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The cosmic carousel of life

It regulates the evolution of the Earth,
it also influences the evolution of mankind

„The Earth is a small stage in the big theater of the cosmos."
Carl Sagan, *"Pale Blue Dot"*

Duesseldorf, March 2003,

Appendix

Preface

You have never read a single report about so many astonishing discoveries before. You have never had the possibility before to improve your knowledge in so many areas of science in so simple way. And you have never had the opportunity to it before to support the spreading of so many generally useful applications of science.

The Newtonian physics may have been maybe romantic. The physics of the 20th century may have been very exciting. But the physics of the 21st century must be practically applicable in particular if the physicists should keep their leading role in the science and technology.

This is not an academic text-book. It was not my aim to write a book that should be comparable with the hardly readable milestones of the scientific literature that have been written for example by Copernicus, Newton or Darvin. This book is much more a report describing the original scientific ideas leading to some fascinating discoveries and the seemingly unbelievable consequences of these discoveries. These discoveries unify not only the motion of the heavenly bodies and the structure of the Universe with the long history of the terrestrial life, but also with many other domains of science, like relativity, quantum physics and the modern technologies - first of all the nanotechnology, biotechnology, and new materials.

If it sounds unbelievable for you, note just the following fact. There is only one nature; and this nature is governed with some fundamental, universal rules. If we succeed to understand at least some of these fundamental rules, we will understand much better than previously, how the nature works. Exactly this has happened to myself in the recent two decades. This book is reporting at the first time about some really fundamental rules of nature. The next books about this discovery will surely be much easier to read. But if you wish to read the story in its original version, try to read this book now.

1. Preparing the stage
(The prehistory of our Solar System)

1. 1. Introduction

The goal is...

One writes a book in order to inform some people about something, which one considers interesting, important or entertaining. This book is written for all people, who are interested in science. It should introduce a reorientation in our scientific understanding of the natural phenomena to the beginning of the new millennium.

The twentieth century has quite clearly shown that scientists - and their sponsors - have to be aware of their continually growing responsibility for the technological transformation of the Earth. Comparing with the age of the Earth, our species is first relatively late appeared on the cosmic stage, in order to participate at the grand drama „Nature“. Despite our late entrance, however, we have already altered a large part of the stage until today. The changes caused by us people on the Earth are not to be overlooked.

What is however so particular with this unique drama of life? Which role does human race play in it? Firstly, it is no performance of a classical opera with well-known arias that are played here on the stage „Earth“. This is a serious live-and-death game. There can neither be a rehearsal nor a repetition from it. The scenario is created currently, like at the front of a working camera. Secondly, it depends on us personally, whether we want to play a good, a bad or no role at all in this game.

Every one of us has probably thought already once about the future of the mankind. A realistic forecast can be derived only from our collective experience. The enormous advance during the twentieth century in the scientific understanding of our world allows us to hope for a credible prognosis for the further development of the mankind.

In this book you will read about the presently accepted scientific theories that have to be updated or corrected. You will see what such corrections have in common with the cosmic carousel of life. You will also experience, how deeply one must go back into the bases of the scientific description of the Universe in order to find the possibilities for such corrections. However, you could be spared from the history of my personal, long-time hike through the substructure of physics. If you belong

to the studying readers or if you wish to apply Naturics in your professional job, I have summarized the most important information for you in the appendix.

I hope, dear reader, that after the reading in that book you will see our cosmic home in a new light and you will better comprehend its fascinating, although amazingly simple structure.

Nature is...

What is nature, everyone knows. Let's ask several people about it however, would probably give everyone of them a different reply. Is there a generally valid answer for this question? I am sure, yes. Such an answer must exist, because there is only one nature. If we all really understood this unique nature, we would also give the same description of nature always.

You do not yet know such a generally valid description of nature? No problem. You are not alone in this situation. Despite all sciences, which people have invented to this purpose, and despite centuries of our large experience in the practical description of nature, there is still no scientist who knows the final definition of nature. And maybe, there won't be such a scientist also in the future.

Nevertheless, we people will never give up the search after an ever better answer on this question: What is nature? Our entire scientific and technical knowledge has originated only through this interest. Maybe, also our whole culture that we have created as heirs of the former civilizations is also only a multiple expression of the never ending search after the answer on this simple question.

In this book, we want to consider many aspects of a general description of nature from the most modern view of the 21st century. In order to be able to concentrate ourselves on a certain sequence of the thoughts and ideas, we first try to use a simple, or even a primitive substitute of the definition of nature. As „*natural*" we will view everything, which was not created by human hand in principle. The nature itself therefore could be described as „*the Universe around us that has not originated through our help*".

After this simplifying definition, everything older than one to three million years surely belongs, or has belonged, to nature itself. There were simply not yet *Homo*

sapiens before this time. Quite similarly, everything outside the present-day Solar System - with the exception of the few spacecraft, which have already flown to outside of the Solar System - is also such pure natural object. If you like, we even include any intelligent creatures that possibly could exist there „outdoors" to our definition of the natural objects.

We are...

Are we ourselves not also only a product of nature? Surely yes if considering purely philosophically at least. However, this environment-conscious point of view doesn't take us further in our intent to describe nature. We must see ourselves, at the moment at least, as a factor outside nature.

This situation has originated because we people want not only to understand nature. We also want to be her „masters" or at least to have a control about her. Therefore, we must consider ourselves as protagonists acting outside nature. In some situations, as in the question of the environment pollution, we must even consider ourselves as opponents of nature. From this „external" perspective, we have presumably better chance to correctly understand the natural, unadulterated connections and processes. Only when we have understood them properly, we have the possibility to successfully realize our „interventions" into such processes, as, for example, the cure of illnesses or the manufacturing of new medicines.

A cosmic hierarchy is...

The history, that we tell you here, is a history of a hierarchy, in fact a cosmic hierarchy. What this exactly means, we try now to explain with help of a simile.

Let's us imagine, we are in a large amusement park and sit on a big carousel. It is tremendously big. We hardly see over its edge. Let's us also imagine, we sit on it with our whole family and all our friends, already rather long time.

The carousel is no just a simple revolving machine. With a more exact contemplation, we notice that our carousel, with all our relative and friends, is a part of a much bigger carousel. It is solidly connected with a long, arched arm over our heads with the rotation center of the bigger carousel. Also other, similarly

looking carousels rotate around the same center. Every one of them is connected with the center of rotation through an individual arm. The loud music in our proximity, the shouting and the fat smoke-clouds from the cigars of our relationship prevent us from the observation however whether the other carousels are also so filled with life, like our own carousel.

If we look into the distance even further, we notice that also another mighty arm protrudes from the rotation center, at which we have just looked. We look along its bow now and we recognize that it ends into a similar, merely many „fatter", center of rotation. Several such multi-stage carousels, that we have just described, rotate together around this fat center.

After some time, if we are allowed to play with binoculars, we find out that even this „fat" center of rotation is not yet the true middle of the whole carousel in our park. We recognize then another, still „fatter" step of the whole rotation, whose „members" are interconnected with still „fatter" arms with one „super-center" of the whole rotation. First then we comprehend, what it means that we celebrate our current existence on a hierarchically built carousel.

A moment later, in the middle of the celebration, something startling happens without early warning. The good mood of our mother is away. Her beautiful party-clothing has been ruined suddenly. It was sprayed quite blue. We only now notice that the bent arm to the neighboring rotation center of the carousel now stands exactly over our heads. This blue paint, that causes stains on the clothing of some passengers so ugly, drips from some small nozzles on this arm. However, we determine with astonishment that the rest of the clan celebrates quite vigorously further. No one seems to notice something from the „accident" concerning only a few. Only our grandfather gives the mother a sack with clean clothes. Could he foresee this „misfortune"?

We ask intrigued the grandfather. And we are amazed again that he confirms our supposition. We experience that this happens to some of the passengers relatively frequently. Always then, if one rotates under this connection-arm, the danger exists that one becomes splashed colorfully from above. It is no catastrophe however. One then simply changes the clothes and celebrates further.

Then the grandfather becomes more thoughtfully and explains some more details. Now and then, it comes more badly however. In fact then when our whole

carousel, with all guests in there, passes exactly under the bigger connection-arm. It drips not only from this arm, but it rains a colorful „broth". Whoever is caught without an umbrella then is truly poor at it. Also the whole carousel must be cleaned after everyone such „run".

Then, he tells us about a true dare that is still in store for us. If the whole group of the carousels moves under the super fat bow, which we have seen with binoculars, it must go through a „water-wall" through. It is already no colorful rain more but several water-cannons, which can hurl the careless passengers away from the carousel.

But have no fear. We won't want to longer celebrate anyway. Before it would be so far, we will get out and go home. One tells however that for some completely wild guests, which want to celebrate the whole night, still another escalation of the dare is intended. One can namely still wait for another revolution of the „higher level" of the carousel being completed. One is then pulled through a huge waterfall that one can leave only with a slingshot-seat. The longer one can endure under the masses of water, the bigger is the price and the fame of the intrepid passenger. However, our grandfather does personally know nobody, who would have won the main-price.

We rather use the possibility to get out in time, and go back peacefully home.

In the real life, we live also on one similarly built, hierarchical carousel. The big disadvantage of the real carousel is however that we can never leave it. This carousel is our single home. Not even with a slingshot-seat, we could escape from a forthcoming threat. We always must go through each cosmic „wall" completely through. And such a cosmic wall consists of scraps and blocks of water-ice more than of drops of liquid water. It is thus very important to know exactly what of events are waiting for us.

Since it deals in reality about a dynamic order of such cosmic objects like the Sun, the Solar System, the stars and galaxies, we speak specifically of a Cosmic Hierarchy of the Sun. We mean our hierarchically built cosmic home by it. Our investigation in this book explains the true structure and the repetition-frequency of the cosmic *rain*, the cosmic *water-cannons* and the cosmic *waterfalls*, which we have to cross during each next *dare*.

We name a cosmic connection-arm between a member of the hierarchy and the corresponding rotation-center of the cosmic carousel shortly as an „energy-bridge" of the given level of the hierarchy. The necessary energy, which connects a smaller carousel with its higher, accordingly bigger center of rotation, is transported along this „energy-bridge". Of course, there are no arms from steel in the Universe, which had filled this role on our racket-place. To a rather harmless colorful rain on the racket-place corresponds in reality more or less fat „wall" from rock stratum and ice-scraps, which practically amount the energetic connection. With the smallest hierarchy-levels, that we simply number from one to three, are meant the mostly slight objects, which cannot endanger us on the Earth seriously. Nevertheless, they surely could kill everyone, who stays by chance too close to the position of their collision with the Earth. Also those smallest cosmic objects collide with the Earth with speeds, which would let each rocket to follow far behind them.

The middle levels of the hierarchy - four to six - is already connected with more dangerous collisions. The showiest witnesses of such events are the numerous impact craters on all solid bodies of the Solar System. Such events on the Earth had always led to local environmental catastrophes, which have influenced the terrestrial life correspondingly.

The three biggest levels of the hierarchy represent so huge collisions that we no longer can treat them as dare solely. In such cases, the task is already the bare survival on the Earth indeed. The *primates*, our own biological order, had not yet had to experience such an event. It is also questionable whether we, the highest developed species of the *primates*, would be able to survive such a collision. However, until it is so far, we have some millions of years of time in order to learn. You have the possibility to read even more about such collisions in this book.

From where do we know that everything? In this book, we will report much about the already known relations, but even more over the absolute new. We experience, for example, that a cosmic „rain" of the seventh level had killed the last dinosaurs 64.975 million years ago. The two last events of the step eight, which have taken place 554.663 and 259.462 million years ago, has almost brought the whole evolution of life to a halt. The so far single event of the level nine that we can prove in the Solar System had brought all the prior objects of the Solar System literally to cooking. Some of these objects were exploded, as the small „brother" of

the Sun. Some new were formed against it, as the gigantic gaseous planets or the Moon.

Our cosmic carousel rotates since already several billion years. Its regularity, the periodicity of the corresponding events of the Cosmic Hierarchy – the periodicity of the quantum jumps, as we name them - is truly astonishing. In order to do this regularity for us useful, we define a cosmic clock of these events here. What impresses me, as physicists, professionally at the most is the fact that this whole, actually unimaginably large hierarchy can be defined in all its aspects by means of a single quantum number. If we have found this number once, we are able to learn incredibly many things over our cosmic home, our past, and also about our future. A partial aim of this book is to awaken an enthusiasm also in you for this possible simplification in our understanding of nature.

Time is...

Time is that, what we increasingly lack, if we become gradually older. The older readers understand surely easier what I mean hereby. Unluckily, such a sentimental, imprecise definition of time does not help us here. Our human time is what distinguishes the *now* from the *previous* and the *afterward* from the *now*. This human time is based on the other hand upon the astronomic time that rules the order of days, years, and millennia.

Now, we don't want to discuss about a possible existence of an absolute time. It will be enough if we only take into account the characteristic rotation-time of the Cosmic Hierarchy of the Solar System. That is exactly that time, which regulates the neat course of our history, in this book as well as also there outdoors. One speaks in such a case of a chronology of events along a timescale. As a practical length of our timescale, it is quite reasonable to adopt the longest known period of the Cosmic Hierarchy of the Solar System. The astrophysicists suspect today that the history of the Solar System should not be longer than ten billion years. We also accept that approximate value and leave all former events outside our contemplation. It should be much dearer for us to learn with this book about the real events and natural phenomena somewhat new rather than to speculate over any fantastic, not comprehensible possibilities, like the first seconds of the Universe.

Quantum jump is...

A quantum jump is exactly that, what its name describes. It is an abrupt alteration of a quantity, that means, a step-like change in a numerical value of a characteristic size, or more shortly, a jump of a parameter. From time to time, we hear also in the daily news a message that someone would like to reach (or has already reached) a new quality through an accordingly big quantitative jump. In the case of our Cosmic Hierarchy, a quantum jump means a completion of a certain period of a certain level of the hierarchy, together with crossing the corresponding „energy-bridge", including the sometimes dramatic climatic consequences of such event. Such a completion can be followed by an abrupt alteration of the life-conditions for the subordinate members of the hierarchy.

If we take once more our carousel on the racket-place in consideration, then the question poses itself for example, about the intervals of time in which we become spattered with the blue water. It is easily comprehensible that these intervals of time will resemble a period of the revolution of the smallest carousel about its own axis. One can say, a quantum jump with the spattering of our clothing happens every full period of this lowest level of the hierarchical circulation.

Unfortunately, in reality of the Cosmic Hierarchy of the Solar System, we are not sprayed so harmlessly with a color but we are shot with heavy blocks of rock and ice. This regular bombardment of the Earth's surface with projectiles of a certain caliber is the main cause of the quantum jumps of the conditions for life on the Earth, in fact since the beginning of the evolution of life until today.

Our Moon is...

After many different considerations, and after the examination of the Moon rocks from the Apollo program, one is ready to accept only one plausible explanation to the formation of our Moon. According to this explanation, a Mars-like projectile has hit the Proto-Earth severely before some billions of years. The Moon has then originated from the material of the projectile and the upper layers of the partially damaged Proto-Earth. However, this explanation still states nothing over the origin of the cosmic projectile and over the possible existence of some of its remains.

We will soon experience in our book, from where that „aggressor" has come, when and why. We will also see what it actually has in common with the present-day Mars. The most important thing, which we will experience here, however, is the crucial role of this ancient collision in the evolution of life on our blue planet. Even if that could sound for some readers somewhat astrologically, it is truly right: without this event that led to the formation of the Moon, it would have given no highly developed life on the Earth. How it has occurred, and how we could learn about it, we also explain in this book.

Naturics is...

We people want to understand the world around us. This healthy wish distinguishes us from animals. We want to understand the natural phenomena and processes in order to be able to make them useful for us. We admittedly observe the nature since millions of years, but we have still not landed at this wished goal.

What does make the fulfilment of this basic wish so difficult? It is the still incomplete description of the natural phenomena, which the traditional science can make available for us. Accepting the classical physics of the former epochs, physicists have included also the almost hundred years old quantum physics and the relativity theory into their description of nature. However, a global unification (in the theoretical physics named as the *grand unified theory* - *GUT*) of our understanding of nature has not yet been made possible with it.

Naturics is a completely new description of all natural phenomena. It is a consistent expansion of all useful descriptions known until today. It joins the achievements of the classical physics, including the quantum physics and the relativity theory, into a precise, clear construction of the quantum spectrum of matter. The quantum spectrum of matter is a universal scale of quanta of all possible states of matter. Naturics agrees with all experimental results of the natural phenomena known up to now.

Naturics is based on an independent foundation of physics that was specifically developed for this purpose in the years 1972 to 1992. Therefore, it represents a new foundation of each science and technology. Naturics is advantageous particularly in such areas of science and technology where the traditional physics is

no longer directly applicable, as, for example, in the finest materials of the nano- or biotechnology.

The most important theoretical advantage of Naturics is that it defines the relativistic quanta of matter on one and the same manner for all possible states of matter. It makes possible a simple gradation of each description of the natural events along the scale of the quantum spectrum - by means of any physical quantity - from the smallest quanta of the atomic nuclei, over the atoms, molecules, membranes, simple biological cells and nerve cells, up to the biggest brain cells, and reversely.

The most important practical and technical advantage of Naturics is that we now need to know only a single value of a single physical quantity, in order to fully define the current state of the material under consideration.

At the beginning was...

At the beginning was ... Oh, no! We do not want to write a new Bible here. Furthermore, who could already certainly say, that there was a beginning once at all?

Maybe, we start differently: before long, long time ... That sounds already better although we do not want to tell also a fairy-tale in that book. And how long does it actually mean this „long, long time"? Does it really exist, a universal, absolute time? With which clock should it be measured? And with what a timescale should this „long, long time" be compared?

Each beginning is difficult. At least this is true and obvious. However, because we are not forced to begin with the most difficult thing, we leave the beginning - if there was one - simply blank. We begin somewhat later - or maybe much, much later, in fact with the formation of our Solar System. There, we already stay on an (almost) solid scientific ground and can trust our senses, i.e., the scientific observations.

Therefore ... At the beginning was a gigantic cloud of the cosmic proto-matter, a matter that came from former phases of the Universe, from former galaxies. This cloud, with its physical features, formed the necessary prerequisite for the

formation of our Proto-Solar System. The present-day Solar System, that we proudly name our cosmic home, has originated from this Proto-Solar System, approximately three and half billion years ago. The mass of this particular primordial cloud alone has determined all the physical „constants", which people have created some billion years later in order to be able to scientifically describe their cosmic home.

1. 2. Our cosmic home was born

The Universe already exists for several billions of years. It develops itself however constantly. Complete galaxies are born, live some time, become old and die again someday. New stars and new galaxies are born from their matter constantly. Also these stars become older and quite old again. We believe today that they die because their fuel, the hydrogen, is burned out. Some die more, the others less spectacularly. Their remnants form smaller and bigger clouds of the cosmic proto-matter.

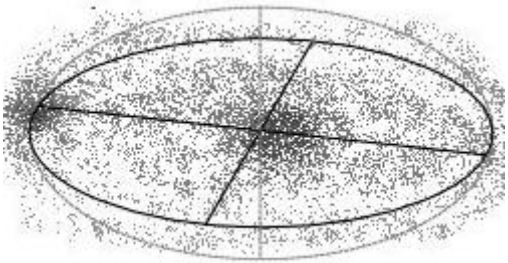
A moderately big cloud of such proto-matter has once developed at the edge of the Milky Way, our home-galaxy. It would have happened before something more than seven billion years. The primary version of our Solar System, the Proto-Solar System, originated from this cloud, in a process of accretion.

We must notice, for the later applications, two characteristic features of the primordial cloud. One of them is the entire mass of the primordial cloud. After a few billion years, this single value will be responsible for the numerical basis of the whole terrestrial science. All physical constants of all sciences have their origin in this single value of mass of our primordial cloud.

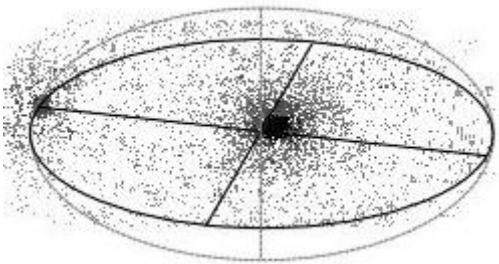
The second important property of the primordial cloud is the location of the center of its mass. No matter which inner changes have taken place in this cloud in the following billions of years, the own motion of this center of mass and its location, relatively to the entire mass of the primordial cloud, remained unchanged. In this „majestic" point lies the center of mass of the entire Solar System also today. We must be able to identify this point unequivocally, in order to correctly understand the dynamics of the Solar System, with its internal and external motions.

The process of accretion means that the matter of the primordial cloud contracts gradually. That occurs in direction of one or several, dynamically favorable centers of accretion. Two such centers come into being most frequently, a central one and a second at the edge of the primordial cloud. One can imagine a primordial cloud as a flattened ball of the proto-matter. The flattening is all the more the faster the cloud rotates around its own axis. The own spin of every freely moving object, beside the translatory motion relative to other objects, is one of the two natural components of the free motion in the whole nature.

1. Accretion of the primordial cloud with two centers of rotation



2. A double-star system originates



Why does contract a cloud from gas and dust? The simplest correct answer is: because its global energy is lower, therefore more favorable, than that of the far distributed individual particles of the gas and dust. We can observe the same tendency also on our sky. The clouds from steam, dust-particles and other gases contract up to a certain form, rather than to distribute themselves evenly over the whole sky.

With it, we already clarify in advance a misunderstanding of the traditional astrophysics. It is broadly assumed that such cosmic clouds contract under the influence of their own gravity. However, we learn in Naturics that gravity is no

special fundamental force of nature. It is only a composition of many electromagnetic interactions, which work between the individual microscopic components of a macroscopic body. Beginning from a size of dust-particles, they work always attractively. In the case of the molecular physics, one has connected the same attractive electromagnetic forces with the name of a Dutch scientist, Van der Waals.

We would have a similar problem if we actually wanted to make the classic – Newtonian - gravitational interaction between two masses being responsible for the formation of the rain-clouds on our sky. In that case, we would have to accept also the assumption that the clouds would be attracted by the big mass of the Earth much more quickly, before they could grow under their, in this case much weaker, attractive interaction of the cloud-particles to each other. Since the rain-clouds can hover obviously in the air, we must accept that not the gravity but the Van der Waals interaction is responsible for their cohesion. During the contraction, they load themselves electrically, which is demonstrated effectively in a thunderstorm. Exactly the same interactions had also caused that our cosmic primordial cloud, after its formation-phase, was gradually contracted again.

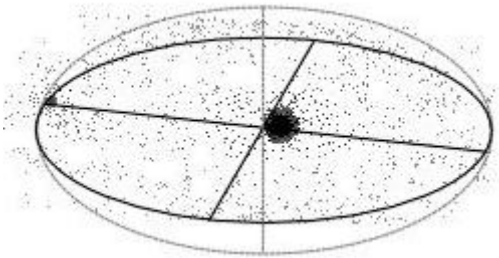
The biggest part of the mass of our primordial cloud had therefore condensed around its center. Because, as mentioned above, each translatory motion in nature is joined with a corresponding rotation, the central part of the ever denser mass has adopted also the natural rotation of the entire primordial cloud. The almost always unavoidable turbulences of the motion of such a big mass led however to the situation that a smaller part of the mass began to rotate also in the vertical plane of the primordial cloud. This vertical motion severed itself from the central motion gradually and led to the formation of the second accretion center at the edge of the disk of the primordial cloud. That is the most frequently observed case of the star-formation in the Universe. Our Proto-Sun was there no exception.

There were therefore two accretion centers of our primordial cloud, at which its entire mass has been collected. The central star, the Proto-Sun, originated from the bigger center. A brown dwarf, a stellar companion of the Proto-Sun, originated from the smaller center, at the edge of the primordial cloud. We will therefore call the brown dwarf the small brother of the Proto-Sun.

