Stuttgart 1981, pp. 175–192: 186: »Ist überhaupt Individuation notwendig? Heberer, mit dem ich darüber korrespondierte, bejahte es. Ich könnte mir Welten denken, die von einem einzigen Wesen besiedelt, plasmatisch überwuchert wären von einer *Fechneria mirabilis* als universalem Individuum.«

<sup>26</sup> Gustav Theodor Fechner: *Nanna oder über das Seelenleben der Pflanzen*, Leipzig 1848, p. 308.

<sup>27</sup> Pope Francis: *Laudato si'* (2015), Encyclical Letter of the Holy Father Francis on Care for Our Common Home, under: [http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco\\_20150524\\_enciclica-laudato-si.html](http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html) (1 February 2018).

idea of ecological interrelatedness is far more difficult to reconcile with Catholic dogmas than is the idea of genealogical descent. Descent seems to be much more compatible with the idea of God as a central agent and with man having some exquisite position in the cosmos. In contrast, the idea of universal interrelatedness, i. e. the mediocene, as I understand it, does not leave much room for central agents and hierarchical top-down interventions. But this is not my problem and I leave it to Catholic thinkers to solve it. There are many of them, even among the prominent predecessors of the mediocene, such as Teilhard de Chardin, McLuhan, and Latour.

To sum up: I started with Lyell and the practice of geological stratigraphy to separate different deposit strata on the basis of their relative amount of recent species. For this purpose, Lyell, with the assistance of William Whewell, designed the terminology of ›Eo-‹, ›Mio-‹ and ›Pliocene‹ as formations of the tertiary. I then turned to the Mediocene and explained that in my view it is different from geological epochs insofar as the mediocene is not a story about physical deposits, but is about relational entanglement. The major change taking place in the mediocene is that the environment has become part of a singular managed global system. This innovation refers to a shift in the relationship between life and its environment, a radical shift, a turning point. This introduces a dichotomy between *amediocene* and *mediocene* which also generates a kind of paradox because in the *amediocene* we have a clear separation between organisms and their environment. Thus there still is a medium in the classical 19<sup>th</sup> century sense, whereas in the mediocene the media have coupled everything together to the point where there is no environment left, to the point where the system is everywhere. This means, paradoxically, that we have lost the medium in the mediocene. I further tried to show that there has been a change in the conceptual history of the term ›medium‹, from the 19<sup>th</sup> century, when it was associated predominantly with the elements of nature, to the 20<sup>th</sup> century, when it came to designate technological devices. A third change would be in the mediocene where everything comes together and in which the sharp distinction between organism and medium no longer makes sense. My final step was to present some positions embracing the new universal interrelatedness in the mediocene, namely Bruno Latour's theoretical approach, Stanislaw Lem's science fiction story about the ocean that controls its environment, and Pope Francis' Catholic ›integral ecology.‹