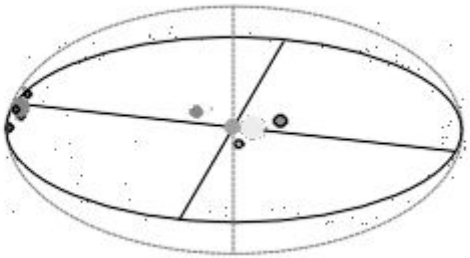
It is important to notice that no one of the two newborn stars could place itself directly in the center of mass of the whole primordial cloud. Although the Proto-

Sun had collected more mass than the brown dwarf, approximately fifty times more, the center of mass of the whole Proto-Solar System could never lie within the surface of the Proto-Sun. The small brown dwarf was placed far away from the center of the whole mass, farther away than the present-day Pluto. Its mass, hanging on such a long arm, has played a crucial role in the mass-distribution of the whole Proto-Solar System.

3. The remaining material of the primordial cloud consolidates to the four proto-planets of the Proto-Sun and to four further proto-planets of the accompanying star



4. The planetary systems of the Proto-Sun and the accompanying star are completed



Let's summarize that was said above. During the accretion, the Proto-Sun swept the big, horizontal plane of the primordial cloud empty, because it had its rotation-impulse in this plane. The small brother, against it, cleaned the vertical plane, because its rotation-impulse could stabilize itself in this plane excellently. From the remaining material of the primordial cloud, four proto-planets at each of the two stars had been formed. They have populated the four stable orbits in each case. The heavier proto-planets of the Sun had reached a diameter of approximately 12000 km. They all had a metallic core and a stony crust. The lighter proto-planets of the smaller brother had reached approximately 5000 km. At the edge of the

accretion plane they had not found a material for a stony crust. Instead they had developed an icy crust. The proto-planets of the Proto-Sun were: Proto-Mercury, Proto-Venus, Proto-Earth, and Proto-Mars.

We can identify the proto-planets of the small brother of the Proto-Sun on the basis of the properties of the biggest moons of the present-day Solar System. The two oldest Jupiter moons - Ganymed and Kallisto - belonged surely to them. Also the biggest Saturn moon, Titan, is the old proto-planet. We will be able to identify the fourth proto-planet of the brown dwarf first then, if we have already discussed, what has happened to the brown dwarf and its companions. We suspect namely that this fourth proto-planet must have been dispersed meanwhile. Its remnants form some of the smaller moons of the Solar System today.

1. 3. The present-day Solar System was born

The Proto-Solar System consisted of the Proto-Sun, with its four 12000-km large companions - the proto-planets with heavy iron cores, which orbited the Proto-Sun in the main-plane of the system - and the small brother, the brown dwarf, with its four 5000-km large companions, the smaller proto-planets, which orbited it in the vertical plane.

What has happened with this Proto-Solar System, when and why? Where is the small brother of the Sun today? And at all, from where did come the four present-day gigantic gaseous planets, Jupiter, Saturn, Uranus and Neptune? Now, the story becomes exciting.

We describe a unique event in the entire history of the Solar System here. We shall call this event as „hour-zero". Whether one wants to look at this event as a catastrophe or rather as a kind of obstetrics for the mankind, depends completely on the personal philosophy of the observer. Pessimists will say surely, it was a catastrophe what had occurred there and had wiped out the small brother of the Sun. I am much more an optimist, so I would not like to mark the event as a catastrophe. That was actually the first prerequisite for the formation of the higher developed life on the Earth; what we will document in this book extensively. Therefore, we stick with the rather neutral name: the event of the „hour-zero".

The main phase of the event of that „hour-zero" has happened exactly 3.506673 billion years ago, within a course of probably only few years. However, the whole event has already started several millions of years earlier. And it still lasted several millions of years after the main phase. It was a regular quantum jump of the level 9 of the cosmic hierarchy, to which belongs the Sun with the whole Solar System. It was the only quantum jump of this highest level, which the Earth had to experience until now. The next jump of this level will occur in the Solar System (and on the Earth, of course) in 77.897 million years. Then, the carousel of life on the Earth will explode apart, with all its passengers. We will report even more about this perspective in this book. For us, our children or grandchildren, however, that should be by no means a scare-vision, at which we had to orient us already today. You can relax and continue to read.

During the „hour-zero", the small brother of the Proto-Sun has been hit deadly by a foreign, dwarf-star-similar object. This huge projectile came from the outside of the Proto-Solar System, with a relative velocity of over 1000 km/s, and broke exactly into the center of the small brother. The „heart" of the Sun's companion was torn out with it literally. Its most inner matter, the stellar core, was hurled towards the Sun.

It was no sensation-reporters and no eyewitnesses with it. Therefore, we cannot expect reports from this time. We can reconstruct the whole happening only by means of our detective-like analysis of the remains. Luckily for us, there are relics of this event sufficiently in order to make an elaborate reconstruction possible.

Although the immediate loss of the mass of the small brother amounted to probably only approximately 10%, the loss of the inner source of energy was so dramatic that the entire small star broke apart. Its matter gradually became cold and dark scraps that was distributed over the whole outer zone of the Solar System, in the so-called Kuiper Belt, and can only hardly be observed today. In our book, we are going to call the broken apart companion of the Sun mainly as the Dark Companion, because its dark mass still plays an important role in the dynamics of the present-day Solar System.

The core of the dispersed small brother oscillated some time around the center of mass of the Solar System back and forth until it finally came to the rest on the first free orbit, directly behind the Proto-Mars. However, during its near flight at the Sun, like a huge comet, it had to have come so close to the Sun that its axis of

rotation had tipped over and has adapted to the rotation of the Sun; Jupiter was born.

Would the Sun had no such „experience", would have its axis of rotation, and the axes of rotation of the inner planets (Mercury, Venus, Earth and Mars), be precisely parallel to the original axis of rotation of the accretion disk still today. It is not the case however. The axis of rotation of the Sun is parallel to no one of the axes of the four planets. The near flight of the unlucky core of the small brother and the adaptation of its horizontal axis of rotation to the perpendicular axis of rotation of the Sun can be a plausible explanation for this disorder.

The „aggressor", hunting behind the core of the small brother - or better, behind that part of it, which had remained after the collision - was also caught by the Sun and became the second gaseous planet, Saturn. The collision with the dwarf-star has given the „aggressor" a rotation impulse with the inclination of the rotation axis of about approximately 20° to the axis of the Sun.

The part of remnants of the core of the „dying" small brother, which was swept with the „cosmic projectile", has split themselves in two portions. A part of this material that came into the touch with the „cosmic projectile" has received its rotational impulse and became Neptune. The untouched rest has met itself to Uranus.

Uranus is generally called an overturned planet still today. We put an end to this injustice. According to our scenario, Uranus is just the only visible relic of the Proto-Solar System still showing its original axis of rotation. The axis of rotation of Uranus lies, still today, precisely vertically to the rotation axis of the Sun, what means parallel to the plane of accretion.

Also Neptune, with its from the „aggressor" inherited inclination of the rotation axis, has experienced a different story, unlike as one has supposed until today. A part of the mass of the dwarf-star became „shot", as said above, into the interior of the Solar System. The prevailing rest is remained however, even if in smaller pieces, on its original orbit, the Kuiper Belt. Because of the big remaining mass of the Dark Companion, the much smaller Neptune was forced to find for itself a survival-niche if it should exist as an independent member of the outer Solar System. And Neptune has found such a niche indeed. In fact, he stopped on a resonance orbit with the center of the remaining mass of the Dark Companion. It is

the resonance 3:2. That means, exactly three periods of circulation of Neptune come on every two circulation periods of the center of mass of the dead star. The orbit of Neptune remains stable with it.

To the event of the „hour-zero" belong of course also many other impacts of this caliber on the Proto-Sun itself. Because of its size and proximity to the center of mass of the Proto-Solar System, the Proto-Sun was a much bigger target for the collisions and was hit surely several times. It lost much more of its mass than the small brother. The Sun survived with only 40% of its original mass. Clearly, this estimation of the loss of the mass cannot become tested differently than through a hypothesis; there are no direct pieces of evidence from the time before the „hour-zero". The only hint can be delivered by the so-called „natural constants" of the present-day physics. All these constants can be deduced, by means of the hierarchical structure of the Solar System, from the total mass of the primordial cloud of the Solar System.

Let's return shortly, as promised, to the identification of the fourth proto-planet of the small brother. We suspect that the four original planets were catapulted with the stellar core of the „dying" dwarf-star into the interior of the Solar System. Three of them have stuck with the core, the mighty Jupiter. They are Ganymed, Kallisto and a third one, still unknown. The fourth of them, probably the slowest, was caught - either immediately or later - by the following Saturn and became Titan.

Where has however this third small proto-planet remained? It is impossible that it could escape the Sun and leave the Solar System. It is also impossible that it is the present-day Mercury, although its size fits into the sought range. Mercury has a big iron-core. This betrays us that Mercury was much bigger once, and never could originate at the edge of the Solar System. We must therefore look for the remnants of the original planet of the small brother within the Solar System. And we will succeed there.

Until the young Jupiter and its not so quite young moons came to the rest on the new orbit, things were surely rather turbulently there. The third proto-planet must have been broken in pieces after a collision with Ganymed. Its two biggest fragments are very probably Io and Europe, the two youngest Galileian moons of Jupiter; these two moons are same age with our Moon. We can suspect further

bigger fragments of the third proto-planet under the Neptune-moon Triton and even under the ninth „planet", Pluto and its moon Charon.

The small double system, Pluto and Charon is, after our idea, no simple planet of the Sun but a caught satellite of the center of mass of the Dark Companion, on the one side, and on the other side, of the center of mass of the whole Solar System. Pluto orbits the center of mass of the Dark Companion on a vertical orbit a time in 247.2 years, in the same time, which the Dark Companion needs for a circulation around the center of mass of the entire Solar System. Therefore, we observe the apparent motion of the double system Pluto-Charon on its unusually inclined orbit. We will treat this point again more extensively in a separate section of this book.

The small brother of the Sun is dead. However, this is in no way the end of our story here. If we take it literally, this point is just the start of our chronicle of nature and the history of the mankind. The death of the small star was the first prerequisite for the formation of the higher life on the Earth. How it has come to this story, we shall tell in the following chapters. We shall also experience, among other things, how one can calculate the ideal orbits of the planets around the Sun. Then we will see also which of the present-day planets have kept their original orbits and which were changed, and with which unique consequences for us.

1. 4. The starting shot to the evolution of terrestrial life

The prehistory of the Solar System that we have told previously, could seem at the first sight to be difficult to become confirmed. We have to admit that all potential „eyewitnesses" of the events of the discussed „hour-zero" are either already destroyed or are unattainable for our measurements. Below, however, we shortly present many already generally known aspects of the scientific knowledge, which can serve as a convincing confirmation for this prehistory. In two following chapters, we present - in a more broadly elaborated manner - many well known and many new proofs of the prehistory.

A practical meaning of our prehistory of the Solar System for you, the reader of this book, lies above all in the particular logical direction of thinking about the development of the Solar System, from the very beginning until today. You do not need to consider any further unknown forces, objects, or events in it. One of the badly defined objects of the traditional science would be, for example, the

completely mysterious projectile that had led to the formation of our Moon. This projectile should come from nowhere, some four and half billion years ago, hit the Proto-Earth, and be disappeared in nowhere again. As we will immediately see, our prehistory supplements this completely isolated theory of the Moon formation with many important aspects and inserts it into the whole history of the Solar System seamlessly.

In order to describe the formation of the Moon, we must be able to answer the following question: What has happened with Proto-Mars and Proto-Earth during that „hour-zero", 3506.7 million years ago?

Let's consider the ancient situation of these two proto-planets more exactly. The young Jupiter wanted to occupy particularly an orbit that would stand in the resonance 5:13 with the orbit of the Proto-Mars. Because of the forced hectic movements of all objects of the Solar System in that time, this resonance could not be reached however. The Jupiter came obviously after each fifth circulation very close to the Proto-Mars; it should meanwhile complete approximately thirteen of its revolutions. The Proto-Mars broke apart through the interaction with the giant very soon. The phase of the reinforced bombardment of the inner Solar System continued presumably some years after it, until all bigger fragments of the Proto-Mars have rained on the other planets as well as in the Sun. Many of the smaller fragments are remained gotten until today as the asteroid belt. The Kirkwood's gaps in the present-day distribution of the asteroids are an effective witness of the attractive power of Jupiter. It is therefore extremely probably that the destruction of the Proto-Mars has happened actually very early after the „hour-zero".

The Saturn probably hiked then much nearer at the Sun as today. As the Proto-Mars had shattered, the Saturn has served for the biggest of its fragments as an acceleration center, like the accelerating maneuver that the spacecraft use in the last years more and more frequently, in order to come more quickly to the destination place. In that way, this accelerated fragment of the Proto-Mars has adopted the rotational impulse of Saturn. It rammed with this impulse the Proto-Earth some time later. In this manner has also the Earth, as the last link in that „domino-chain", received the original rotational impulse of Saturn and the rotational speed of that largest part of the Proto-Mars.

We clearly recognize this object, the largest unbroken fraction of the Proto-Mars, which has survived this last impact, as the present-day Mars, still moving on its strongly elliptical orbit. Let's notice that the traditional astrophysics has neither an explanation for the strongly elliptical orbit of Mars nor for the similarity of the inclination of its axis of rotation and its rotational speed with the corresponding values of the Earth.

This is actually already the whole prehistory of our Solar System. What now follows in this book is already quite well verifiable. It has even already been partially proven, although it has never been composed previously to a uniform picture. Let's summarize these facts shortly now.

- Our Moon has been formed from the outer material of that fraction of Proto-Mars that collided with Proto-Earth, and from the material of the outer layers of Proto-Earth. The out-hurled material has collected itself under the attraction effect of that cloud, but then of course already without this rotational impulse of Saturn (and of the Proto-Mars). Therefore, the rotation axis of Moon is oriented almost vertically to the ecliptic plane, in which the Earth circles around the Sun.

- The Earth has survived the collision quite well. Notwithstanding, its whole surface was re-melted by it and was newly formed again. Thus we can hardly find a piece of rock today that is older than these 3506.7 million years, the Moon's age.

- The collision has had one further serious influence on the „born-again" Earth. The Earth has now received a partner, the Moon, with which it could react to the impulse of the collision together. This double system displaces itself continuously since the collision towards the center of the Solar System. The decrease of the radius of the Earth's orbit of about approximately 14.2 meters per year seems to be very low, in comparison with its present-day length of approximately 150 millions km. This displacement is connected however with a continuous increase of the average temperature of the Earth's surface, from the icy -32.3°C at the time of the formation of the Moon up to +8.4°C today.

- And exactly this continuous increase of the average temperature was and still remains the true motor of the evolution of life on the Earth. The climbing average temperature has constantly forced new environmental conditions in all regions of the Earth's surface. The organisms had always to fit themselves to the

growing temperature and the migrating climate zones and were therefore continually developed, higher and higher.

- In fact, it lasted 2.8 billion years until the life could develop itself, until the organisms grow enough and could conquer the land. We now exactly see also the reason for this unbelievably long inactivity. The life had to restrict itself only to some smaller niches near active volcanoes for 2.8 billion years. It was necessary, until the average temperature of the Earth had reached the critical point of 0°C and the oceans could completely thaw, for the first time in the geological history of the Earth. That has happened only approximately 700 million years ago. The evolution could fully develop its „explosive" character only after this point of time, first in the ice-free oceans and later also on land.

- This temperature-dependent „pressure" to the evolution is only known on the Earth and surely nowhere else in the Solar System. We are even a rarity in the whole Universe. It is rather impossible that such a „domino-effect" could often repeat itself, leading from the destruction of a companion of a central star, over two further steps, up to an extremely soft displacement of a live-friendly planet over the right temperature range.

- Therefore, we have to fear nobody, maybe besides us ourselves. And besides these events, that have helped us to develop the highest form of life. Namely, the cosmic clock still ticks as ever, with the same frequency and with the same likelihood for a next impact. With each full „hour" an equally strong cosmic impact can happen on the Earth. However, with this statement we already land in one further chapter of our book.

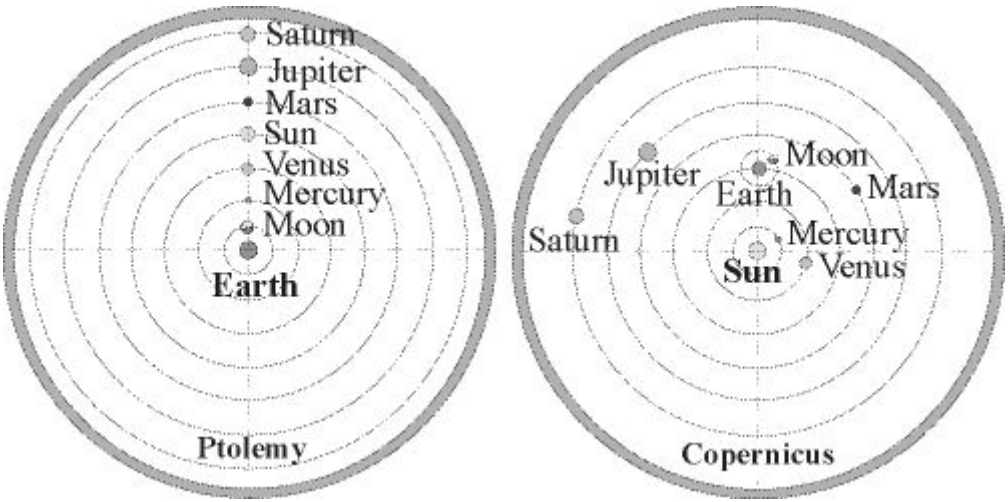
- The death of the small brother of the Sun was therefore the first prerequisite for the creation of the higher life on the Earth. Which mighty arguments already exist to the confirmation of our prehistory, we shall tell us in the next chapter.

2. Some dusted sceneries
(The known proof for the prehistory of the Solar System)

2. 1. The outer edge of the Solar System is not empty

The Ptolemaic system (developed in 2nd century) was geocentric. The Earth stood in the middle of the Universe and all heavenly bodies orbited it on ideal circular orbits. The Copernican system was against of it heliocentric. The Sun stood in the middle of the system. Since Copernicus (1473-1543) was a mathematician, he strongly held at the perfect form of the circular orbits of the heavenly bodies.

5. Ptolemaic geocentric universe and the Copernican solar system

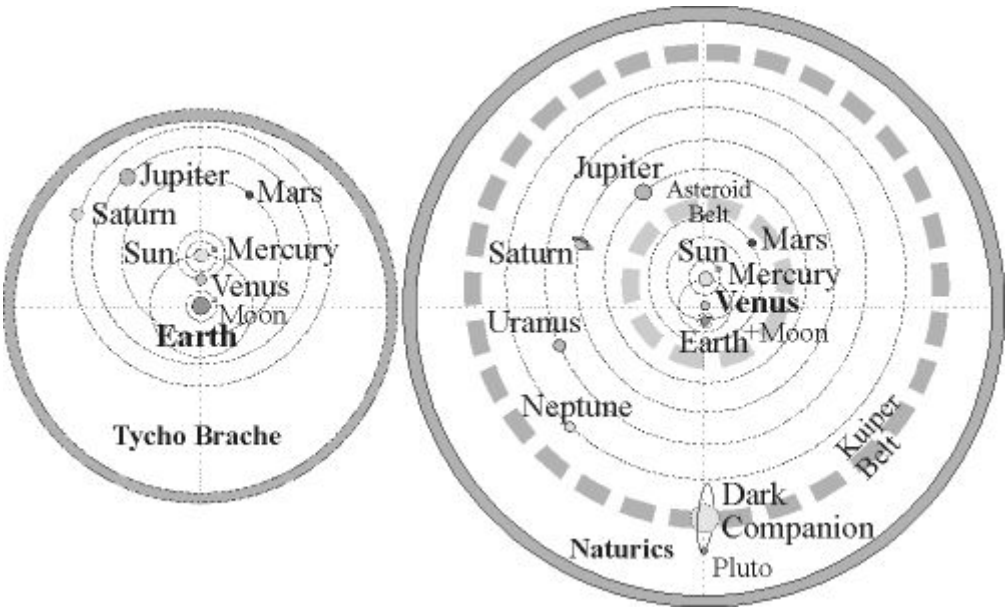


Tycho Brahe (1546-1601) was one of the best observing astronomers of all times. Although he lived after Copernicus, he however still refused insistent to put the supremacy of the Earth in question. On the other hand he recognized that the Ptolemaic system was wrong. Therefore, he has proposed his own, mixed system. In his system, the Earth stands in the middle, around which Sun, Moon and stars move, while the other planets run around the Sun however. It is very important for us to have noted here that the excellent observations of Tycho allow such a mixed system indeed, in which a planet, in his case, the Earth, stands in the center, around which the Sun circles.

Our modification of the Tycho's system, which we are going to justify in detail in this book, looks rather similarly in the central area. We shift the center of the Solar System from the Earth to Venus however. Furthermore, we supplement the system

with its outer area that was still unknown in the 16th century. Finally, we still add our most important discovery to it, the mass of the Dark Companion of the Sun; you know, the mass distributed along the Kuiper Belt. A big part of this book considers the reasons for our version of the Solar System.

6. The Solar System in Naturics as compared with the system of Tycho Brahe



The observations of the last ten years (since 1992) have discovered that Pluto, its moon Charon, and Neptune-moon, Triton, are not the only frosted bodies that exist at the edge of the Solar System. The number of the discovered objects in the Kuiper Belt is growing explosion-like. Approximately forty such objects were discovered during the first half of this decade, in the second half - already approximately four hundred. Also the size of the biggest discovered objects of this type, and consequently also the entire mass in this belt, climbs constantly. The two biggest objects discovered 2001 have already reached the size of Charon, the moon of Pluto.

The objects of the Kuiper Belt revolve mainly on elliptical orbits, like that one of Pluto, and are therefore sometimes called as Plutinos, „small Plutos". Their distances from the Sun lie between 55 AU (astronomic unit; the average Earth-Sun

distance today) and 35 AU. Despite the strongest telescopes, their observation is not simple since they lie in the coldest and darkest regions of the Solar System and reflect very little light. First a new spacecraft in this region of the Solar System would be able to do a row of further revolutionary discoveries. However, such a mission is postponed, on the basis of the expected high expenses, into the more distant future again and again.

2. 2. Apparent orbit-resonance of Neptune and Pluto

Neptune is the most outer gas-planet of the Solar System. It was discovered 1845. Its period of circulation lasts 164.8 years. It therefore comes back 2009 to ist „original" position for the first time since its discovery. Its orbit has become observed completely with it. However, the astrophysicists are capable already to calculate a full course of a planet from only a fraction of its orbit. On the other side, however, such a calculation works only if there are no surprising deviations of the gravitational interaction with other cosmic bodies.

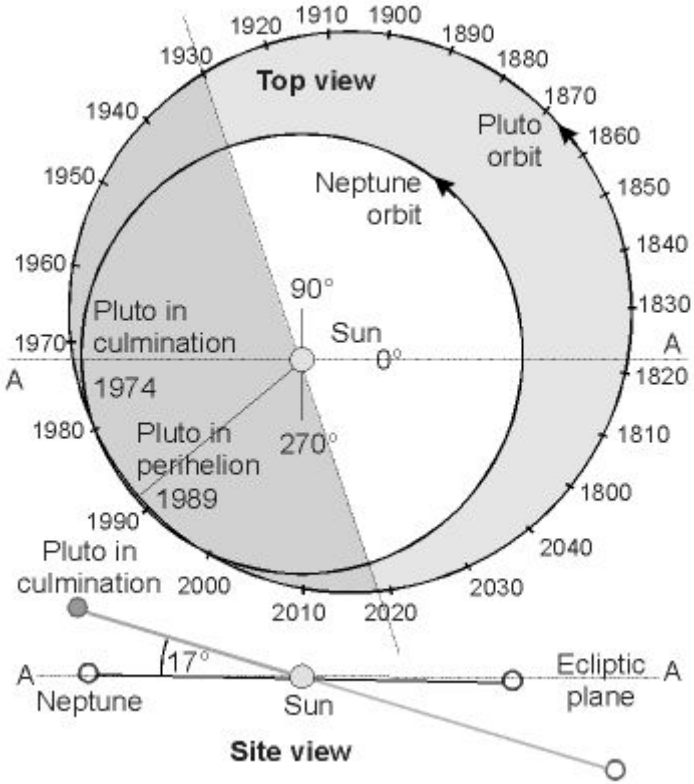
The small Pluto was discovered only in the year 1930. It has completed until today not more than 30% of its full circulation. One also corrects its period still today. The older sources have declared the value of 248.5 years. The reduced value of 247.7 years is approximately fifty years younger. We calculate this value today with Naturics on 247.19 years. Why? We are going to explain it now.

The traditional astrophysics explains the extraordinary orbit of Pluto through its so-called „2 to 3 resonance" to the orbit of the neighbouring Neptune. One explains namely that exactly two revolutions of Pluto about the Sun come on each three revolutions of Neptune in the same time, which provides a kind of an undisturbed motion of the two objects. This orbit-resonance doesn't explain the extreme inclination and eccentricity of the orbit of Pluto however.

This traditionally assumed orbit-resonance is mathematically correct. From our physical point of view, however, it is only an appearance-effect. It is a by-product of some much stronger interaction in this region of the Solar System. Let's compare the mass of the „protagonists". The mass of the gigantic Neptune is bigger approximately ten thousand times than the mass of tiny Pluto. The mass of the Dark Companion however is still bigger approximately 330 times than the mass of Neptune. This mass is very scattered today. Notwithstanding, the center of

mass of the Dark Companion still travels on its regular, original orbit in the Kuiper Belt and lies today approximately 10 AU behind Pluto. From these relations of masses, it becomes clear that the attractive interaction between Neptune and the center of mass of the Dark Companion is stronger approximately 3.3 million times than the interaction between Neptune and the tiny Pluto, within the same distance. We do understand now, why the chance for a resonance-relationship between the two bigger masses much higher is than a similar chance for the two smaller masses.

7. The orbits of Neptune and Pluto



Incidentally, as we have already indicated in our prehistory, it was just Neptune itself that was able, shortly after the ”hour-zero”, through its orbit-resonance with the mass of the Dark Companion, to rescue its existence at the edge of the Solar System. The small Pluto with its moon Charon (both existing probably as the remains of some following explosion of the fourth original proto-planet of the

small brother of the Proto-Sun), has found this cosmic „niche" a little later. In that way, Pluto has made believable its own orbit-resonance with Neptune.

This exact adaptation of the orbits of the Dark Companion and Neptune also explains why we cannot observe until today any measurable influence of the mass of the Dark Companion on the movement of Neptune. The interaction became minimized through the precise resonance shortly after the „hour-zero" and it remains constant since then. Therefore the remaining disturbances (if any) are hardly measurable. Merely, the disturbance of the Uranus-orbit through the mass of the Dark Companion could still be observed. However, in order to be able to exactly measure it, one has to take into consideration also the orbital (still unknown) distribution of the mass of the Dark Companion along the Kuiper Belt.

The adaptation of the motion of Neptune to the motion of the center of mass of the Dark Companion must be very precise indeed. In order to derive the exact circulation period for the Dark Companion, we thus can use the famous results of the Voyager mission for the circulation period of Neptune around the center of mass of the Solar System (164.79 years) and the resonance-relationship of 3:2. Therefore, it is easy to calculate that the corresponding circulation period of the center of mass of the Dark Companion must be as long as one and a half the circulation period of Neptune. It amounts to 247.19 years then. Of course, the small Pluto and its moon Charon also have, as the satellites of this center, the same circulation period around the center of mass of the entire Solar System. Our exact construction of the orbit of the Pluto-Charon system around these two centers of mass simultaneously will be presented in a separate section of the next chapter.

2. 3. Two classes of the object-properties in the Solar System

The extreme differences in the physical properties of the members of the Solar System suggest two different ways of the formation of two groups of these bodies. Above all the extreme differences in the properties of the four terrestrial planets and the four gaseous planets ask for a model, which doesn't set these differences trivial, but brings them to the expression.

Our prehistory of the Solar System writes the origin of the gigantic gaseous planets to the stellar companion of the Proto-Sun, the small brother, while the terrestrial planets have originated directly as proto-planets at the Proto-Sun from the

remaining material of the primordial cloud. Thus the terrestrial planets are about 3.5 billion years older than the gas-planets. You will experience somewhat later (in section 3.1.3), when we will report about the numerical details of the Cosmic Hierarchy of the Sun, why a full period of level 9 of the Cosmic Hierarchy lasts exactly 3.58457 billion years.

It is well known to the astrophysicists today that the four terrestrial planets, Mercury, Venus, Earth, and Mars, are smaller and denser than the gas-planets, Jupiter, Saturn, Uranus, and Neptune. However, it is not quite easy to understand why these two groups are also mixed among each other in some further characteristic properties.

As example, let us call the own rotation of each planet, i.e., the rotation about an axis, which stands vertically by the equator of the rotating planet. From the terrestrial planets, only the Earth and Mars rotate relatively quickly, although not so quickly, as the giant planets. Mercury rotates slowly and Venus extremely slowly. In fact Venus seems to rotate even in the „false" direction. This observation is completely unaccountable in science till now. Our explanation instead is very clear: the true center of mass of the primordial accretion disk does not have to rotate in relation to this disk.

The table below still shows two further "mixed" properties, the inclination of the rotation axis and the inclination of the orbit against the ecliptic plane, the plane in which the Earth orbits the Sun. What is particularly interesting to us here is the quite clear bifurcation of the inclination of the rotation axes of all planets. Four planets form a group with its rotation axis (approximately) parallel or vertical to the rotation axis of the Sun, that is inclined about 7° to the ecliptic. To this group count: Mercury, Venus, Jupiter, and Uranus. The second group, Earth, Mars, Saturn, and Neptune, have all their rotation axes almost parallel to each other, however inclined clearly to the ecliptic plane, between 23.5° and 29.6°.

Our prehistory of the Solar System unifies the first group of planets as direct relics from the time of the Proto-Solar System, and the second group as being influenced by the own rotation of the huge "aggressor" that had had attacked the Proto-Solar System during the "hour-zero" (its relic is the present-day Saturn).

As we already know, the inclination of the rotation axis of Pluto is oriented not accidentally in between of these both groups. We will discuss the origin of this inclination further in this book.

Selected properties of the planets of the present-day Solar System

Planet	Mass [Earth=1]	Average density [g/cm^3]	Equatorial diameter [1000 km]	Period of rotation [Days]	Inclination of the rotation axis [°]	Inclination of the orbit against the ecliptic plane [°]
Mercury	0.0553	5.43	4.878	58.66	2	7
Venus	0.8150	5.25	12.103	243.0	2.7	3.4
Earth	1.0000	5.52	12.756	1.0	23.5	0
Mars	0.1074	3.95	6.756	1.03	25.2	1.9
Jupiter	317.83	1.33	142.984	0.41	3.1	1.3
Saturn	95.145	0.69	120.536	0.43	26.7	2.5
Uranus	14.559	1.27	51.118	0.72	97.9	0.8
Neptune	17.204	1.66	49.528	0.67	29.6	1.8
Pluto *	0.0025	2.03	2.284	6.4	57.5	17.2

(*) - Pluto is actually not the ninth planet but the biggest object known so far of the Kuiper Belt; until 2002 one already knows over 400 such objects.

2. 4. Disordered atmospheres and the magnetic fields

The broadly scattered values of the inclination of the magnetic fields and orbits of all planets of our Solar System had to have also a unique cause in the past.

Before the start of the Voyager spacecraft (1972), one has suspected that all giant gas-planets are built rather in a similar way. They would have originated, together with the Sun, from the cosmic primordial cloud. For example, one could expected, that the atmospheres of the gaseous planets have in principle an identical composition. The Voyager observations showed however that the upper layers of the atmospheres of Jupiter and Saturn have „lost" a big part from their „original"

helium (from that amount that should be expected in the traditional astrophysics). In the reality against it, the upper atmospheres of Uranus and Neptune seem to have even more helium than one would assume for a proto-solar primordial cloud. Methane is in the atmospheres of Uranus and Neptune even ten times more abundant than in the atmospheres of Jupiter and Saturn. In the atmospheres of Uranus and Neptune, one has also found ten times more carbon than in the atmosphere of the Sun. These observations correspond very well with our prehistory of the Solar System. For example, Uranus and Neptune are just a kind of „smoky clouds" left behind the igneous agony of the Sun's small brother.

However, the most evident of all are the differences in the properties of the electromagnetic fields of these planets.

The magnetic field of the planets

Planet	**Average surface field** [Gauss]	**Inclination of the magnetic dipole** [°]	**Offset of the magnetic dipole** [Planet-radius]
Earth	0.308	11.4	0.0725
Jupiter	4.28	9.6	-*
Saturn	0.218	0.0	0.04
Uranus	0.228	58.6	0.3
Neptune	0.133	46.8	0.55

(*) The gigantic electric currents around Jupiter do not allow the astrophysicists to define the shift of its magnetic field with a dipole-offset directly.

The magnetic field of Saturn is distinctly regular in the comparison to that of the other planets. Also this observation corresponds exactly with our prehistory of the Solar System. That cosmic body, which has remained from the "aggressor", namely the present-day Saturn, shows much less irregularities than its "victims" – the giant Jupiter and the other "pitiful" remains, which have met themselves again into the two smaller gas-planets, Uranus and Neptune.

2. 5. Quartets of planets and moons are the rule

The existence of the quartet-groups of planets and moons in the Solar System is so evident that it cannot be originated only by a pure chance. Let's note the showiest quartet-groups of the objects of the Solar System here.

- The four terrestrial planets: Mercury, Venus, Earth and Mars. Four orbits are available precisely, and not more or less.

- The four gas-planets: Jupiter, Saturn, Uranus, Neptune. We note here just the existence of these four orbits, rather than the actual origin of their „inhabitants".

- The number of the known moons at the giant planets is almost always a multiplicity of four: Jupiter - 16, Saturn - 23, Uranus -15, Neptune 8. One could even suspect that one additional moon is missing at Saturn and one at Uranus. The problem is not quite so easy however; one discovers every year further smaller, moon-like objects at these planets.

- Much more convincing than the global number of the moons, is the distribution of these moons around the respective central planet however. At Jupiter, for example, we have four moons with a circulation time under 17 hours, next four Galileo's moons, with a circulation time between 1.8 and 16.7 days, further four with a circulation time approximately 250 days, and the last four with a circulation time approximately 700 days.

- At Saturn, the situation is not so clear, as at Jupiter. It becomes however simpler, if one consider its biggest moon, Titan - the „invader", quite separately, what we have proposed in our prehistory of the Solar System. Then, one has a group of four moderate-sized moons again that all are almost equally big: Tethys 1050 km in diameter, Dione - 1120 km, Rhea - 1530 km, and Japetus - 1436 km, and one another group of (originally four) smaller moons: Prometheus with Pandora in duet, Epimetheus with Janus, also in duet, and Mimas and Enceladus. Also the additional „outsider", Phoebe, the „prisoner" Hyperion, and some smaller, icy rocks, that are similarly big as the moons of Mars, do not disturb the principal picture of the quartet-groups.

- Uranus represents a simpler example again. Also it offers four orbits for moderate-sized moons, Ariel, Umbriel, Titania, and Oberon, and probably four

further orbits for the smaller moons. From the smaller moons, however, only two have survived, Miranda and Puck. And Miranda has survived only barely. She was torn apart at least once and was built itself from the dispersed slices quite again. The third small moon of this group seems to have become shattered and the fourth is landed probably at Neptune, as Nereid, or/and at Saturn, as Phoebe.

After the same rule, we would have to find also a complete group of the four biggest moons of the Solar System, with a diameter of approximately 5000 km. We however will only succeed, if we will consider the smaller moons of Jupiter, namely Europe, Io, and also Triton (probably together with Pluto), all as the remnants of the fourth moon of this group of 5000-km in diameter. The three others members of this group, as you already know, are Ganymed, Kallisto and Titan.

Such a point of view asks for an explanation however - like this one of us - why especially this group of the biggest moons should be so strongly scattered over the whole outer Solar System today. They all four were once formed as the proto-planets of the small brother of the Proto-Sun, at the edge of the primordial cloud, and became catapulted into the interior of the Solar System not earlier than during the accident of the „hour-zero". The traditional astrophysics is aware of the biggest moons of the Solar System since decades. However, no plausible explanation has been found yet for their distribution in the cosmic space. With our explanation, as presented here, we are therefore some decades in advance in comparison with the traditional astrophysics.

2. 6. The single successful theory of the formation of the Moon

We have sent astronauts to the Moon before more than three decades. Its rock and its interior have been already studied. Nevertheless, the scientists are still not sure today, about how, when and where in our Solar System the Moon should have originated. In the course of the time however, above all through the examination of the rocks from the Apollo-Mission, ultimately only one hypothesis of the formation of the Moon has proven to be a truly applicable theory. This unique theory of the Moon's formation accepts a collision of the Proto-Earth with a Mars-sized cosmic body, without being able, however, to name a realistic origin and a present position of this important body.

As we have indicated already earlier, also this theory has been integrated in a quite natural way into our prehistory of the Solar System. We have even added many important details to it.

One of those details is the exact date of birth of the Moon: it has happened 3.506673 billion years ago. Our moon was formed from the outer material of this break-part of the Proto-Mars, which has collided with the Proto-Earth at that time, and from the material of the outer layers of the beaten Proto-Earth itself. This primary moon material has consolidated itself under the attraction effect of this ”primordial cloud” - what we have already discussed earlier. Since this cloud possessed no own rotation, the Moon does not rotate about his own axis. It always shows the Earth only one of its sides. The other side, not observable from the Earth, has been photographed by the Russian Luna 3 in the year 1959 for the first time. The rotation axis of the Moon around the Earth stands almost vertically to the ecliptic plane, in which the Earth-Moon system circles around the Sun.

2. 7. Where did the asteroid belt come from?

The existence of the asteroid belt between the present-day orbits of Mars and Jupiter is a further evidence for something unusual that has had to occur in this region of the Solar System long time ago.

According to a former scientific opinion, the asteroid belt should consist of fragments of a shattered planet. The commonly accepted opinion of the present-day astrophysics says however that the asteroids represents altogether rather the building blocks of one through the large mass of Jupiter ”prevented” planet. One suspects such an origin of the asteroids, because their present total mass would not be enough to the formation of a normal planet. One admits however tacitly that this newer assumption, for lack of evidence, could only be understood as a stopgap, but nothing more.

Our prehistory of the Solar System supports the first aforementioned hypothesis of a shattered planet and immediately removes its weak points. The proto-planet of the asteroid belt has existed for a long time before the entrance of Jupiter into the neighbouring orbit. Therefore, Jupiter could not prevent its formation at all. Then however indeed, soon after the arrival of Jupiter during the ”hour-zero”, this proto-planet, the Proto-Mars, has had to suffer the cruel death through the

dismemberment. Only a small part of its mass has remained until today in the asteroid belt. We claim that the biggest scrap of this proto-planet is the modern Mars today. Parts of its material have also earlier contributed to the ”renovation” of the Proto-Earth and to the construction of the Earth’s Moon.

Let's stay for a moment with the topic of asteroids. What does one know about these cosmic objects today?

- One knows almost 5000 largest asteroids. Most of them are in the asteroids belt between Jupiter and Mars, in 2.1 to 3.3-fold distance of the Earth to the Sun. The average inclination of the orbits to the ecliptic is approximately 10°. With 933 km diameters is Ceres the biggest asteroid. The 501 km big Vesta is the only asteroid against it, that can be seen, thanks to its very strongly reflecting surface, with bare eye.

- One estimates the total mass of the asteroids in this region on $2*10^{22}$ kg, i.e., approximately 27% of the mass of the Moon. This mass is predominantly concentrated in the approximately 30 biggest asteroids, with which alone the biggest Ceres contains one fourth, and with Pallas, 523 km in diameter, and Vesta, almost half of the entire mass of the asteroids.

- The first asteroid was discovered 1801. Hundred years later, already 500 were observed. One has registered 4978 asteroids until 7th November 1992. One estimates the number of the asteroids with a diameter over 30 km however on approximately one thousand, with a diameter over 1 km on approximately one million, and the number of the asteroids with a mass of more than 100 kg on 10^{20}.

- In order to make progress more quickly with the newer, powerful electronic procedures of observation, the project „*Spacewatch”* became established. The *Spacewatch* was able to draw approximately 77000 precise measurements of the positions of comets and smaller asteroids in only one year 1994. These aimed observations showed that there are forty times so many small asteroids of approximately ten meters of size, as the astronomers earlier have assumed; however from where they should come, is still not known.
- Most asteroids are in the asteroid belt. Although the size and the orbital distribution of the big asteroids, with a diameter over 120 km, is quite well

known, an investigation of the center of mass of the asteroid belt has presumably not yet been enforced.

- The only currently accepted explanation of the existence of the asteroids means that with the formation of the Solar System the gravity of the gigantic Jupiter had hindered these planetary „building blocks" to grow together to a planet.

- This explanation has so many gaps, that it is even not to be treated as a hypothesis. Let's name only some examples for these gaps.
    - From the approximately seventy known moons of the Solar System is only 16 bigger than Ceres. If even the smaller moons have cleaned the space around themselves, why is then the space not more clean also around the big Ceres than in the remaining asteroid belt?
    - The formation of all planets and moons should have been undertaken simultaneously at the beginning of the Solar System. That means however that the big Jupiter was in that time, when the first conjectural attempt of the asteroids has taken place to form a planet, not yet as big as it is today. Why thus especially this one attempt should have failed, and not these of the other planets?
    - The formation of all planets and moons should be completed within relatively short time in principle. Why thus remain the asteroids, these unlucky planetary building blocks, also after billions of years still at this place of failure?

Our prehistory of the Solar System gives a clear answer also here. The asteroids have been once exploded from a single cosmic body away. Nevertheless, the center of mass of the asteroid belt must lie approximately in the orbit with a period of 4.16 years - approximately at the asteroid Irene - still today. The tendency to fly apart has not yet been braked completely until today through the attractive interaction between the asteroids. Furthermore, the belt is therefore so wide, because its individual members are revolving their rounds in the same way as the remaining satellites of the Sun, being simultaneously the satellites of the center of mass of the entire Solar System. And this center of mass lies much more away from the Sun than one has suspected until today. We are going to report some exciting things about that center in this book. It is enough at the moment, if you would notice for yourself once more the following idea: the center of mass of the Solar System is in Venus.

2. 8. The unique plate tectonics

The uniqueness of the plate tectonics on the Earth asks for an explanation for the cause and the driving power of the tectonics. This explanation should be exclusively applicable for the Earth. One has not been able to discover a similar dynamics of the entire surface of a cosmic body elsewhere in the Solar System.

Our knowledge of the geological history of the Earth has been essentially improved in the last 60 years. Many exciting questions nevertheless remain unanswered. For example, why are the tectonic plates moving at all? The many volcano-outbreaks everywhere on the Earth prove that a molten rock does exist under the Earth's crust, the lithosphere, in which a strong convection is active. If however some strong convection-streams in this molten rock should be exclusively responsible for the movement of the tectonic plates indeed, where should the enormous convection-energy come from? Why should that work on the Earth, and not for example on the glowing Venus, where periods of an even stronger volcanic activity were proven?

Our prehistory of the Solar System gives a plausible answer also for these questions. Above all, the most important of them: what has set the geological activity of the Earth approximately 3500 millions years ago into the run? We already know the answer. It was one singular event - the collision of the Proto-Earth with the part of the Proto-Mars - and its numerous astrophysical and geophysical implications.

Let us allow some of the professional geophysicists to come to the word directly, in order to demonstrate, on the one side, the generally accepted uniqueness of the geological properties of the Earth's crust, and on the other side, the traditional resistance against the expansion of the geological point of view onto some extraterrestrial argumentation.

With J. Brendan Murphy and R. Damian Nance ("*Scientific American*", April 1992, pp.34-41, *"Mountain Belts and the Supercontinent Cycle"*, we read:

> "... Present understanding of supercontinents grows out of the theory of plate tectonics, advanced some 25 years ago. This theory provided the first unified explanation of the origin of mountain chains, of the development and destruction of ocean basins, and of the global distribution of earthquakes and volcanoes. The lithosphere - the rigid outer layer of the

earth containing both ocean floors and elevated continental masses - is divided into seven major sections, or plates. The plates ride atop a hot, pliable layer of the earth's mantle, called the asthenosphere. Radioactive elements within the earth release heat that drives convection currents deep inside the earth; these currents ferry the plates across the surface at the rate of a few centimeters a year.

... Attempting to reconstruct even earlier supercontinents is exceedingly difficult. ... Continental collisions followed by major rifting episodes seem to have occurred in pulses approximately 2,700 million to 2,500 million, 2,100 million to 2,000 million, 1,700 million to 1,500 million and 1,100 million to 1,000 million years ago. Although these ages are somewhat uncertain, they strongly suggest that the supercontinent cycle has been a long-standing feature of the evolution of the earth's surface."

It is easily calculable, however, that the amount of the radioactive elements, being necessary to drive the mighty convection currents deep inside the Earth, would be unrealistic high. On the other side, the geophysicists cannot find a different plausible source of the internal heat of the Earth. As we already know, this energy has to come from outside of the Earth.

With S. Ross Taylor and Scott M. McLennan ("*Scientific American*", January 1996, pp.60-65, „*The Evolution of Continental Crust*", we read:

"The high-standing continents owe their existence to the Earth's long history of plate-tectonic activity.

... Is the persistence of high-standing continents just fortuitous? How did the earth's complicated crust come into existence? Has it be there all the time, like some primeval icing on a planetary cake, or has it evolved through the ages? Such questions had engendered debates that divided scientists for many decades, but the fascinating story of how the terrestrial surface came to take its present form is now essentially resolved. The understanding shows, remarkably enough, that the conditions required to form the continents of the earth may be unmatched in the rest of the solar system.

... It is likely that at this stage the surface of the earth resembled the current appearance of Venus. None of this primary crust has, however, survived.

Whether it sank into the mantle in a manner similar to that taking place on the earth or piled up in localized masses until it was thick enough to transform into a denser rock and sink remains uncertain. In any event, there is no evidence of substantial granitic crust at this early stage. Telltale evidence of such a crust should have survived in the form of scattered grains of the mineral zircon, which forms within granite and is enormously resistant to erosion. Although a few ancient zircons dating from near this time have been found (the oldest examples are from sedimentary rocks in Australia and are about 4.2 billion years old), these grains are exceedingly scarce.

... Crustal growth has proceeded in episodic fashion for billions of years. An important growth spurt lasted from about 3.0 to 2.5 billion years ago, the transition between the Archean and Proterozoic eons. Widespread melting at this time formed the granite bodies that now constitute much of the upper layer of the continental crust.

... Although the most dramatic shift in the generation of continental crust happened at the end of the Archean eon, 2.5 billion years ago, the continents appear to have experienced episodic changes throughout all of geologic time. For example, sizable, later additions to the continental crust occurred from 2.0 to 1.7, from 1.3 to 1.1 and from 0.5 to 0.3 billion years ago. That the earth's continents experienced such a punctuated evolution might appear at first to be counterintuitive. Why, after all, should the crust form in spurts if the generation of internal heat - and its liberation through crustal recycling - is a continuous process?

... The formation of such 'supercontinents' appears to recur at intervals of about 600 million years. Major tectonic cycles driving the continents apart and together have been documented as far back as the Early Proterozoic, and there are even suggestions that the first supercontinent may have formed earlier, during the Archean."

The upper quotations clearly show that there is still no recognizable willingness to unite the geophysics of the Earth's crust with the newest results from the planetary research of the Solar System. We will demonstrate in that book that our model of the Cosmic Hierarchy explains not only the periodicity of the continental development but also the exact times of the corresponding events. A traditional

attempt to understand the Earth and the global terrestrial problems, without to consider the Earth's cosmic neighborhood, would be today pure waste of time.

2. 9. Our extremely high developed life

Also the uniqueness of the high-developed life indicates that somewhat extraordinary in the whole Solar System had had to happen with our planet some billion years ago.

These unique circumstances had to have been of a long duration however so that the evolution could receive the necessary time in order to become not interrupted. The slow and continuous approach of the Earth towards the Sun, as postulated in our prehistory, had created such singularly favorable circumstances for the evolution of life on the Earth.

The generally recognized uniqueness of the sophisticated life on the Earth makes superfluous any wider reasoning of this thesis also in this point. Therefore, we restrict ourselves only to some further characteristic quotations from the scientific literature.

With Tjeerd H. van Andel (*"New view of an Old Planet; History of a Global Change"*, the Press Syndicate of the University of Cambridge , 1985) we read, for example, on page 237:

> "Life appeared on earth late in the first billion years. Its beginning is pure speculation, but speculation is preferable to the somewhat desperate view that it was imported from elsewhere in the universe. Its early history exhibits a marvelous dialectic: ultraviolet rays, useful in creating its biochemical precursors, were a deadly enemy once life has arrived. These rays were rendered harmless by oxygen, an accidental by-product of photosynthesis, but the oxygen itself then become a threat. Fortunately detoxified by ferrous iron in the sea, it was eventually put to use in an efficient energy metabolism that opened new opportunities. "

And on page 296:

> "The first evolutionary challenge was the colonization of unoccupied territory: the surface waters of the open sea, the muddy bottom near shore, the land. As each came to be colonized, the challenge shifted to competition, with the better equipped taking over from the less endowed.

> Throughout, there were continual changes in the environment, the propensity of the earth being never to remain the same for very long. The Paleozoic vividly illustrates the occupation of new territory, and continental drift and climate provide examples of the power of environmental change. We should like to know more about each, but that knowledge will come in time."

In the introduction to the article by Jerome Pearson (in *"New Scientist"*, 25 Augusts 1988, pp.38-40, *"The lonely life of double planet"*) we read:

> "We could be alone in the Galaxy because the Earth and the Moon make a unique double planet. Rare, giant moons such as ours may be necessary for the emergence of life."

As you already know, I am also completely of the opinion of the last quotation. Without the long chain of events during the "hour-zero" of our prehistory of the Solar System, that has finished with the formation of the Earth's Moon, it would be impossible for the terrestrial life to evolve itself from some very primitive form (probably that one of bacteria) up to the human being today.

In the introduction to the article by John Horgan (in „*Scientific American"*, February 1991, pp.101-109, *"In the Beginning..."*), we read:

> "Scientists are having a hard time agreeing on when, where and - most important - how life first emerged on the earth."

The last quotation comprises a thought-trap, from which I would like to alert you now. It is not necessary to think that life had to have originated from inanimate matter. We propose a different assumption in this book. It means that:

> *Both the animated and the inanimate matter originate from a universal (not necessarily primordial, because it is still existing) level of matter, the field of light. What is also very important to note, the most primitive form of the animated matter is still being created, all the time and in every part of the Universe, where also the inanimate matter does exist. What is so extraordinarily seldom in the Universe is the evolution of that primitive life to the higher and highest forms of life*.

We will consider the features of the field of light in this book several times.

2. 10. Long and short periods in the evolution of life

The periodicity in the evolution of the Solar System and the terrestrial life is a real feature of our Universe. This fact penetrates into the knowledge over the Solar System more and more. Slowly the conviction becomes also generally accepted that our whole Universe is quantized. This quantization occurs in fact on all levels of the organization of matter, from an atomic nucleus to a cluster of galaxies. That means of course that all natural events, atomic as well as cosmic, can happen only in their characteristic intervals, it means - periodically.

One of the main theses of our book represents a specific expression of this conviction. We assume, in particular, such a periodicity for most of the geological events. With these events, we primarily think about the impacts of the cosmic bodies on the Earth and about the volcanic eruptions following on them, with gigantic floods of the basaltic lava and further geophysical and climatic implications. Of course, the periodicity of the accordingly strong changes of the environmental conditions resulting from them, and ultimately the periodicity of the mass extinction of the badly adapted forms of life, is considered also as a real phenomenon.

To support this supposition, let us cite some widely recognized results of the official line of the scientific research.

- One estimates that more than 99 percent of the original biological forms are extinct again in the course of the Earth's history. The at least 10, possibly even 100 million species living today allow us only approximately to imagine the lost variety.

- From outset of the scientifically documented life, the terrestrial organisms stand under the pressure, to adapt themselves at the always changing environment.

- Also in relatively stable periods of the Earth history originated and vanished species virtually so regularly, as if a cosmic clock would be at the work. The found fossils suggest such conclusion.

- This cosmic clock seems to have more periods however, as only the „minutes" and „hours". From time to time, also the full „hyper-hours",

i.e., the longer intervals, come to the end. Then, especially strong changes of the environment could follow. As a result of these changes, a mass extinction could occur, which mark the natural boundary between two periods of the Earth's history. The mass extinctions were the most spectacular cuts in the development of the flora and fauna, and with those sometimes more than half of the species existing up to this time was died.

- The life on the Earth existed before more than 3 billion years. The first verifiable crisis of life, however, took place about 550 millions years ago. At that time, above all, single-celled species of algae died. Until then life was obviously limited to only smaller niches, whose disappearance from the picture of the whole Earth is not globally verifiable.

- If we wish to hear to the echo of the hits of the cosmic clock with the longest intervals - of approximately 295 million years - we must rely on the geological and astrophysical facts rather than on the paleontological data.

- Against it, so many of the shorter intervals (of approximately 24.3 million years) have already been finished since the „explosion of life" (at the end of Precambrium 550 million years ago), that we are also able to recognize the cosmic periodicity in the fossils of the living organisms from these shorter boundaries.

The still going scientific discussion about the reality of the periodicity in the evolution of life should be lifted on a higher level very soon. Then one will be able to recognize also the real periodicity in the evolution of the Solar System and the entire Universe. Our Cosmic Hierarchy of the Sun makes the necessary basis for this recognition available already today. One can use it just now.

3. The roles are distributed again
(Our new proof for the prehistory of the Solar System)

3. 1. Cosmic Hierarchy of the Sun and the Solar System

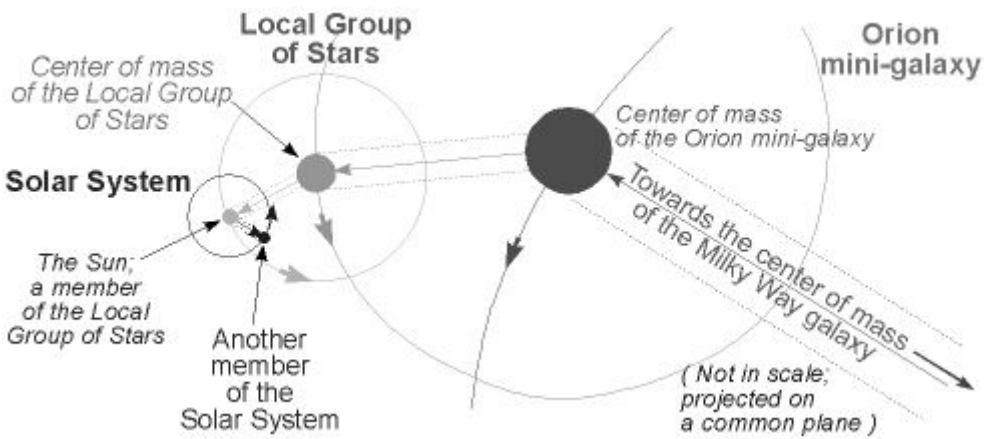
The most important prerequisite for a serious advance in our understanding of nature is the proper description of our cosmic home.

3. 1. 1. Sun's Cosmic Hierarchy is the most important feature of our cosmic neighborhood

There are two physical aspects of our cosmic neighborhood that are especially well confirmed through the astrophysical and geophysical observations.

To the one side, it is the hierarchical organisation of the individual stars to huge collections consisting of innumerable stars. This hierarchical construction of ever bigger cosmic objects seems to be characteristic not only for our immediate neighborhood of the Solar System but even for the whole visible Universe. The groups of stars collectively move within bigger formations, we say - mini-galaxies. Each of these mini-galaxies belongs to its own galaxy, and with it to a cluster of galaxies. Numerous clusters of galaxies build still bigger super-clusters of galaxies and other, more complex structures of galaxies. All these structures are not accidentally scattered in the space. They form gigantic, collectively moving „big walls", „big attractors", and other huge structures. These structures are separated from each other through enormous, empty appearing regions of the cosmic space.

8. The lowest levels of the Cosmic Hierarchy of the Sun



To the second side, there are the characteristic periods of the return of a defined configuration of these hierarchical objects. It causes a regular repetition of particular influences within the hierarchy. Especially well was proved that the history of the Earth is passed in bigger and smaller steps. These steps reflect the hierarchical order of our cosmic neighborhood precisely indeed.

These two aspects are the most important pillars of our description of the astrophysical structure of the Solar System and the evolution of life on the Earth:

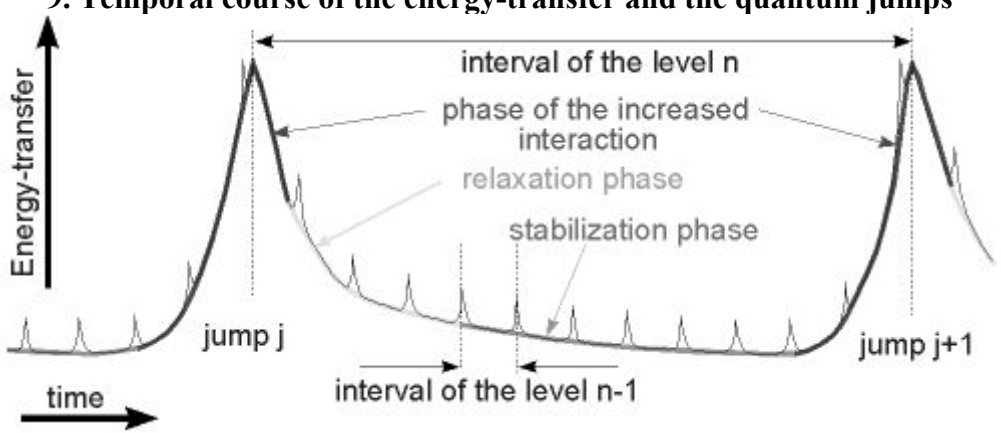
- the cosmic neighborhood of the Solar System is hierarchically built;
- this cosmic hierarchy of the Solar System periodically influences the geological and biological development of the Earth's surface, including the terrestrial life;

We add to these two observational properties the third one, the theoretical characteristic of the description. It is our most important discovery in the practical application of Naturics to astrophysics;

- the entire cosmic influence of the Sun's Cosmic Hierarchy can be defined with a single cosmic quantum number.

Now, let us imagine our hierarchical motion in the cosmic space more exactly. Each time, when we are crossing an „energy-bridge" between two paramount members of the Sun's hierarchy, the average density of the energy, which the Earth is receiving during this period is accordingly altered. Such an energetic quantum jump recurs regularly in accordance with the cosmic clock of the Sun's Cosmic Hierarchy.

9. Temporal course of the energy-transfer and the quantum jumps



We have resumed the most important numbers, which describe our Cosmic Hierarchy, in the table below. The scaling factor of the hierarchy showed in the foot of the table is based on the only necessary quantum number of our theory. This **c**osmic **q**uantum **n**umber (shortly - **cqn**) amounts to - if you want to know this - exactly 1.3662801.

3. Cosmic Hierarchy of the Solar System in numbers

Le-vel	**Object**	**Cycle** [y]	**Radius** [ULy]*	**Radius** [AU]	**Relative velocity** [km/s]	**Mass** [$M_{Proto\text{-}Sun}$]
9	**Coma (?) Supercluster**	3584.56 M	3584.56 M	1.951×10^{10}	2033.2	1.056×10^{26}
8	**Hydra (?) Supercluster**	295.201 M	295.201 M	1.607×10^{9}	1089.2	5.898×10^{22}
7	**Virgo Cluster**	24.3109 M	24.3109 M	1.323×10^{8}	583.48	3.294×10^{19}
6	**Andromeda Group**	2.00209 M	2.00209 M	1.090×10^{7}	312.57	1.840×10^{16}
5	**Magellanic Cloud**	164878	164878	8.974×10^{5}	167.44	1.028×10^{13}
4	**Milky Way Galaxy**	13578.3	13578.3	7.390×10^{4}	89.698	5.739×10^{9}
3	**Orion Minigalaxy**	1118.22	1118.22	6085.97	48.051	3.206×10^{6}
2	**Local Group**	92.0896	92.0896	501.201	25.741	1790.42
1	**Solar System**	7.58390	7.58390	41.2757	-	~1
0	**Proto - Sun**	0.62456	0.62456	3.39920	-	1
Scaling factor		**cqn^8**	**cqn^8**	**cqn^8**	**cqn^2**	**cqn^{24}**

***** The definition of the universal light-year - ULy - follows below in this section.

Before the „hour-zero", the lowest level of the hierarchy, the Proto-Sun with its four proto-planets has stretched itself up to the outer edge of the present-day asteroid belt with 3.3992 AU (one astronomic unit is the present average distance of the Earth from the Sun, 1 AU = $1.496*10^{11}$ m). As a result of the events of the

„hour-zero", the Solar System has expanded and it extends since then to the present-day Kuiper Belt, with an average radius of 41.2757 AU. The gaseous giants (Jupiter, Saturn, Uranus and Neptune) have filled the gap between the old and new Solar System boundaries. It is rather obvious, that the higher hierarchy levels could not be influenced by the death of the small brother of the Sun.

The uncertainty of the two highest levels, as marked in the table, concerns only the names of the corresponding constellations of stars and not the numbers themselves. Finding out the affiliation of a certain group of stars to a distant cosmic formation is not an easy task. Actually, the gradual theoretical definition of the hierarchy goes even further, behind the levels of our table. Merely, we can hardly expect on the re-melted Earth any measurable signs of the cosmic activity which occur at distances bigger than that of level 9, namely above 3.585 billion light-years from the Earth.

Although the whole upper table could appear quite theoretically (because it was calculated with only one quantum number), many of the investigated values were actually observed in reality by the astrophysicists. This correspondence confirms the correctness of our assumption regarding the structure of the Cosmic Hierarchy. Not only the just mentioned distances to the edge of the planetary system of the Proto-Sun, the asteroid belts, and of the present-day Solar System, the Kuiper Belt, but also other distances and relative velocities, and even also the estimated masses of the individual members of the hierarchy, were actually confirmed by the observations. The distance to the Magellanic Cloud was set with help of the supernova 1987A for a value of 169000 light-years, for example. The distance to the Andromeda super-galaxy has been estimated also on about 2 million light-years.

However the best and final confirmation for the entire idea of the Cosmic Hierarchy of the Sun relies on the analysis of our universal timescale. This timescale is based on the characteristic periods of the individual levels of the hierarchy, in a similar manner as our daily calendar is based on the periods of the „hierarchical" motion of the Earth within the Solar System: years, months, days, hours, minutes and seconds. Our universal timescale unifies all periodical events of geophysics and astrophysics. It begins with the formation of the Earth's Moon exactly 3506.673 million years ago and continuously proceeds until today. Of course, if necessary, it can also be extended far into the future. It serves then as a reliable basis for the forecast of all regularly repetitive cosmic events, with their typical frequency and intensity at all levels of the hierarchy. We will still apply the

details of this timescale in this book several times, especially for our forecasting of the global climate changes during the next five centuries. The timescale itself can be seen in the section 4.3.

For every aware reader, I am still guilty three further explanations. At first, let us consider the units of the upper table. The cycles of the individual hierarchy levels have been declared in years. That is quite clear. The corresponding radiuses of the hierarchical rotation have been declared in universal light-years, which have not to be confused with the traditional light-years. The traditional science has assumed - without delivering any single proof for it - that the speed of light everywhere in the Universe must be the same as the speed of light in the so-called „vacuum". This speed amounts to the well-known value of approximately 300000 km/s. Taking exactly, this speed, artificially defined exactly as the flawless value of 299792458 m/s, has been lifted on the altars of physics, as a sanctuary, as an absolute „constant" of nature. Do you notice the arrogance of this definition against the nature itself? However, we do not want to bring this „sanctuary" to the fall here. Science, like each other human activity, needs its climaxes. Furthermore, we do not use the traditional description of nature anyway. In order to be able now and then to enforce a possible comparison, we need only a translation-possibility between the traditional and our descriptions of nature.

We describe nature on our own manner, by means of our unified version of physics, which I have named Naturics. In this description, we restrict ourselves to only so few physical quantities and constants as possible. In the standard version of our unified family of all physical quantities, we reduce the speed to an unambiguous derivative from length and time for example. The universal values for the length and time automatically give then a strictly defined value for the universal speed. This value amounts exactly to 25812.3 m/s. That is the universal speed of light in our standard, two-parameter version of Naturics. And it is no unknown value. For the investigation of exactly this value (under the name of the quantum Hall-constant; because the speed of light and the electric resistance are equivalent physical quantities), the German physicist, Klaus von Klitzing, had received 1984 his Nobel Prize. This value is however dramatically different from the traditionally assumed value of the „vacuum-speed" of light. We should note for ourselves that difference very well.

In the present version of Naturics, we have already gone another step further towards the unification of all physical quantities. Instead of the traditional unit of

time, the second, which our clocks work off so diligently and inexorably, we introduce the absolute second into our unified family. The absolute second - already confirmed in the astrophysical observations - equals to approximately 99.7 per cent of the traditional second. Of course, also the value of the universal velocity of light must be changed through it and amounts then to 25741.16 m/s_a , where s_a means (for the moment) the absolute second. One must take exactly this recent value of the speed of light, instead of the „sanctified" value of the traditional physics, in order to calculate the really universal distance of a light-year. A universal light-year, noted as ULy in the last table, is then the distance, which a ray of light puts back with this universal speed of light within one year.

You probably already suspect what now happens. Suddenly we recognise that the Universe has shrunk very strongly outside the Solar System. The distances to the next visible objects outside the orbit of Pluto, like stars, galaxies and cluster of galaxies, is no longer so incredibly large. Merely the light needs such a long time in order to come to us. It is because the matter there is in the average much denser than in our Solar System. We shall tell more to that point in the next section of the book.

Let's move on to our second explanation for the aware readers now. From the sequence of the individual levels of the Cosmic Hierarchy of our Solar System, it becomes clear, that the Magellanic Cloud is placed above the Milky Way level, completely in contrast to the opinion of the present-day science. Until today, I have never read in the scientific literature of a doubt that the Magellanic Cloud could be something else than a small satellite-galaxy of the Milky Way. Nevertheless, the statement of the table is unambiguous, and also the values are correct. The sequence of these two levels of the Cosmic Hierarchy must be reversed. We shall come back to this necessity in the last section of this chapter.

The only plausible explanation, I could imagine to this mix-up, lies in the fact that most scientists live and work on the north hemisphere. They have never observed the Magellanic Cloud by themselves. Otherwise, at least some of them would have had to notice that it is our „grandmother-galaxy" and most of those with bare eye visible stars on the sky above our heads belong to her and not to our „mother-galaxy", the Milky Way.
The third promised explanation involves the conversion of a characteristic period of a certain hierarchy level onto the size or the radius of the corresponding motion in the Universe. The traditional procedure always requires the estimation of the

form of the cosmic body and the form of its orbit. For example, the length of an orbit with a radius of 1 light-year is calculated to be 6.28 light-years long, where one has taken into consideration the factor of twice the number „Pi". However, what is really important in nature, are the relative movements. The additional, geometrical factors of our traditional science are no longer necessary in order to hold on the right relations between the moving objects. Whether we attribute a quantum of matter the form of a die, a ball, or a pear, the natural relations of such quanta to each other is expressed only with a simple potency of a characteristic length, a second potency for the surface, a third potency for the density of mass, etc. The same also applies to the length of the cycles and the size of the orbits. For this reason, the table shows the same values for the cycles, expressed in years, and for the orbits, which are expressed in the universal light-years.

3. 1. 2. The traditional gap of 4 orders of magnitude is not a real effect

Most of the shown levels of the Cosmic Hierarchy of the Sun have been already earlier discovered, directly or indirectly, although independently of each other. We have actually only completed them and brought them on a common denominator, on a common scale of gradation.

What have we reached through it? A significant improvement of our knowledge about our cosmic neighborhood and our place in the Universe. Our Cosmic Hierarchy of the Sun has no more gaps. It can be completely scaled from the present-day border of the Solar System up to the biggest cluster of galaxies that we still join.

The traditional idea of our cosmic neighborhood is not so clear against it. In the widely accepted picture of the neighborhood, which still be learned today, a gigantic gap lurks between the most outer orbit of the Solar System, the orbit of the small Pluto, with a radius of 49.3 astronomic units (49.3 AU = 7.4×10^{12} m), and the first neighbouring star, Proxima Centauri (4.2 „vacuum" light-years = 4.0×10^{16} m). It is not a small thing at all. It is a difference of four orders of magnitude (16 versus 12). Imagine, just for a comparison, the outer border of your city would lie only 10 km away from the center of this city. With the same difference of about four orders of magnitude, the first neighbouring city should lie in a distance not smaller than approximately 54 thousand kilometers. The whole Earth would already be too small with it for any second city.

Fortunately, our definition of the Cosmic Hierarchy of the Sun now shows that this apparent gap of the 4 orders of magnitude in our nearest neighborhood has never existed in reality. At the end of 19th century, the scientists have extrapolated the „vacuum" speed of light of the Solar System on the whole visible Universe. They of course knew nothing of the relativity and the quantization at that time. They also didn't know that the interstellar space could be much denser than the internal space of the Solar System. Through it, also the universal speed of light is much smaller there than the traditional speed of light in „vacuum".

Naturics says that the universal speed of light is only 25741.16 m/s. This value is 11646.4 times smaller than the traditional speed of light in „vacuum" (which was fixed at 299792458 m/s). For this reason, only such traditionally determined cosmic distances, which are expressed in the units of light-years, are identical with those values of Naturics. If, against it, the same distances are expressed directly in meters, or alternatively in the astronomic units (AU), they become in Naturics with the same factor (of 1/11646.4) smaller in comparison with the traditionally determined values. It means that the whole visible Universe is in reality much more compact than we have thought. The densities of the cosmic clouds of dust and molecules are also much more realistic through it, from the chemical view of the likelihood of the molecular reactions.

The scientists knew of course for a long time that the nature actually tolerates no gaps. If some should originate somewhere, they would be replenished very quickly with a new material. Therefore, also the traditional „cosmic gap" between Pluto and Proxima Centauri was quasi-theoretically, purely intuitively, filled by a Dutch astronomer Jan Oort with billions of invisible cometary cores. This so-called Oort cloud could of course never be proven directly. However, it has stuffed the theoretical hole at least for the time being.

Another Dutch astronomer, Gerard Kuiper has proposed the existence of a similar accumulation of millions of small icy bodies directly behind the orbits of Neptune and Pluto. While the Oort cloud still remains a pure imagination, the correctness of the Kuiper idea is indisputable already today because it has been confirmed by direct observations. Until 2002, one already has discovered over 400 objects there, partly as large as the Pluto moon, Charon.

Our definition of the Cosmic Hierarchy of the Sun unifies the Oort cloud with the Kuiper Belt. Our idea lets the distance to the nearest star, Proxima Centauri, shrink

on only about 23 AU behind the outer border of the Solar System. The necessary assumption, that in the cosmic space between the Solar System and the Proxima Centauri already the typical, universal space prevails, where the universal speed of light is 25741.16 m/s, must of course still become confirmed through observations.

The Heliosphere, the outer border of the Solar System, lies, according with our calculations, at a distance of 56.4 AU from center of mass of the system. It is then obvious that the next stars have to be much smaller, and not as bright as our Sun. The Voyager spacecraft have already flown across this border. We can expect with tension what will they discover there outside. Whether they will work still sufficiently long in that much denser surrounding, remains to wait. If we are right, they will met the first stellar objects outside the Solar System much earlier than it was planned, whether still being working or already silent forever.

3. 1. 3. How long are the individual time-periods of our Cosmic Hierarchy?

The table at the beginning of this chapter defines not only the Cosmic Hierarchy itself. It defines also all time-periods, which are of fundamental importance for the history of the Earth and the evolution of life. We refer to a collection of these periods as our universal timescale. It is the most successful result of Naturics in this area of science. It is broadly documented through the present-day research in the astrophysics, geophysics, palaeontology, archaeology and history.

Our timescale makes it possible, to assign the most important events of the Earth's history to certain critical moments in the course of the relative motions of the whole Cosmic Hierarchy. First of all, the crater-formation on the Earth and on the Moon, but also originating and going out of volcanic Hot-Spots, the lava-floods creating the gigantic basalt-plateaus, the super-cycle in the generation of the continents, the glaciations of the Earth's surface, the drifting of the climatic zones, and the periodic extinctions of the living organisms, all those belong to such events. More even, we observe also that, although such different events are dated independently of each other through the corresponding branches of science, these age-estimations perfectly agree with our timescale in all cases. This observation delivers a very powerful proof for the correctness of the timescale, and of course also of the idea of the Cosmic Hierarchy, which forms its basis.

Let's pick out the corresponding hierarchical intervals from the above table now and widen something their interpretation with it.

- A period of the 1st level lasts 7.58390 years. With this period, rotated the accompanying star of the Proto-Sun around the center of mass of the Proto-Solar System, until it was destroyed 3.5 billion years ago.

- A period of the 2nd level lasts 92.0896 years. That is the rotational period of the Sun around the center of the Local Group of Stars.

- A period of the 3rd level lasts 1118.22 years. With this period, the Local Group of Stars rotates around the center of our local Minigalaxy of Orion-Nebula.

- A period of the 4th level lasts 13578.3 years. Our Solar system needs only such a short period, in the framework our local Orion-Minigalaxy, to orbit around the center of the Milky Way. That is approximately 3000 times shorter than we had to learn until today.

- A period of the 5th level lasts 164878 years. That is the rotational period of the Milky Way, our „mother-galaxy", around the Magellanic Cloud. Note that the science still stands before its official correction of the - until today generally accepted - reverse sequence of the both galaxies. The Magellanic Cloud is not a satellite of the Milky Way however. Most of the stars observable with bare eye doesn't belong to our Milky Way, but to the Magellanic Cloud.

- A period of the 6th level lasts 2.00209 million years. Such a long time lasts a rotational period of the Magellanic Cloud about the Andromeda supergalaxy.

- A period of the 7th level lasts 24.3109 million years. It is a rotational period of the supergalaxy Andromeda around the Virgo cluster of galaxies.
- A period of the 8th level lasts 295.201 million years. It is the duration of a single rotational period of the Virgo cluster around (probably) the center of the Hydra supercluster of galaxies.

- A period of the 9th level lasts 3584.57 million years. It is the longest, geologically comprehensible period in the history of the Earth. It corresponds to the period of the cosmic rotation of the Hydra supercluster of galaxies around a still higher member of the Cosmic Hierarchy, probably about the Coma supercluster of galaxies.

3. 2. Proto-Solar System with a spirally shaped structure

The spiral-shaped structure of the Proto-Solar System betrays the ideal orbits of the proto-planets in the system of long ago.

In nature, there are forms convoluted into a spiral virtually everywhere, in the inanimate as well as in the animated matter, in the microcosm as well as in the macrocosm. The best known example of a spiral in the cosmic standard is probably a spiral galaxy, like the Galaxy M81 in the Big Bear or the beautiful Andromeda Nebula. We assume quite consciously in our description of nature that also the original structure of the Proto-Solar System, just as the structure of its Cosmic Hierarchy, is being determined through the famous relationship of the golden section of 5/13 to 8/13.

It turns out that ideal orbits of the proto-planets had been ordered in the space about the Proto-Sun after the same principle, like the leaves of a willow twig. That even happens with the same natural goal, that each new member of the group, no matter whether a leaf or a planet, develops itself always preferably far from the preceding members. Equally, like the leaves, being ordered after a golden angle, are mutually minimally shaded, the similarly ordered planets have minimal risk to mutually influence themselves.

We have mentioned already before, how incredibly universal is our assumption concerning the Proto-Solar System. We have assumed namely that the total mass of the solar primordial cloud has adapted itself to the gradation-scale of the Cosmic Hierarchy, in which it has originated. On this first level of the cosmic carousel was exactly this place free for such a cloud (as a new „passenger" of the level 1 of the carousel), and no other. The mass of the Sun and its small brother, which has resulted from this cloud, has therefore numerically predetermined the entire structure of the emerging Proto-Solar System. Now we add an „architectural" detail of this structure. In the design of the Proto-Solar System, the leading theme

of a spiral was applied, for the natural, ideal positioning of the proto-planets around the Proto-Sun.

Some important consequences of this adaptation were the following.

- The distance of the small brother to the center of mass of the Poto-Solar System was fixed unequivocally by it.

- The center of the entire mass of the Proto-Sun and its small brother was positioned exactly in the area of the forming proto-planets of the Proto-Sun. It is therefore rather obvious that some building blocks of the proto-planets had had collected themselves exactly around this position of the center of mass. The proto-planets were namely formed from the remaining part of the cosmic primordial cloud, which was extant after the accretion and generation of the Proto-Sun and the small brother.

- A proto-planet therefore was formed in the center of the entire mass of the cosmic primordial cloud. It was the Proto-Venus. One would like to consider her, in the sense of the traditional science, as a satellite of the Proto-Sun. However, we have to consider all motions - also the cosmic ones - as to be relative movements merely. In reality, only the lighter Proto-Sun could circle around the heavier center of the entire mass, where the Proto-Venus was positioned, and not reversely. The period of circulation of the Proto-Sun around the center of mass of the Proto-Solar System had resembled therefore the apparent circulation-period of the Proto-Venus around the Proto-Sun already at that ancient time. We have the same situation also today, when the lighter Sun circles around the heavier center of mass of the whole Solar system in Venus.

- This fundamental circulation-period of 0.6151877 years (224.701 days) became the standard for the whole ideal structure of the new Solar System, when the renewed Solar System was formed again after the „hour-zero".

- In this way, the basis was also fixed for the orbits of the residual original planets. Each next proto-planet was positioned along a spiral favoring the relationship of the golden section of 5/13 to 8/13.

One receives the ideal orbits of the present-day Solar System also using of the factor 13/5 for the periods of circulation and $(13/5)^{2/3}$ for the radiuses of the orbits. A comparison with the corresponding parameters of the present-day orbits of these planets shows that some of them have been shifted relatively to the center of mass of the Solar System, others again not.

4. Ideal orbits in the Solar System

Planet	**Ideal period** [days; years]	**Ideal radius** [AU]	**Present-day radius*** [AU]
Mercury	86.423 days	0.38255	0.38710
Venus	224.701 days	0.72333	0.72333
Earth	584.223 days	1.36769	1.00000
Mars	4.1587 years	2.58605	1.52369
Jupiter	10.8125 years	4.88973	5.20280
Saturn	28.1126 years	9.24558	9.53884
Uranus	73.0928 years	17.4817	19.1819
Neptune	190.0412 years	33.0546	30.0578

***** The present-day radius is calculated in relation to the traditional position of the center of mass of the Solar System; without the mass of the Kuiper Belt.

The consequences of these changes were not always so serious, as that one for the Earth. We owe our existence to that shift of the Earth, from its original, ideal distance of 1.36769 AU 3.5 billion years ago to exactly 1 AU today (you know, the last distance is the definition of the astronomic unit). As we already know, without this slow postponement towards the Sun, no evolution of life would have been able to take place on the Earth.

In this unexpected way, we have now found also an explanation for the observation, which has frustrated the solar physicists and climate researchers since centuries. Some of these scientists have always suspected a connection between the solar activity and the motion of Jupiter, the biggest gaseous planet. The problem with it was that the circulation period of Jupiter about the Sun, as measured from the Earth, lasts 11.86 years. The observed period of the solar activity however, known above all through the sunspot cycles, lasts only approximately 10.8 years in

the average. The upper table shows the solution of the puzzle. Jupiter actually circulates, like the Sun, around the center of mass of the entire Solar System. This period amounts exactly to 10.8125 years. The terrestrial length of the Jupiter period of 11.86 years is a typical observer-effect. A terrestrial observer needs about one year longer in order to see Jupiter at the same position again, relative to the distant stars on the sky. This apparent period cannot have an influence on the energetic interaction between the Sun and the Jupiter of course. It influences the periodicity of the number of the sunspots observed from the Earth, not however the physical, extraterrestrial cause, which leads to the formation of these spots.

3. 3. Understanding the extraordinary Pluto orbit

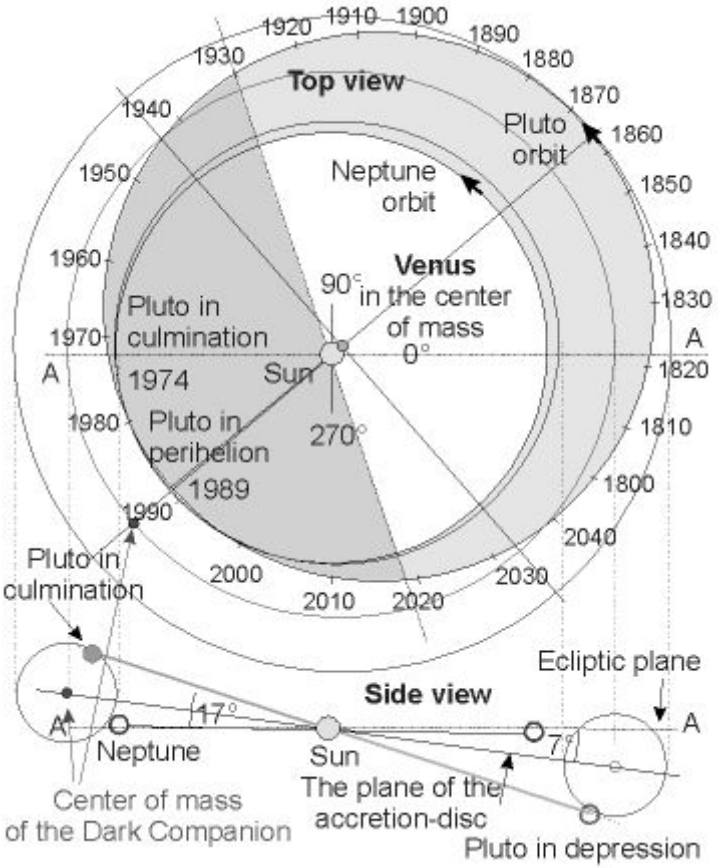
The first successful explanation of the cause of the exceptional orbit of Pluto is based on the existence of the mass of the Dark Companion.

We owe the first successful explanation of the origin of the extraordinary orbit of Pluto to our idea of the Cosmic Hierarchy of the Solar System. Not only the bigger ones but also the smallest member belongs to this hierarchy namely. That necessitates the assumption that the Proto-Sun had got a small brother, a dwarf-star, as its companion from the very beginning. From this assumption is only one step to the right definition of the orbit of Pluto, as a combined motion simultaneously around the two stars of the double-star system. One assumes with it that the rotation-axis of the Sun - which is inclined today at about 7° to the ecliptic-plane - must stand precisely vertically to the proto-plane of the accretion disk. The rest of the construction is already a purely geometrical task.

We formulate the task as follows. The exceptional orbit of Pluto can be constructed as a track of the combined motion of Pluto around two centers:

- together with the Dark Companion around the center of mass of the entire Solar System, in the plane of the accretion disk, that is inclined to the ecliptic about 7°, and
- around the Dark Companion himself, in a plane, that stands vertically to the prior plane, and proceeds through the center of mass of the Dark Companion.

10. Construction of the orbit of Pluto



In order to be able to better understand the origin of such an orbit, we imagine a round swimming-ring, with which the children learn often to swim in the sea. While we hold the ring in our hand on the beach, we observe a small snail on the ring that wants to reach the shady side of it. The snail wanders along the shortest way around the hose, from outside to its inner side. We want to annoy the poor snail a little. Therefore, we turn the whole ring a half spin about its axis meanwhile. The snail has admittedly reached the inner side of the hose, must hike on its small circle further however, because we have turned the previously shady position into the Sun again. After another half spin around the ring, the snail comes to the starting point, which unfortunately, thanks to our renewed „help" is the sunny side again.

Let's leave the snail alone and let's imagine only its movement in the space. In the same time, in which we have turned the ring one time about its big axis, the snail has hiked also once around the hose, to its internal side and back to the outer side. If we could do the swimming-ring invisible during this whole experiment, we would have seen the snail on exactly such an orbit, on which Pluto moves across the Solar System. The motion of the snail on the small circle about the hose around corresponds to the movement of Pluto around the center of mass of the Dark Companion. The simultaneous spin of the whole swimming-ring in its plane, that we inflict it, corresponds to the motion of Pluto, of course together with the center of mass of the Dark Companion, around the center of mass of the entire Solar System (in Venus). The „orbit" of the snail is inclined to the plane of the swimming-ring because the snail reaches in the highest point of the track the very top of the hose, and correspondingly, it reaches the deepest point of the track at the very bottom of the hose.

In that way, we have simply cleared one further scientific secret by means of our idea of the Cosmic Hierarchy. We can even be more concrete here. We can estimate the inclination-angle of the orbit of Pluto, without using any complicated mathematics. We have said that the center of mass of the Dark Companion lies approximately 10 AU behind the present position of Pluto. The inner radius of the orbit of Pluto is approximately 40 AU. It means, when Pluto lies in the highest point of this orbit, over the center of mass of the Dark Companion, it is, at most, 10 AU over the ecliptic and 40 AU away from the center of the orbit. The inclination-angle of the orbit therefore amounts to approximately one fourth of the straight angle of 90°, therefore approximately 22.5°. And that is approximately this inclination, which one knows from the observation. We won't apply the more exact trigonometrical functions here. We are content to have determined the right magnitude in that simple manner.

3. 4. Explaining the global variability of the solar activity

The activity of the Sun reflects its energetic interaction with other members of the Cosmic Hierarchy.

The enlightenment of the variability of the solar activity, and consequently of the Earth's climate, connects two fundamental ideas.

- The first of the two ideas is the universal interaction of nature, namely the energy-transfer. In this case, it is the transfer of energy between the individual members of the Cosmic Hierarchy of our Solar System and the Sun itself.
- The second idea is the timescale of the Cosmic Hierarchy, defined already above. This timescale arranges the quantum jumps of the Solar System within the Cosmic Hierarchy into a temporal sequence, universal for all subordered members of the hierarchy.

As a result, a precise timescale of the relative alterations of the energetic output of the Sun originates. The Earth, a satellite of the Sun, crosses together with it, in regular intervals, every one of the „energy-bridges" of the Cosmic Hierarchy. The alternating energy-transfer into the whole Solar System alters also the average temperature of the Earth's surface and through it also the global climate of the Earth, accordingly.

According to the traditional science, one has commonly assumed that the Sun provides us not only with the visible light and the perceptible heat but also send to the Earth a whole series of further cosmic waves, as x-rays, ultraviolet waves and the radio waves. One also adds the sometimes blustery streams of energy-rich particles of different type. These streams of particles, together with the electromagnetic radiation, are collectively named as the solar wind.

We understand now the place of the Sun in its Cosmic Hierarchy. Therefore, it becomes immediately evident to us that in fact the biggest part of the „solar" wind cannot come directly from the Sun. It has to be of some extra-solar origin. Not only the Earth and the Sun, but also the whole Solar System is influenced almost simultaneously through this cosmic wind. If we want to be yet more exact, we must assume that this cosmic wind does not blow into our face from somewhere outside in the cosmic space, but it will be created through our own motion on the „carousel" of the Cosmic Hierarchy through the matter of the Universe.

Shortly saying, all these components of the energetic communication between the Sun and its nearer and farther cosmic surrounding provides for the dynamic balance of the Sun within its Cosmic Hierarchy.

The energy-transfer is therefore, according to Naturics, the only active interaction between the Sun and its neighborhood. It replaces in our theory the gravity as well as also the traditional electromagnetic interaction. The both nuclear interactions, the weak and the strong one, have no meaning over the cosmic distances anyway.

One knows already today, that all components of the energetic interaction of the Sun can fluctuate very strongly in its intensity with any change in its cosmic neighborhood. That always happens in the characteristic time-intervals (like those of the Cosmic Hierarchy), from minutes (like during a solar eruption) up to several millions of years (like during the biggest glaciations of the Earth's surface). It is obvious that the long-term changes of the solar activity, although always connected with a dramatic „modification" of the life-conditions on the Earth do not speak so strongly to our imagination, as the short-term, directly observable phenomena that can recur several times during a human life. Particularly the sensation-reporters quickly declare each bigger event as the event of the century (whether a flood, an earthquake or a storm), although those, according to the name, could happen only once during every century.

In January 1997, for example, even the newspapers reported on a huge energy-outbreak on the Sun. For the first time in the history of astronomy, this energy-thrust could be continuously observed from its start (at the 6th January) up to its arrival on the Earth (at the 10th January). It was directly observed from many scientists simultaneously, with help of several satellites and telescopes. The effects of this event on the Earth were conspicuous, although in no way the strongest of their type. The energy in the radiation-belt around the Earth has ascended about more than hundredfold. A magnetic storm raged over the Earth. In the Antarctica, the airplanes could not start and in the USA the magnet-storm has made itself noticeable through a cancellation of the television-picture, as the functionality of a transfer-satellite has collapsed.

A long-lasting influence of this particular outbreak, however, was nothing in the comparison with the global warming of the Earth's surface in the 20th century. It was much more streams of the cosmic energy towards the Earth necessary in order to force this warming. The intensity of these streams decrease however constantly

now, beginning with 1990, and this tendency will provide for the sinking surface-temperature of the Earth for a very long time. The next five hundred years become clearly colder than the 20th century. In this section, you shall experience some more details to this forecast. In the next chapter, we present also a separate section to this economically important problem.

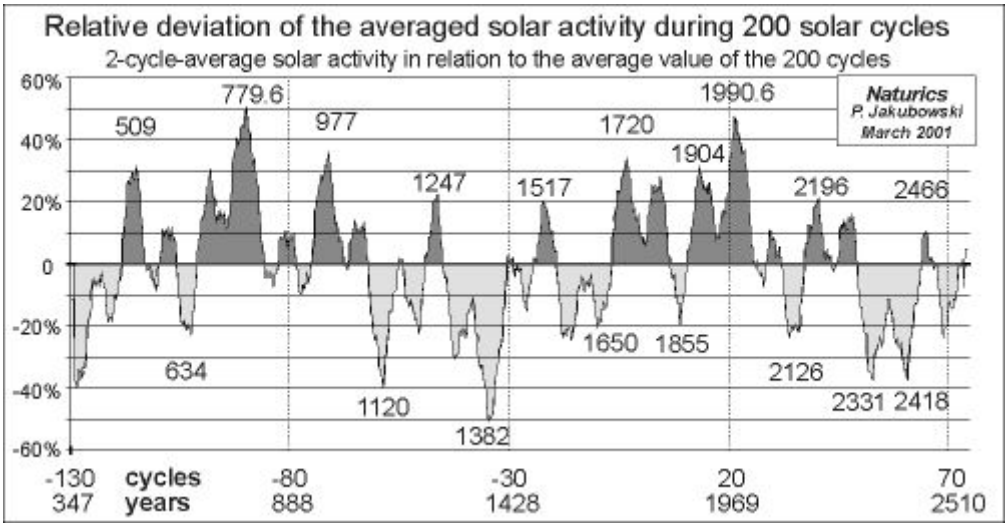
Now, let's shortly come back to the mechanism of the variability of the solar activity. In the traditional education and science, is still prevalent the opinion that some - not nearer defined - fluctuations of the inner heat of the Earth, and, in the newest time, also the influence of our industrial activity, are the only causes of the global alterations of the Earth's climate. As you already know, with our explanation of the variability of the energetic activity of the Sun, we represent a quite different view however. The variability of the energy-output of the Sun is caused by the rotation of the members of the Solar System and the Cosmic Hierarchy of the Sun around their respective centers of mass.

The here interesting variability of the solar activity belongs to the middle range of the solar periods, from the barely 11-year long cycle of the sunspots up to the over 1118 years long cycle of the level 3 of the Cosmic Hierarchy. This last cycle has brought with itself such well documented variations of the average temperature of the Earth, like the medieval climatic optimum (between 700 and 1050), the Little Ice Age (1100-1670) or the present climatic optimum, which has reached its warmest phase in the 20th century, is however finally decreasing now.

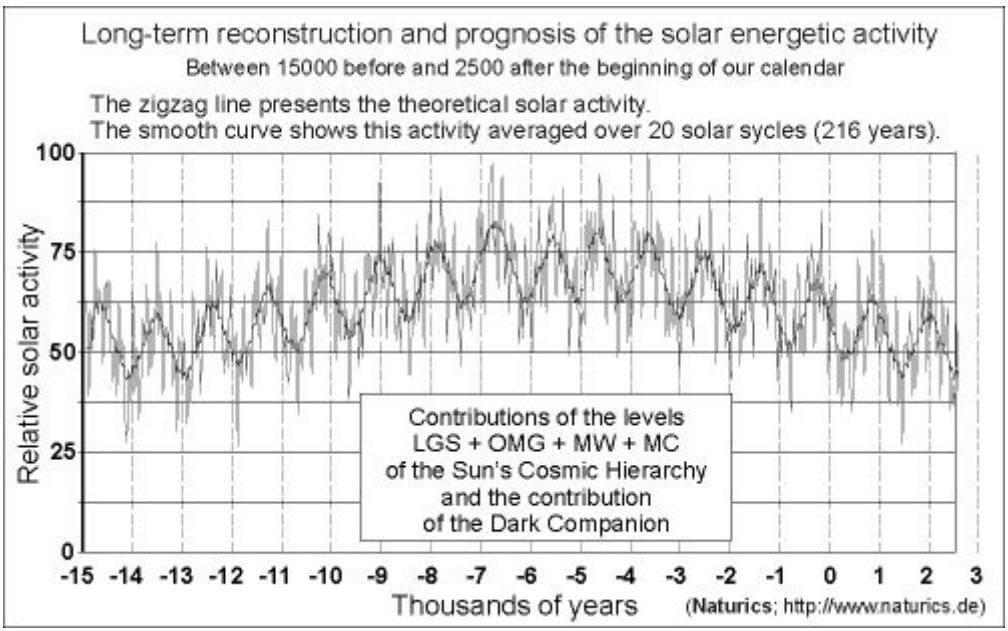
In our numerical treatment of the entire energetic activity of the Sun, we take the following cosmic objects into account:

- Jupiter, which causes the basic-period of the variability of 10.81254 years;
- Saturn, which influences the movement of Jupiter every 28.1126 years;
- the Dark Companion of the Sun in the Kuiper Belt, which dispersed mass forces the Sun to „dance" around Venus with a period of 247.19 years;
- the Local Group of Stars, which build the next stellar neighborhood of the Sun; with its characteristic period of 92.09 years; and
- the local Orion-Mini-Galaxy, a 3rd level of the Cosmic Hierarchy, between the lower level of the Local Group of Stars and the higher level of Milky-Way galaxy; with a period of 1118.22 years.

11. Relative changes of the solar activity during 200 cycles



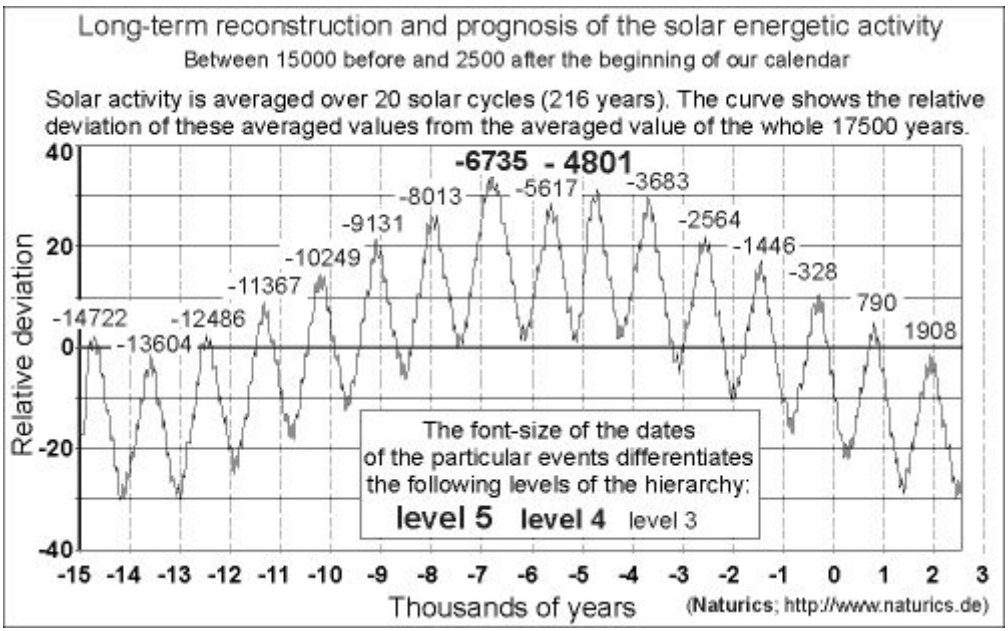
12. Energetic activity of the Sun during the last 17000 years and in the future 500 years



For a long-term reconstruction of the past climate and a prognosis of the future development of the global climate, we omit the two shortest components; those of Jupiter and Saturn. We add in their place the two longer periods of the levels 4 and 5 of the Cosmic Hierarchy. It is the period of the Milky Way (13578 years) and the period of the Magellanic Cloud (164879 years).

The reached precision of the reconstruction of the alterations of the Earth's global temperature in the last thousands of years is outstanding indeed. We can see from the pictures 11 and 12 that all historical periods of the global warming and cooling of the Earth have been reconstructed with very high precision. First of all, we see the last two thousand years that have been especially well documented, in a new perspective now. Such events as the enormous migrations of people, bad harvests, nuisances, plagues, warlike fights for more favorable areas, can be interpreted in that light as more or less direct consequences of the fluctuations of the energetic activity of the Sun.

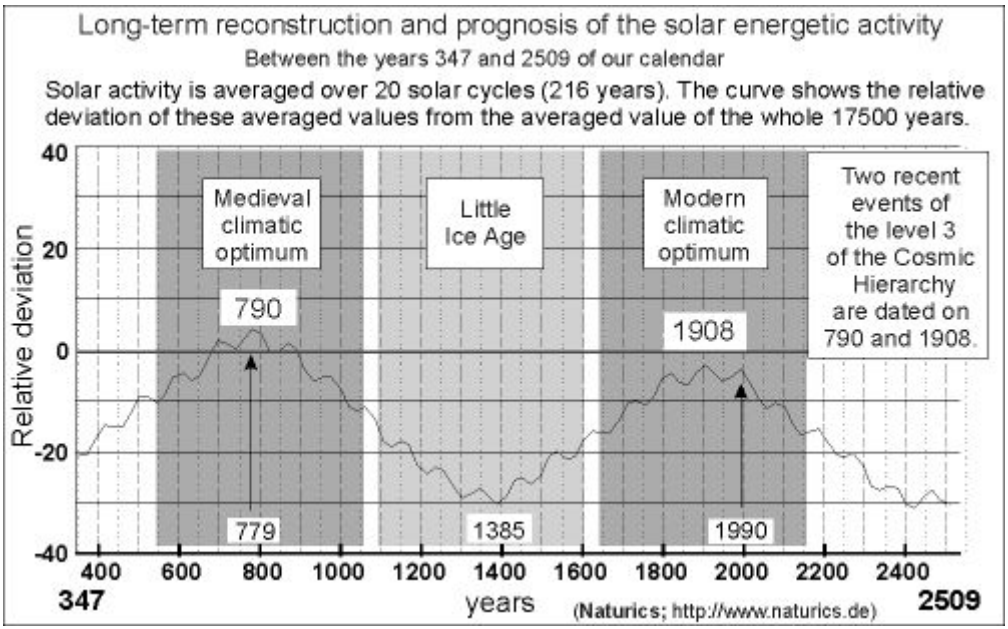
13. Long-term reconstruction of the averaged solar activity



The forecasts for the next six-hundred years are rather cold. We are coming back into the climatic circumstances of the previous „Little Ice Age". We have already crossed the maximum of the present global warming in the year 1990. The cooling

tendency is surely not reversible with our terrestrial methods for a longer time. We have not enough energy on the Earth for this purpose. Therefore, we - or rather our grandchildren and their descendants - shall have to learn the necessary survival techniques in the colder world.

14. Three recent periods of the Earth's global climate



3. 5. Our vibrating Earth

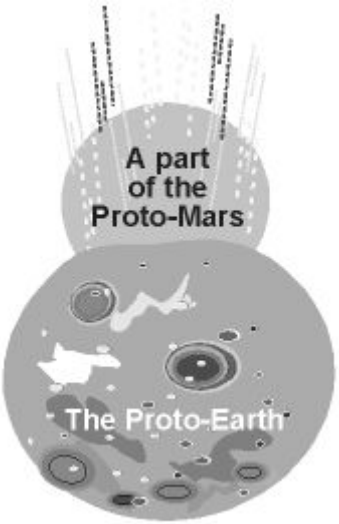
The diminishing own-vibrations of the Earth's material since its collision with the rest of the Proto-Mars are the true cause of the still active - although evidently slowing down - plate tectonics and of the reversal of the Earth's magnetic field.

3. 5. 1. Our model of the vibrating Earth

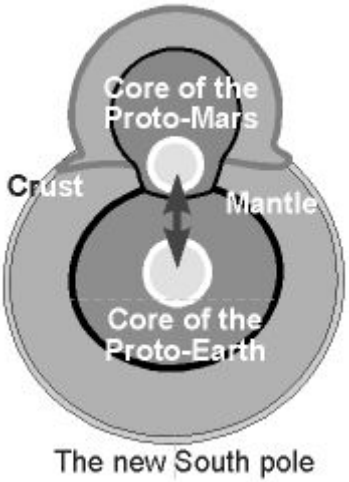
The collision of the Proto-Earth with the rest of the Proto-Mars, 3.506 billion years ago, have had, beside the „creation" of the Moon and the impulse to the increase of the terrestrial surface-temperature, also another effect, directly forcing the evolution of life on the Earth. This collision namely gave the „start-shot" to the drifts of the continents, and with it, to a continuous movement of the climatic zones on these continents. A big part of the collision energy is transferred into the vibration of the Earth's material, above all into the vibration of the heavy, metallic core of the Earth along the axis of the collision, relatively to the geometrical center of the Earth.

Collision of the Proto-Mars with the Proto-Earth

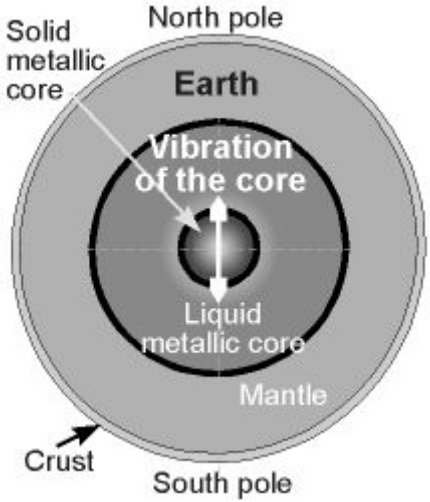
15. Collision



16. In cross section



17. Vibration of the inner material of the Earth after the collision



Our uniform treatment of the whole geology allows us to produce a model of the vibrating Earth, in which the whole material of the Earth, from the uppermost lithosphere, down to the solid core, is involved in this own-vibration. Our model of the vibrating Earth adopts and widens the Wegener's theory of the plate tectonics.

We want to make ourselves a little more familiar with the traditional point of view on the problem of the plate tectonics. We quote shortly from „*The Chronicle of the Earth"* (*in German only*) by Felix R. Paturi (by Chronik Verlag, Dortmund 1991).

- *To the problematic exploration of the Precambrian, we read there:*

"The Precambrian comprises about three quarters of the entire Earth's history. Into this gigantic time-period fells both the formation of the first continents as well as the formation of single-celled, vegetable and animal life. But this section of the development of our planet lying in distant antiquity can be only very heavily explored, and the exploration is in many cases not possible at all. To the one side, the early Earth's crust was already forced to go through multiple conversions during the Precambrian, to the other side also later times have of course changed or destroyed the witnesses of that era."

- *To the definition of the cratons, we read:*

"With this change of the face of the solid Earth's crust originate relatively stable clods in the mountain-regions. They form the kernels of the later continents. New stiffened parts are always stored at them through further formations of the mountains. Geologists name such continental clods or shields as cratons."

- *To the identification of the proto-cratons, we read:*

"During the Precambrian originate several proto-cratons, from which we can still localize five on the basis of their remains today: the Canadian shield known also as Laurentia; the Baltic-Russian shield, also called Fennosarmatia, that stretches itself over almost whole Scandinavia and reaches in Europe to the Ural; the Siberian shield Angaria; the Chinese shield Sinia; and on the south hemisphere the mammoth-shield Gondwana, in which big parts of the later continents and subcontinents are united - South America, Africa, India, Australia and the Antarctica."

The traditionally conservative geophysics says nothing about how and why these proto-cratons should distribute themselves on the Earth in the present way and not differently. We adopt the upper quotations without further commentary as the background information to our model. The discoverer of the plate tectonics, Alfred Wegener, was finally rehabilitated decade after his death. However, we fruitlessly seek the Wegener's name in the above quoted „*The Chronicle of the Earth"*. I don't want to participate in the questionable, pseudo-scientific disputes here. We rather devote our time instead to the vibrating Earth in the millions of years after the formation of the Moon.

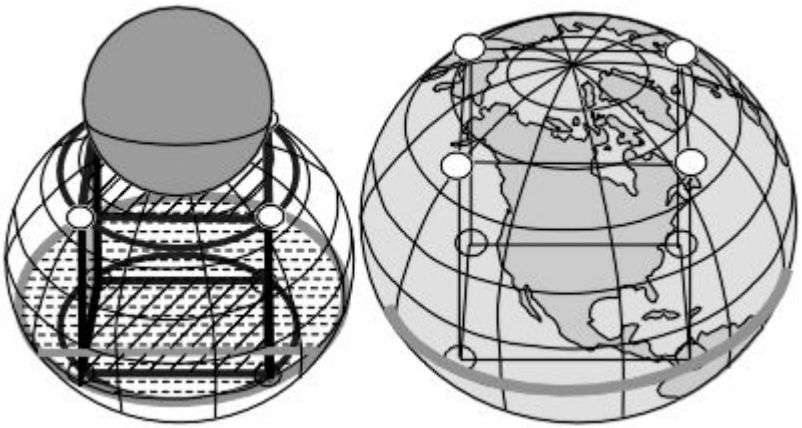
Let's summarize what we have already found out about the collision so important for us. We know that in the „hour-zero", 3.506673 billion years ago, the largest remaining part of the Proto-Mars had collided with the Proto-Earth. A result of this event was the formation of the Moon. Another result of the collision was the stimulation of the solid core of the Earth to the vibration, relatively to the liquid, outer part of the core and to the viscous mantle above the core. The two bodies, of the Proto-Earth and of the „aggressor", formed for some short time during the collision a dynamically bound unit. The contact was long enough, however, for the successful transfer of the original rotation velocity and the inclination of the rotation axis of the „aggressor" to the Earth. As you probably remember, the „aggressor" itself had obtained its rotation from Saturn. In that way, the place of

the impact became the North-pole of the new rotation axis of the Earth. On the antipode of the impact place originated the new South-pole of this axis of course.

One can represent the resultant own-vibration of the Earth's material by means of an imaginary cube within the spherical globe. The corners of the cube are virtually anchored at the surface of the globe and distributed symmetrically about the North-South rotation-axis and about the equator. These points cannot leave the Earth's surface but only glide on it back and forth.

Why do we speak particularly of a cube in the context with the own-vibrations of the almost spherical Earth? Well, according to my whole experience as solid-state physicist, it is the fundamental form of a vibration, which one can generate in an elastic ball with a single hit of a drumstick. One considers with it an expansion of the fundamental vibration of a guitar-string and of a flat membrane of a drum on the three-dimensional ball.

18. Ideal positions of the corners of the vibration cube



You correctly notice already, what is our aim. We assume namely that the corners of the vibration-cube are identical with the proto-cratons of the Earth's crust. The vibration of the material of the Earth has of course been initiated immediately after the collision. However, the cratons of the solid Earth's crust have consolidated themselves and enriched with granite-rock first in the course of the time after the collision, as the Earth has stopped boiling. The proto-cratons have always remained on the Earth's surface.

After this model, it is clear that there is no reason to suspect that the cratons should have developed in the mountainous regions. The opposite is true. One should see the exact positions of the ancient kernels of the land-masses in those places, where there are no mountains on the clods of the proto-cratons. First the advancing further land-masses, which have united themselves with the proto-cratons, have lifted the more or less circular mountain ranges around the corners of our vibration cube.

The proto-cratons drift thus on the surface of the Earth since the collision. In the ideal-case, without any further cosmic impacts, they should drift symmetrically towards the rotation axis of the Earth, a half of the vibration-period long, and outwards, from the axis away, over the other half of the vibration period. The four northern cratons swing in the counter-phase to the four southern cratons.

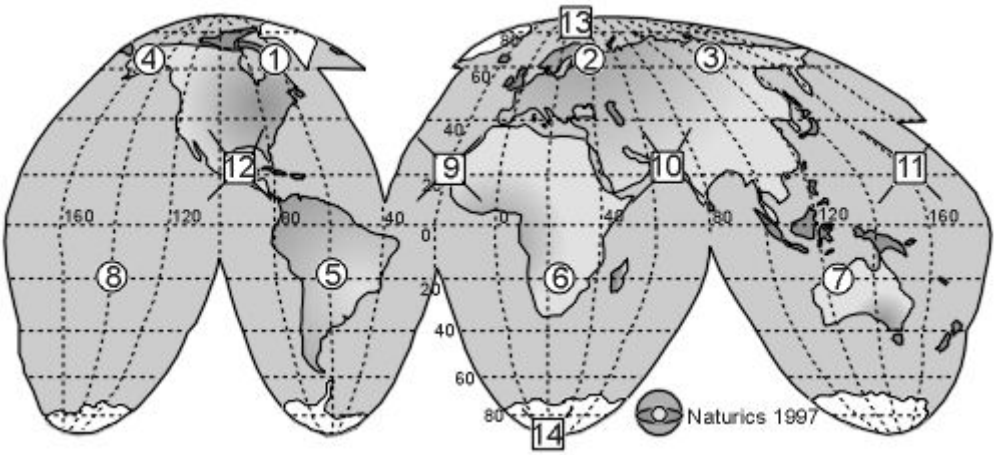
There are however possible numerous disturbances of the ideal vibration, like

- the numerous impacts of the level 8 of the Cosmic Hierarchy, which occur mostly from the side to the vibration axis;
- the still much more numerous impacts of the level 7 and 6 of the Cosmic Hierarchy;
- the periodically changing distribution of the Earth's mass because of the motion of the Moon around the Earth;
- the differentiated temperatures of the Earth's surface in various geological times, and through it the differentiated resistance against the movement of the tectonic plates.

All such disturbances have contributed to different deviations of the actual positions of the continents from their ideal pattern during various geological periods. The characteristics of this cubic pattern have however always remained the same as we have described it above.

The driving energy of the plate tectonics permanently decreases during the three- and a half billion years since the „hour-zero". Would the whole vibration-energy already be used until today however - because of the friction and the radiation into the cosmos - then, the ideally symmetrical vibration-cube would have placed its eight corners in the regular distances on the Earth's surface. Because the vibration still continues today, the current positions of the proto-cratons are still ordered a little irregularly.

19. The present-day positions of the proto-cratons on the Earth's surface



The current positions of the eight proto-cratons are as follows (the numbering is of course an aid of our identification only):

1: Northern Canada (Eastern Baffin; 65N 65W)
2: Karelia (White Sea; 65N 35E)
3: Central Siberia (Viljujsk; 65N 120E)
4: Central Alaska (65N 150W)
5: Wastern Brazil (Pantanal; 19S 57W)
6: Northern Botswana (Okavango Swamp; 20S 24E)
7: Western Australia (Canning Basin; 21S 124E)
8: Southern Pacific (French Polynesia; 20S 140W).

Also the centers of the six faces of the vibration-cube play a geologically important role:

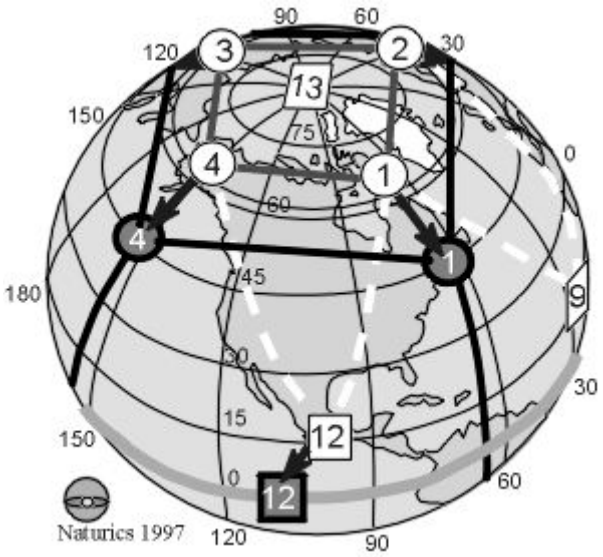
9: Atlantic at West-Sahara (22N 20W)
10: Arabian Sea (22N 65E)
11: Northwest Pacific Basin (22N 160E)
12: Mexico Basin (22N 95W)
13: Arctic Ocean (North Pole)
14: Antarctica (South Pole).

The plate tectonics has become already clearly slower in the recent 3507 million years. Nevertheless, the solid core of the material of the Earth still swings far from its stipulated rest-position in the center of the Earth. Today, it lies to the south of the center. It returns to the north however already again. The northern proto-cratons drifts through it apart and the southern move from the equator away. The land between the northern proto-cratons is being lifted, while the southern proto-cratons move more tightly together and nearer to the South Pole. While large land-masses rise around Scandinavia, North-Canada and North-Siberia from the oceans high, some of the southern land-areas already sink slowly in the water, as the Tierra del Fuego or Antarctica. The seemingly dramatic message of March 2002 over an outsized ice plate, which has separated itself between Antarctica and the Tierra del Fuego, confirms these movements of the Earth's crust very impressively. The ice cannot sink of course in the water together with the sinking land.

The centers of the side-faces of the vibration-cube move at the present also towards the equator, where is their regular position. The virtual lines connecting these centers with in each case four proto-cratons, the corners the vibration-cube, are distinctly visible on the Earth's surface everywhere. The continents break along these lines apart (like along the Rift Valley in Eastern Africa), if the adjacent proto-cratons have separated too far of each other. And reversely, the continents are pressed together (like along the Rocky Mountains) if the proto-cratons have come too near to each other.

Owing to the model of the vibrating Earth, we are even able to foresee the future movements of the tectonic plates. A more exact view of the North-American continent says us for example that the proto-cratons in Alaska and North-Canada will drift towards equator; their distance of each other will be almost doubled. The whole continent will therefore move into warmer climate-zone. However, it will probably already be split along the line between the Hudson Bay and Gulf of Mexico in less than one million years.

20. Future drift of the northern proto-cratons



3. 5. 2. The „lacking" continent

Now, we want to answer another inevitable question of each aware reader. It is the question after the „lacking" continent on the Earth's globe, with the eighth proto-craton in the Southern Pacific.

It was really exciting, but at the beginning not quite easy, to believe in the idea of the vibrating Earth. Especially problematically was the situation of the vibration cube, as long as no continent was still to be suspected in the Southern Pacific. A proto-craton should look like a land-clod that should serve as the ancient kernel of a continent. It was clear to me that the sea level was not constant in the course of the geologic time, and a whole continent would have found place under the present-day Pacific. It was however impossible, that it could still remain unrecognized, particularly since the observation of the Earth's surface from the space. It had to be hidden something more uncommon behind the „lacking" continent.

First little by little, as the idea of the Cosmic Hierarchy of the Solar System has received more and more color, also a first hint came to the solution of this puzzle. In contrast to the traditional opinion of the theory of the evolution of life, the future ocean-basins of the Earth had remained quite dry over more than 2 billion years (after the collision leading to the formation of the Moon). With exceptions of the active volcanic regions, they were covered with thick ice, because the average distance of the Earth to the Sun was then one third bigger than today, as we have shown in the table of the section 3.2. The supposition, that the proto-continents should protrude as islands from a proto-ocean, with an ideally round Earth's surface, was consequently no longer an obligatory condition to the model of the vibrating Earth.

The order of the seven known proto-cratons at the corners of the vibration cube, gave me another hint. The lacking eighth proto-craton had to lie under the present-day French Polynesia. However, nothing exciting had been observed there. The distances between the neighboring proto-cratons of the southern hemisphere, in West-Brazil, North-Botswana and in West-Australia, are however clearly bigger, than the corresponding distances on the northern hemisphere. That could mean only one thing. The southern hemisphere is much more swollen up, stretched, as the northern hemisphere. That must mean therefore that, through this strain of the southern ground of the Pacific, the eighth proto-craton could lie under the middle surface of the other proto-cratons.

The idea was therefore there, but still no indications for the „lacking" continent. And then suddenly, within just a moment, the eighth proto-craton, with its proto-continent, was traced down exactly there where it should be. In my search after any geological anomalies in South-Pacific, I have encountered an older publication (*"The South Pacific Superswell"* by Marcia K. McNutt and Karen M. Fishers, in „*Geophysical Monograph"*, American Geophysical Union, Vol. 43, 1987 (pp.25-34). The first sentence of the summary lay there before me:

> "Seafloor depths in a broad area of French Polynesia are 250 to 750 m shallower than lithosphere of the same age in the North Pacific and the North Atlantic."

There are merely these almost ridiculous 250 to 750 meters of the difference to other places of the Earth's crust. Nevertheless, I immediately knew: the eighth

proto-craton existed exactly there, where the model of the vibrating Earth wanted to have it.

This work of McNutt and Fisher describes an elaborate study of this swelling of the oceanic ground. The anomaly in the asthenosphere (that hot and soft layer of the mantle, on which the lithosphere moves) under the French Polynesia is not caused through hotspots. Rather reversely, this anomaly seems to favor the grouping of such hot places there, because it obviously, like each other proto-craton, remains already much longer on this position of the Earth and was never molten again.

Now, I already knew that the thin lithosphere, which slides especially quickly over the swelling away (in the comparison to the neighboring regions), held covered the eighth proto-craton before our eyes until today (forgetting the water of the Pacific for a moment).

The remaining was only a matter of the routine. The search after an additional confirmation of some already known effect is much easier, than the first step without having any clues. That was also the time of the big renewal in the foundation of the geology. The highly dissolving seismic tomography has just opened for the geologists the third dimension - into the depth until to the iron core of the Earth. One can therefore be interested in some further discoveries under our feet.

3. 6. Antipodal geological correlation

The antipodal geological correlation of the impact-positions of the biggest impact-bodies and the following formation of the volcanic hotspots on the Moon and on the Earth clarify many puzzles of the geophysics.

3. 6. 1. Just a normal transfer of the cosmic energy

The antipodal geological effect of the big cosmic impacts has been meanwhile already accepted also in the current teaching of the Solar System. One has recognized, for example, that the formation of the Caloris-Basin on Mercury let simultaneously originate clearly visible faults exactly on its antipode.

We claim here that from a certain size of the impacting body and the target-body, or taken more exactly, from certain energy of the impact, a regular canal originates crosswise through the entire body of the target. Along the canal, driven through the surplus energy of the impact, the lava becomes promoted in big quantities, from the body-inside on its surface, exactly opposite the impact-crater. This way, gigantic floods of the molten rock occur. That leads in a relatively short time to the formation of gigantic plateaus of pure basalt. Such a canal can remain open for millennia or even millions of years after the impact of the level 8 of the Cosmic Hierarchy. During that time, it can produce even a gigantic lava-sea, as for example Mare Imbrium on the Moon, or a basaltic plateau, as the Siberian Trapps on the Earth.

The recent such impact, with all his consequences threatening the life, has almost caused a miserable end of the evolution on the Earth 259.462 million years ago.

Also a smaller impact of the level 7 can already be very dangerous for the Earth. Such an impact at the Mexican peninsula of Yucatan has drilled the Earth through 64.975 million years ago. At the antipode of the impact-place laid the Indian subcontinent at that time. The lava from the fresh „wound" of the Earth has produced the Deccan Trapps in India, as mentioned in the previous section. These events 64.975 million years ago have given the dinosaurs the last deathblow, but simultaneously they have enabled the evolution of mammals until to us humans. The Indian subcontinent has moved since then far to the north, however the Reunion-volcano marks the impact-antipode still today.

Although we speak much over the huge cosmic collisions here, we want nevertheless to build no new catastrophe-theory in order to make the readers unsure. We are interested here only in the causes for the regular extinction of innumerable species during the long history of life. A next „regular" impact of an extra-solar body of the „caliber" 7 or 8 is not imminent us in the next millions of years. However, the accidental impacts of the wandering asteroids or comets that already today belong to our Solar System have not been taken into account with it. No new theory can help in that case more than the current observational programs of the international „*Spacewatch"* group.

What is new here, that is our claim that the actual trigger for all regular temperature fluctuations on the Earth, with the clear exception of the human activity in this direction, is to be found literally in the stars, and not under our feet.

The energy transfer between the Sun and all the other members of its Cosmic Hierarchy is the only physical reason for all geological and climatic events in the Earth's history.

However, to this energy transfer in the astronomic size belong not only the life-donating visible sunlight, and also not only the other, less pleasant ranges of the electromagnetic radiation and the microscopically small material particles, which we have previously marked as the „cosmic wind". The same transfer of the cosmic energy on the higher levels of the hierarchy takes place mainly in such „astronomic quanta" which we mark broadly as heavenly or cosmic bodies. To these cosmic bodies belongs everything, from dust-clouds to whole galaxies or even cluster of galaxies, in accordance with the actual level of the Cosmic Hierarchy, which is currently involved in the energy transfer.

The sense of the energy transfer is nothing other than the realization of the cosmic interaction, which holds the whole Universe together, despite (or saying more exactly - simultaneously with) the continuous motion of all its objects. We know already from Einstein, that the Newtonian gravity is not precise enough for the dynamical description of the Universe. Until we will someday invent an even better, uniform description of nature, we therefore stick with our energy transfer as the universal type of the interaction in the entire nature.

3. 6. 2. Highly uncomfortable cosmic meetings

Are we really able to imagine the consequences of our close meeting with a cosmic body of the level 8 of the Cosmic Hierarchy? Let us try to do it now. Let us start with a comparison of one higher-level event with such an event of the lower level of the Cosmic Hierarchy.

We attribute the formation of the Moon to an event of the level 9. In our prehistory of the Solar System, we have tried to imagine, what else must still have happened during this event. The almost soft collision of the Proto-Earth with the part of the Proto-Mars that has led directly to the formation of the Moon, had only therefore gone out so „leniently", because that projectile itself was already a fragment of the second generation of the original impactor of the level 9. We consider here the „stage-zero" collision of the small brother of the Sun and the consecutive, „stage-one" collision of the Proto-Mars itself. Would the Earth be directly collided with

the „visitor" of the level 9, it would leave no larger spots on the surface of this visitor, than the exploding parts of the broken comet Shoemaker-Levy-9 have left on the surface of Jupiter in 1994. The whole Earth would have evaporated completely within a second.

On the other hand, we have already reconstructed, as exactly as possible, one of the impact events of the level 7. We have explored this event because we wanted to know, what has finally erased the dinosaurs from the surface of the Earth. As we already know, the end of Mesozoic, a section of the geologic timescale, was introduced by an event of the level 7 exactly 64.975 million years ago. The Chicxulub crater that originated with it on the peninsula Yucatan in Mexico was maybe only one from several craters, which have originated in this time. This crater alone is however already approximately 170 km in diameter. The energy of the corresponding impact has been estimated on the million-fold of the energy of the heaviest earthquakes. For this estimation, one has assumed however only the relatively low velocity of an asteroid within the Solar System. However, from our idea of the „carousel" of the Cosmic Hierarchy, it follows an approximately tenfold speed of the impacting body (compare the table at the beginning of this chapter). Therefore, the real impact energy was still about hundredfold higher, than the one previously estimated.

This huge impact-energy was almost completely transferred through the whole globe and has rent an „open wound" in the mantle and in the Earth's crust at the antipode of the impact crater. The volcanic hotspot on Reunion (today in Indian Ocean) was created. From this „wound" (remaining open until today) streamed at that time the material of the Earth's mantle out. It was not a simple volcanic eruption. It was rather an almost non-stop outbreak of the volcano that was darkening the atmosphere and decreasing the Earth's temperature for many thousands of years. The Indian peninsula was at this position of the Earth's crust during these thousands of years of the outbreak, about 65 million years ago. Therefore we can see today the remnants of this outbreak in the form of the gigantic quantities of flood-basalt, that so-called Deccan Trapps in West-India.

The events of the level 8, that we want now to imagine, lies somewhere between of the two upper events; between that corresponding with the formation of the Moon, and that responsible for the final extinction of the dinosaurs. The Earth has survived all these events, we live obviously. But they had to have been truly uncomfortable. The two biggest waves of the extinction during the history of the

terrestrial life, about 554.7 and 259.5 million years ago, were still reinforced with the events of the levels 7 and 6, contemporary with them.

The seven former events of the level 8 on the Earth, previous to the „explosion of life" in Paleozoic, are very difficult to be explored. A direct observation of their geological implications on the Earth is still waiting for our new ideas. We must be able at first to imagine the size of the effects, for which we should look. Our following description of the antipodal correlation of every larger impact crater with the geologic consequences of such impact should serve exactly the purpose of a better vision of these events. We start with the Moon, where the remnants of such events of the level 8 can be seen with bare eyes, even from the Earth.

In order to complete our available information over the emerging craters, we present the two tables below here. The first table gives the scaling- or gradation parameters of the cosmic impacts on the neighboring cosmic objects. The cosmic Quantum number used here, **cqn**, equals to 1.36628, and results from our prehistory of the Solar System.

5. Size of the cosmic impactors and the impact-craters caused through them on the Earth and on the Moon

Level	**Cycle** [year]	**Impact velocity** [km/s]	**Projectile diameter** [km]	**Crater diameter** [km]	**Number of the past impact periods**
9	3584.6 M	2033	58-200	1400-5000	1
8	295.201 M	1089	17-58	410-1440	11
7	24.3109 M	583.5	4.7-17	120-410	130
6	2.00209 M	312.6	1.4-4.7	34-120	1600
5	164878	167.4	0.39-1.36	10-34	18000
4	13578.3	89.70	0.110-0.390	2.8-10	200000
3	1118.22	48.05	0.032-0.110	0.80-2.8	2.4 M
2	92.0896	25.74	0.009-0.032	0.23-0.80	28 M
1	7.58390	-	0.0026-0.009	0.07-0.23	340 M
Factor	**cqn^8**	**cqn^2**	**cqn^4**	**cqn^4**	**-**

The second table gives the list of the known terrestrial craters with a diameter of at least 20 km, and compares the measured age of these craters with our theoretical age, after the universal timescale of the Cosmic Hierarchy of the Sun (from the section 4.3).

6. The examined age versus the theoretical age of the terrestrial craters

Cat. No.	Name	Level	Theoretical age [My]	Examined age [My]	Dia-meter [km]	Agree-ment
6	Araguainha Dome	6	247.45	247.0±5.5	40	ideal
14	Boltysh	6 or 7	87.29 or 89.29	88±3	24	good
20	Carswell	6 or 7	115.89 or 113.60	115±10	39	good
21	Charlevoix	6 or 7	356.17 or 360.18	357±15	54	good
23	Chicxulub	7	64.978	64.98±0.05	170	adjusting point of the scale
26	Clearwater East	6 or 7	289.53 or 287.25	290±20	26	good
27	Clearwater West	6 or 7	289.53 or 287.25	290±20	36	good
44	Gosses Bluff	6	142.20	142.5±0.8	22	ideal
50	Haughton	6	22.65	23±1	24	ideal
62	Kamensk	6	48.96	49±0.2	25	ideal
63	Kara	6	73.27	73±3	65	ideal
72	Lappajärvi	6	77.28	77.3±0.4	23	ideal
82	Manson	6	73.27	73.8±0.3(?)	35	almost ideal
87	Mistastin	6 or 7	38.67 or 40.67	38±4	28	good
89	Mjølnir	6	142.2	143±20	40	good
90	Montagnais	6	50.96	50.50±0.76	45	ideal
108	Puchezh-Katunki	6	174.52	175±3	80	ideal
112	Ries	6	14.35	15±1	24	ideal
114	Rochechouart	6 or 7	186.53	186±8	23	ideal
118	Saint Martin	6	220.14	220±32	40	ideal
124	Siljan	6	368.47	368.0±1.1	52	ideal
129	Steen River	6	95.58	95±7	25	ideal
137	Teague	6	1630.22	1630±5	30	ideal
141	Tookoonooka	6	127.90	128±5	55	ideal
144	Ust-Kara	6	73.27	73±3	25	ideal
148	Vredefort	7 (8?)	2030.67	2018±14	300	good

We see that the agreement of the two age-estimations is extremely positive in all cases. The cosmic impacts happen scheduled after the timescale of the Cosmic Hierarchy indeed. The agreement is so good, that we can even risk the following thesis. There are namely still four known craters with which the agreement is not so clear. I suspect however that the measured age of these craters can be still improved and the agreement will be reached also in these four cases. The table below shows the scope of the expected correction.

7. Improvement-suggestions for the examined age of some craters

Cat. No.	Name	Level	Theoretical age [My]	Examined age [My]	Dia-meter [km]	Remark
22	Chesapeake Bay	6(?) or 7 (?)	34.66 or 40.67	35.5 ± 0.6	85	Age inaccurately measured (?)
81	Manicouagan	6(?) or 7 (?)	210.84	214 ± 1(?)	100	Age inaccurately measured (?)
105	Popigai	6(?) or 7 (?)	40.67	35 ± 5(?)	100	Age inaccurately measured (?)
133	Sudbury	7	1860.49	1850 ± 3(?)	250	Age inaccurately measured (?)

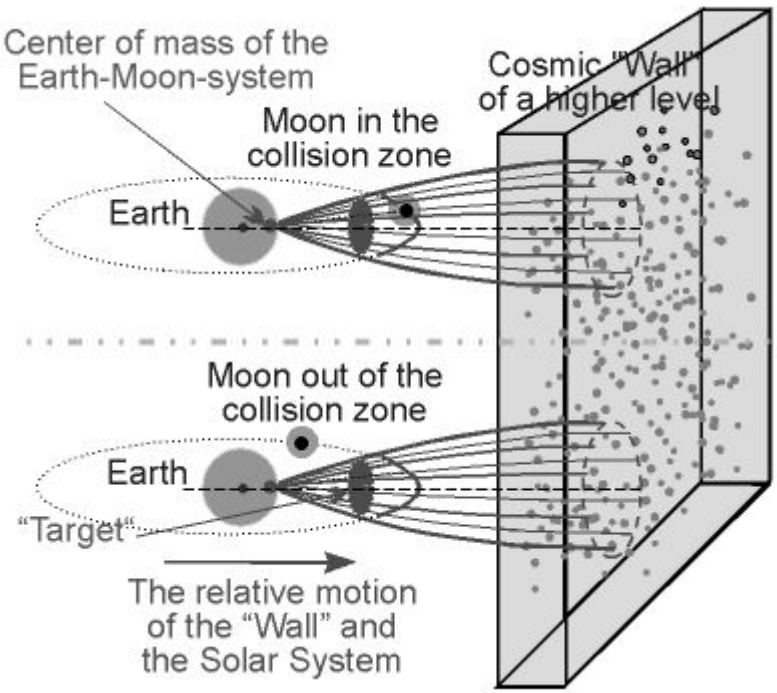
3. 6. 3. The events of level 8 in the Earth-Moon system

In reality, the Earth is not shot by any evil aggressor. The Sun takes part in the complicated movement of its Cosmic Hierarchy. Each member of each lower level is a satellite of the center of mass of the higher level. The conjectural projectiles becomes therefore simply rammed from us, with the whole Solar System, in the regular distances of our timescale and with a corresponding relative speed, between 25 km/s until more than 1000 km/s, according to the level of the Cosmic Hierarchy.

If we further continue to speak about „projectiles", then for two simple reasons. To the first, each movement is relative. To the second, we are accustomed to think,

after Newton, of stones falling on the Earth; the reverse situation, in which the Earth falls on a stone, sounds rather uncommon.

21. Earth-Moon system collides against a cosmic „wall"



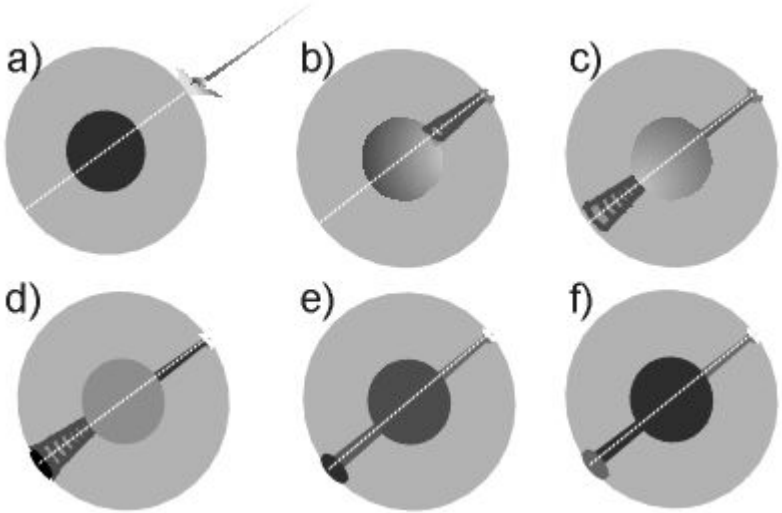
We know from the consideration of the periods of the Cosmic Hierarchy (at the beginning of this chapter), that the projectiles of the „calibers" 8 and 7 come from outside of the supergalaxy Andromeda. Let's imagine: the double-system Earth-Moon „collides" against such a distant cosmic „wall" of the level 8. What does happen then?

The relative motion, with speeds of several hundreds km/s, brings some projectiles into the direction of the center of mass of the Earth-Moon system. Is the Moon in the dangerous zone between the Earth and that „wall" , it has a big chance to be hit, but - and that is the important point here - only in its reverse, that means, into its side turned away from the Earth. Is the Moon, against it, outside the dangerous zone, the projectiles run further towards the center of mass of the double system, and hit the Earth rather. It is therefore almost impossible that the Moon could be

hit by the heaviest projectiles directly into its „face", that means, into the front-side. Only the lighter projectiles, that come in bigger flocks, or also the broken apart fragments of the heaviest projectiles, can reach this side of the Moon.

We know that the period of the level 8 of the Sun's Cosmic Hierarchy lasts 295.2 million years. The events, of which we are speaking here, can therefore happen only in such long intervals. We have discussed already previously that the projectiles of the „caliber" 8 arrive with the speeds much higher than one has assumed for such „conventional projectiles" as the asteroids. Now, we additionally determine that, if a cosmic shot of the „caliber" 8 can reach the Moon, then only in its back.

22. Energy-transfer across the Moon after a bigger impact



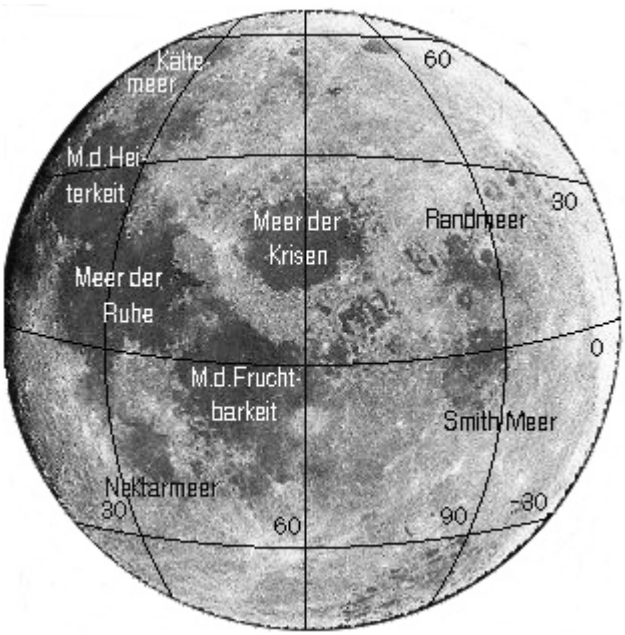
These three new qualities of the heaviest bombardment on the Moon (the continuity, but with very long interval, the extreme impact velocity, and the exclusive localization of the impact craters on the back-side of the Moon) radically change our possibilities to explain the formation of the Moonscape. We suspect the following steps of the formation of a mare on the Moon (compare the upper sketch to it):

a) an impact of the level 8 hits the Moon from the back;
b) a canal of the energy-transfer to the center of the Moon originates;
c) the canal of the energy-transfer reaches the antipode of the impact crater;

d) a break-in-basin first originates there;
e) the liquid basalt rock from the mantle of the Moon gushes out of the open canal;
f) the dark basalt floods the whole break-basin in the following millions of years.

Two plain things follow immediately from this description. To the first, the maria (*Plural* for mare) can originate only on the visible side of the Moon; against it, the invisible side of the Moon must show the biggest impact craters. To the second, only the impact craters themselves can show their different age; obviously separated with the intervals of 295.2 million years. On the other side, it is also quite understandable, that all the maria are filled with the same material of the Moon's mantle, that is exactly as old as the Moon itself. The Apollo-Mission examination of the rocks from various maria have exactly confirmed this situation.

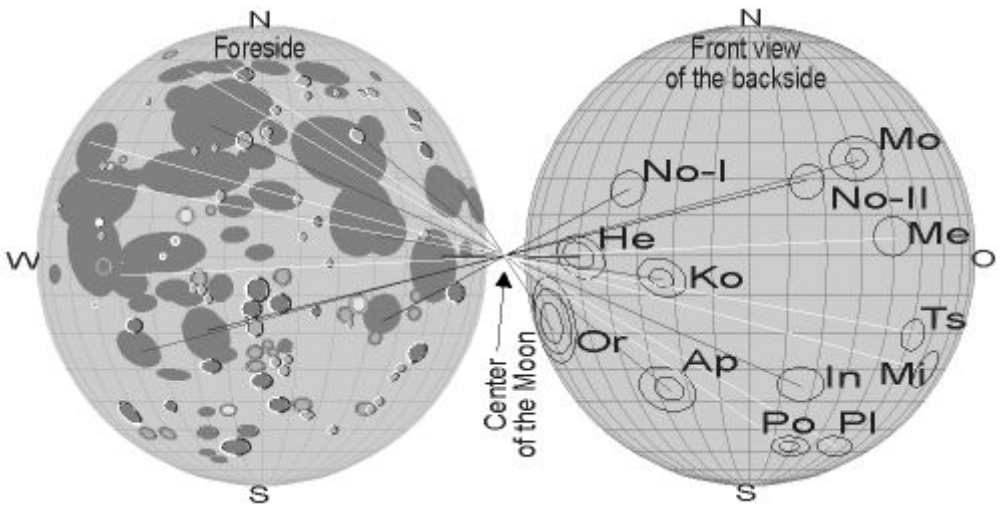
23. Maria originate only on the forefront of the Moon
(*the three left quarters of the picture)*



3. 6. 4. The antipodal correlation on the Moon

Let's imagine, we cut off the rear half of the Moon and shift it to the right, without to turn it, however. The inner material of the Moon is removed, so that we can see the craters at its rear half. We place the geometrical center of the Moon in the middle of the picture, exactly between the two halves of the Moon's surface. Try to imagine that only the central point lies on the picture sheet. The fore surface of the Moon lies (mainly) above the picture plane, and the rear surface lies (also mainly) behind the plane. Now, we connect all bigger craters on the rear surface with straight lines with the center of the Moon. Finally, we extend each of these lines to the left until they appear on the fore surface of the Moon.

24. Antipodal correlation of the Moon's maria and of the impact-craters



If one observes such a construction for the first time, one is amazed indeed. All drawn lines finish in the proximity of the centers of the observable maria. As you perhaps suppose, the so drawn lines are actually nothing other than the canals, along which the impact-energy had pumped the material of the Moon's core in the maria emerging on the antipodes of the impact craters. This antipodal correlation is the actual topic of this section.

The following table shows the most evident examples of the antipodal correlation on the Moon.

Such a wide correlation cannot be only a coincidence. This antipodal correlation is therefore a real phenomenon. If one still takes into account, that the directions of the cosmic projectiles of the level 8 can have maybe also a small deviation from the center of the Moon, then is the correlation even perfect. A bigger deviation should be impossible however, because it is actually the Moon, with the whole Solar System that dashes against the cosmic „wall", as we have discussed already above.

8. Antipodal correlation on the Moon

	Craters		Mare	
No	**Name**	**Position**	**Position**	**Name**
	The youngest structures			
1	Orientale (Or)	19S 95W	13N 87E 18N 58E	a) Marginis b) Crisium (?)
2	Apollo (Ap)	37S 153W	30N 17E	Serenitatis
3	Moscoviense (Mo)	25N 147E	23S 38W	Humorum
4	Hertz-jump (He)	0N 130W	4S 51E	Fecunditatis
5	Korolev (Ko)	5S 157W	9N 30E	Tranquillitatis
6	Ingenii (In)	35S 164E	36N 16W	Imbrium
	Some older structures			
7	Mendeleev (Me)	5N 140E	5S 40W	Procellarum (South)
8	Milne (Mi)	31S 113E	31N 67W	Procellarum (North)
9	Tsiolkovsky (Ts)	21S 128E	21N 52W	Procellarum (Mid)
10	Planck (Pl)	58S 138E	54N 46W	Sinus Roris
11	Poincare (Po)	57S 161E	55N 20W	Frigoris (West)
	Some very old structures			
12	No-Name (No-I)	19N 141W	14S 34E	Nectaris
13	No-Name (No-II)	27N 163E	19S 14W	Nubium

One can be tense, whether a next Moon-expedition will obtain the task to determine the age of the aforementioned craters. The expected intervals in their age should amount to 295.2 million years. All these craters should have originally reached their standard size, comparable with the present size of the Mare Orientale. What we can see today from the biggest craters has remained from them, after many later, smaller impacts.

3. 6. 5. The antipodal correlation on the Earth

The antipodal correlation of the impact craters and their implications on the opposite side of the Moon, just as the best known such correlation on Mercury (with the 1300 km big Caloris-Basin as impact-crater), strengthens of course our conviction, that this correlation is a universal effect indeed. Thus it must work also on the Earth.

What should we heed then on the Earth, in order to discover this correlation here?

- To the first, we have to catalogue all still existing places of the Earth's crust, with the biggest masses of the flood-basalt, the so-called plateau-provinces.
- To the second, we have to identify also the affiliated hotspots of the Earth's mantle, those still active or those already cold.
- To the third and last, we have to identify the actual impact-place for each event of the corresponding level.

After that, theoretically, a similar construction, as that above for the Moon, should be possible also on the Earth. This task won't be so simple however. We already fail at the second step. It is relatively simply to find the still existing plateau-basalts. However, the hotspots are already cold after approximately 50 millions of years. They produces then no new traces on the movable Earth's crust.

If we should manage someday the tasks of the second step with new, clever methods, we finally fail because of the third step. The impact-craters of the level 8 are hardly to be found on the Earth today. There are several reasons for it, which all can be summarized however under the term of the surface-change on the Earth.

- The weathering processes, for example, are so effective on the Earth that they wipe off almost all traces of the devastation in a fraction of the long period of the level 8. There remain visible only the following, mostly the quite fresh traces of the youngest events of the level 7, with an interval of 24.3 million years.

- The still active plate tectonics contributes also considerably to blurring of the traces. The drift of the continents over thousands of kilometers within only one period of the level 7 is possible.

- The land covers only 30% of the Earth; the Precambrian regions are yet essentially less. That means that, purely statistically, more than 80% of all impact-craters, which have originated more than 180 million years ago, are already lost for the research forever. It is because no part of the oceanic crust is older than 180 million years today; the crust is renewed constantly. One must really admire the performance of the geologists, who could read from their finding-collection, despite this limitation, an almost complete history of the evolution of the Earth's crust.

To the above problems, yet much bigger difficulties come, with the proper assignment of the few known craters to the hotspots and the basalt-provinces. The most important reasons for a deviation of the antipodal correlation on the Earth from its ideal variation are following.

- On the Moon, the canals of the energy-transfer extend almost ideally through the center of the Moon. Something similar can only rarely happen on the Earth. The center of mass of the Earth-Moon system has been moved approximately 2/3 of the Earth's radius away from the center of the Earth. The super fast projectiles therefore have no reason to head for the center of the Earth directly.

- The Moon orbits the Earth in a plane that is inclined to the equator about 18° (compare just the inclination of the Earth's axis with the plane of the Moon's orbit). It stands sometimes high at the heaven, sometimes deep. Similarly, the center of mass of the Earth-Moon system hikes sometimes on the North-hemisphere, sometimes under the equator. Therefore, the current position of the center at the moment of the impact influences the direction of the emerging canal additionally.

However, the Earth has also an advantage from the view of our task. Its interior is much hotter, than that of the Moon or Mercury. Earth's mantle is almost liquid and therefore more vulnerably. With the partially liquid core, and the hot, viscous mantle, it is in most cases enough to add also the energy of an impact of the level 7, and maybe sometimes of the level 6, in order to open similar canals of the energy-transfer on the Earth.

Since the last „catastrophic" impact of the level 8, 259.5 million years ago, already ten full periods of the level 7 has been finished until today (see our timescale in the

section 4.3). That already makes possible a quasi-statistical analysis of the antipodal correlation also on the Earth. At least, we are able to confirm with it the real periodicity of the activation of the deep hotspots and of the formation of the plateaus of the basalt-provinces in the course of Mesozoic, the second youngest era of the Earth's history. We therefore start our analysis in the following table with the basalt-provinces and the hotspots that have produced these provinces during the Mesozoic; in the sequence of the youngest to the oldest.

The measured age of all known hotspots and of the corresponding basalt-provinces agrees ideally with our theoretical time of the individual episodes (quantum jumps) of the Cosmic Hierarchy of the Sun. The statement of the following table is unambiguous. The basalt-provinces on the Earth originate as a consequence of the cosmic events that occur with the periods of the Cosmic Hierarchy of the Sun. The corresponding hotspot canals have been opened exactly with the cosmic clock, and their productivity depends on the level of the hierarchy. The North-Siberian province of the level 8 is by an order of magnitude mightier than the others, which correspond to the level 7.

9. Antipodal correlation on the Earth (part 1)

No	**Episode** [My before today]	**Position of the hotspot**	**Basalt-province**	**Remark to the activity of the older hotspot**
1	16.35	Yellowstone 44N 110W	Columbia River (North America)	Afar still active
2	40.66	Afar 6N 37E (?)	Ethiopian (Ethiopia)	Reunion still active
3	64.98	Reunion 21S 55E	Deccan Trapps (India)	
4	64.98	Iceland 65N 18W	Greenland and North-Atlantic	
5	89.29	?	?	Kerguelen still active
6	113.60	Kerguelen 49S 65E	Rajmahal (Bengal)	Tristan still active
7	113.60	Louisville	Ontong-Java (Solomon Islands)	
8	137.91	Tristan da Cunha 37S 12W	Parana+Namibia (South-Atlantic)	Bouvet and Marion still active

9	162.22	?	?	
10	186.53	Bouvet 54S 3E	Antarctic province (North-Antarctica)	
11	186.53	Marion 46S 38E	Karroo (South Africa)	
12	210.84	Great Meteor 30N 28W	North-Atlantic (Eastern USA)	
13	235.15	?	?	
14	259.46	Jan Mayen 71N 8W	North-Siberia (Russia)	by far the biggest known province

Furthermore, we see from the table that, the canals can be activated once again, after 24.3 million years, through the impacts of the following episode. After one more period they „work" already very weak, and then they remain cold. This observation also proves that some big part of the Earth's interior continues to be very hot after each impact of the level 7. One cannot suspect that the following impacts take exactly the same way and hit the same places on the rotating Earth after 24.3 million years.

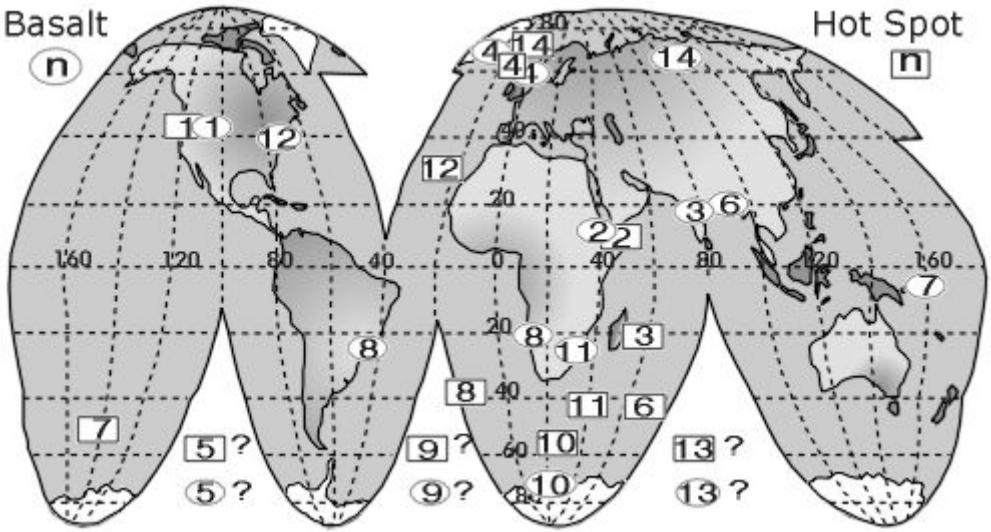
We can also assume that although no basalt-provinces have still been found for three of the ten episodes of the level 7, the activating impacts have taken place also in these three cases. There is no pause in the cosmic bombardment of the Earth (compare once more the section 4.3).

This partial success of the temporal correlation with our Cosmic Hierarchy cannot alter the fact however that we cannot succeed with a complete proof of the third step of the antipodal correlation on the Earth, as we have just discussed at the beginning of this section. In order to see more exactly, which problems are connected with the next step of the necessary analysis, we compare the biggest impact craters of Mesozoic, as known today, with the supposed antipodal hotspots; in the same sequence as above.

Until today one has found only four big craters from Mesozoic. It is: Popigai, Chicxulub, Putschesch-Katunki and Manicouagan. The table shows that the age of these craters agrees exactly with the timescale of the Cosmic Hierarchy. Nevertheless, one knows a rather certain antipodal partner for only one crater, the Chicxulub crater in Mexico. In this case, it is the hotspot volcano on the island Reunion. The others must be first checked more exactly. It seems however to be

sure, that several impacts can happen (almost) simultaneously during each episode of the level 7.

25. Basalt-provinces and the corresponding hotspots



10. Antipodal correlation on the Earth (part 2)

No	Episode [My before today]	Position of the hotspot	Basalt-province	The supposed crater
Identified hotspots and basalt-provinces; (for craters of the level 7 are looked):				
1	16.35	Yellowstone 44N 110W	Columbia River (North America)	Indian Ocean (at Afar)
2	40.66	Afar 6N 37E (?)	Ethiopian (Ethiopia)	Pacific (at Galapagos I.)
3	64.98	Reunion 21S 55E	Deccan Trapps (India)	Chicxulub; identified 20N 90W; 180 km
4	64.98	Iceland 65N 18W	Greenland and North-Atlantic	Between Antarctica and Tasmania (? 65S 160E?)
5	89.29	?	?	?
6	113.60	Kerguelen	Rajmahal	Carswell (?)

		49S 65E	(Bengal)	55N 105W; 37 km
7	113.60	Louisville	Ontong-Java (Solomon Islands)	Europe
8	137.91	Tristan da Cunha 37S 12W	Parana+Namibia (South-Atlantic)	Northwest Pacific (? 37N 170E?)
9	162.22	?	?	?
10	186.53	Bouvet 54S 3E	Antarctic province (North Antarctica)	Bering Sea / Aleutian I. 54N 180W
11	186.53	Marion 46S 38E	Karroo (South Africa)	Northeast Pacific 46N 140W
12	210.84	Great Meteor 30N 28W	North-Atlantic (Eastern USA)	Bismarck Sea 5S 150E
13	235.15	?	?	?
Level 8 (for crater is looked with a diameter > 800 km):				
14	259.46	Jan Mayen 71N 8W	North-Siberia (Russia)	Ross Sea 76S 175W
Known craters of the level 7 (for hotspots and basalt-provinces are looked):				
15	40.66	?	Weddellmeer (?) (Antarktika)	Popigai 73N 106E; 100km
16	186.53	Louisville (?)	South-Pacific	Putschesch-Katunki 59N 40E; 80 km
17	210.84	Norfolk (?) 29S 168E	Coral sea (?)	Manicouagan 52N 69W; 100 km

The Carswell crater is so small and its age still so uncertain, that it could also be assigned to one of the episodes of the level 6, which recur every 2 million years.

As we have demonstrated here, the Earth-Moon system shows many indications of the antipodal correlation of the cosmic impacts and their geological implications indeed. This correlation is a real phenomenon in the Solar System. I am sure to remember, that also one of the largest pieces of the Shoemaker-Levy-9 comet has caused an outbreak of a hot gas exactly on the antipode of its impact on Jupiter in 1994.

Reversely, one can use this correlation, in order to identify many scientifically and economically interesting places of the Earth's crust. We could, for example, apply this correlation for the Prague-Basin. The Prague-basin has originated probably 16.35 million years ago, when the most recent impact of the level 7 has happened. On its antipode from that time, it should be possible to find the corresponding

basalt-province of the size of the Deccan Trapps. My favorite localization for the corresponding hotspot is the archipelago of Hawaii.

In summary, our idea of the Cosmic Hierarchy of the Sun suggests the following chain of the geophysical events:

- Formation of an impact crater;
- Formation of its antipodal hotspot;
- Formation of the corresponding flood-basalt-province;
- Forcing of an accordingly extensive change of the environment (at the two antipodes, by the smaller impacts, or globally, on the whole Earth, by the larger impacts).

It is obvious that above all the last element of this chain, the environmental change, must lead each time to a massive discrimination of the highly specialized groups of the living organisms. On the other hand however, this alteration manages some new habitats for new groups of species. For this reason, one should maybe mark this whole chain of the events as a life-crisis or better as an inventive crisis, and do not speak only one-sidedly about the mass extinction. The exhausted passengers of the cosmic carousel of life get out, the renovated carousel lifts however new passengers and the party on the cosmic racket-place goes on.

3. 7. Concentration of the biggest glaciations in few periods

The temporal concentration of the biggest glaciations of the Earth, some of which had extended to the equator, reflects an exceptional period in the Earth's history.

The geologists have found out, in their long field-work, that the global glaciations of the Earth's surface were not randomly scattered along the timescale of the recent 3.5 billion years. Rather, one has determined a clear grouping of periods of the particularly strong glaciations in relatively short sections of the geologic time. In the remaining time, such global glaciations are hardly appeared, as the lower table presents.

Through which physical conditions could the forming of the necessary big amount of ice be favored, in order to allow the glaciers to expand up to the equator-

proximity? You will be amazed maybe, but our explanation is as simply as plausible. It is based of course, as most other explanations in this book, on our prehistory of the Solar System. Since the collision with the part of the Proto-Mars, the Earth-Moon system drifts continuously into the proximity of Venus - the true center of mass of the whole Solar System. This drift brings the Earth also nearer to the Sun of course. The average temperature of the Earth's surface increases therefore very slowly but continuously, from originally less than -32°C before the collision until on about +8.4°C today. Only as the average temperature had ascended at the proximity of the melting-point of ice, at 0°C, the big natural deepening in the profoundly frozen Earth's crust could be gradually filled for the first time with liquid water. These deepening became in that natural way the future ocean basins. However, their water had to be alternately frozen and melted again and again, still over some longer time, until the average temperature of the Earth had finally overstepped this area around 0°C. It happened approximately 700 millions years ago. Only since that time, and not earlier, exist the oceans on the Earth.

Michael Hambrey describes in his article „*Secret of a tropical ice age"* (in „*New Scientist"*, 1 February 1992, pp.42-49) the laborious way of the geologists to the present-day realization over the role, which the big glaciations have played in the formation of the Earth's surface. We are mainly interested here in the results of these efforts, in the today already indisputable facts.

There were several periods in the geologic time, in which the glaciations of the Earth's surface have assumed a global size. However, they are conspicuously concentrated about the geologic era of the late Proterozoic, as the lower table shows. By means of this table, one can recognize three specific periods in the history of the global glaciations.

- Our commentary to the glaciations 1, 2, and 3 is as follows. During these oldest periods from approximately 3500 to 2000 millions years before today, the glaciations occur exclusively during the cosmic „quantum jumps" of the level 8; these recur only every 295.2 million years. The Earth's surface is still very cold. It therefore needs the utmost possible warming (the largest energy transfer), which is available only during these „quantum jumps", in order to be able to produce enough snowfall for lasting glaciations.

- We do not need any specific commentary to the second period. During the middle period, from approximately 2000 to 1000 millions years before today, no global glaciations occur. We have to notice however, that it is a real pause in the glaciations indeed, and not something like the incomplete results of the geologists, or something else like that.

- Our commentary to the youngest period is as follows. The glaciations occur after the long pause again. First very slowly, then more and more frequently and with a growing intensity. The intensity grows, until the biggest glaciations of all times has finally reached its maximum 640 million years ago. Observe in the table that, the times of these newer glaciations lie all, without exception, in the contrary to the oldest ones, exactly between two neighboring „quantum jumps" of our cosmic timescale, even if we have refined the scale to the level 7, with a duration of „only" 24.3 million years.

11. The largest glaciations of the Earth

No		**Time of the maximal glaciations** (My before today)	**Relative glaciations intensity** (%)	**Near quantum jump of the Cosmic Hierarchy** (My before today)	**The level of the jump of the Cosmic Hierarchy**
1		2630-2600	20	2621.070	8
2		2400-2280	70	2325.869	8
3		2050	30	2030.668	8
4	a			1145.065	8
	b			974.889	7
	c	960	15	950.578	7
5	a	870	15	877.645	7
	b			853.334	7
	c			849.864	8
6	a			825.553	7
	b	810	65	801.242	7
7	a	740	70	752.620	7
	b			728.310	7
8	a			655.377	7
	b	640	100	631.066	7

9	a			554.663	8
	b	540	10	530.352	7
10	a	450	50	457.419	7
	b			433.109	7
11	a			335.865	7
	b			311.554	7
	c	290 (330-230)	90	287.241	7
	d			262.932	7
	e			259.462	8
	f			235.151	7
	g			210.840	7
12	a	5	90 (?)	16.353	7

Without to exaggerate, but also without to fall into wrong modesty, I must admit, I cannot imagine a better explanation for this complicated course of the history of the big glaciations, as our own, which was built on our cosmic timescale and the prehistory of the Solar System.

Let us consider a little bit more exactly, what has happened on the Earth at that time of the biggest glaciations.

In the first few hundred millions of years after the collision with the part of the Proto-Mars, and after the formation of the Moon, 3506.673 million years ago, the Earth has calmed down generally and has cooled down so far that its surface had solidly frozen almost everywhere. The average temperature of the Earth still lay clearly below the 0°C-point at that time. It rose however inexorably, because of the slowly decreasing distance of the Earth to the Sun. (You surely remember, the push of the Earth towards the Sun also came about because of this collision of the level 9).

In the course of time happened the following. During the events of the level 8, the Earth was bombarded with the cosmic projectiles of the heaviest „caliber", and was melted more or less globally, according to the hit-quota. The projectiles of the same „caliber" leave their huge traces also on the Moon, where they cause the basalt floods into the maria opposite the impact craters. However, such impacts had the strongest effect on Venus. Its surface was every time almost completely renewed. Venus lies in the center of mass of the entire Solar System and is therefore bombarded on the strongest.

The quantum jumps of the level 8 last several millions of years (compare once more the picture 9 in section 3.1). Therefore, these events bring so much heat to the Earth's surface that despite the deep average temperature the frozen up large masses of ice melt and cause a lasting snowfall and global glaciations.

First some millions of years after such a huge cosmic „quantum jump" of the level 8, the cold silence returns on the Earth and the glaciers begin to recede gradually. While no new snow falls on the Earth, the ice sublimes slowly. The smaller impacts of the level 7 do not transfer the necessary heat to the Earth's surface. Therefore, glaciations first occur only in the biggest intervals of 295 million years.

The current period of the level 9 (that is the biggest, that began with the formation of the Moon) has reached its stabilization phase (see picture 9 again) around the middle of its (almost exhausted) period of 3584.6 million years. It took place approximately from 2000 to 1000 million years ago. The global intensity of the (never ending) bombardment of the level 8 has decreased. Because the impacts of this level become now more rare, the generated heat was no longer high enough to globally change the frozen water into snow; the glaciations stayed out.

Then has happened, what has procured life its unique chance. Through the hike of the Earth nearer and nearer to the Sun, the average surface-temperature of the Earth has come into the proximity of the melting point of the water-ice. The ocean-basins have started to fill themselves with liquid water little by little, of course first near the warm equator, and only later in the higher latitudes.

The situation now has totally changed therefore. The liquid water was available permanently in a big quantity for the first time in the history of the Earth. Each series of the cosmic impacts has now only warmed up the water additionally. No direct increase of the ice mass was forced during the impacts. Merely during the corresponding phases of the stabilization, which separate each two „quantum jumps" of the level 7, the possibility was now given to press the global temperature under the freezing-point again and to produce the new glaciations with it.

One can clearly recognize in the above table, when the point of 0°C has been reached. The event of the level 8, 850 million years ago, has dramatically increased the intensity of the glaciations, after the very long pause. The following similar event, 555 million years ago, against it, has clearly reduced the intensity again. The

temperature of 0°C therefore has been reached around the middle of this time between, therefore approximately 700 millions years ago.

One receives of course the same result more easily, and even more reliably, from the calculation of the proper part of the continuous change of the Earth's-temperature from -32°C 3507 million years ago until +8.4°C today.

Also the „explosion" of life exactly in this time is a mighty proof for our thesis. The physical conditions on the Earth have crossed an important qualitative border during this unique section of the geologic time. A recommendable article of Jeffrey S. Levinton, „*The Big Bang of Animal Evolution"* (in „*Scientific American"*, November 1992, pp.52-59) begins with the question:

> "Almost 600 million years ago animal evolution demonstrated an unmatched burst of creativity. Has the mechanism of evolution altered in ways that prevent fundamental changes in the body plans of animals?"

Levinton finishes his article with the supposition:

> "Are the phylum-level body plans, so ancient and so durable, truly the optimal solutions to the problems of survival and reproduction, reached through an early, fast bout of natural selection before development congealed? Or are they just random combinations of characters assembled by accidents of history? I think the best to be said for now is that there is some truth in both alternatives. Evolution at the species level continues unabated, but variation in the surviving body planes does not seem to occur. For whatever unknown reasons, there will probably never again be an explosion of animal diversity on the earth like the one that took place sometime around the early Cambrian."

He is surely right with it. Such an explosive development of life hardly can repeat itself, not only on the Earth, but even in the whole Universe. You already know, from the previous sections of this book, why it is almost impossible indeed. And we are also right. Our prehistory leads, as we see, to the enlightenment of one further puzzle of the traditional science, the big puzzle of the evolution of life.

3. 8. „Sleeping" volcanism of Venus

The radar eyes of the Magellan spacecraft have discovered so many astonishing features of Venus, that this planet can no longer be considered simply our planet's twin. First of all, the „sleeping" volcanism of Venus confirms our idea of the Cosmic Hierarchy of the Solar System, and the specific position of Venus in the center of mass of the whole Solar System.

3. 8. 1. Some previously known facts about Venus

Our next neighboring planet hides itself under a dense cloud-veil. The very successful mission of the *Magellan* spacecraft, that has orbited Venus on a polar orbit, from 10 August 1990 to 11 October 1994, has exactly mapped, thanks to its „radar-eyes", approximately 98 percent of the surface of Venus. The most important question that should be answered with the results of this mission is: why does Venus differ so very much from the Earth?

Although the question is still open for the traditional science today, one knows already very much about the inner structure of Venus, over the structure and composition of its surface and its atmosphere. We now summarize the most important, generally known facts about Venus.

- Mass of Venus = 4.87×10^{24} kg = 0.8149 masses of the Earth;
- Radius at the equator = 6052 km = 0.949 radius of the Earth;
- Mass density = 5.25 g/cm^3 (the Earth: 5.514 g/cm^3);
- Average surface-temperature = 482°C (the Earth: 8.4°C);
- Composition of the atmosphere: 96% carbon-dioxide, 3% nitrogen, traces of sulphur-dioxide, steam, carbon-monoxide, and other gases;
- Atmospheric pressure at the surface = 90 Earth's atmospheres.

3. 8. 2. Discoveries made with the new radar maps of Venus

In opposition to the Earth or to the Moon, Venus is completely covered with the basalt crust. There are no continents on Venus, like our continents, and also no plateaus, as we know them from the Moon. To the comparison, we remember that the continents on the Earth have developed through the continuous subduction and

growing of big fragments of the Earth's crust. The material has accumulated itself around the proto-cratons, the „corners" of vibration cube of the Earth's material, which vibrates since the formation of the Moon. On the other side, the high-plateaus of the Moon have (supposedly) originated from the solidifying rock, during the cooling of the initially quasi-melted body.

The crust of Venus is very regularly distributed around the whole planet. There are no spacious elevations, like our land-plateaus, and also no deepening, like the ocean-basins. The up to 12 km high mountains protrude directly from the flat rocky plane of Venus.

There are no indications for a plate tectonics on Venus. We read to it, for example, in the article by S. Ross Taylor and Scott M. McLennan, „*The Evolution of Continental Crust"* (in „*Scientific American"*, January 1996, pp.60-65):

> "After analyzing the wealth of radar data provided by *Magellan*, scientists have concluded that plate tectonics (that is, the continual creation, motion und destruction of parts of the planet's surface) do not seem to operate on Venus. There are no obvious equivalents to the extensive mid-ocean ridges or to the great trench systems of the earth. Thus it is unlikely that the crust of Venus regularly recycles back into the planet's mantle. Nor would there seem to be much need to make room for new crust: the amount of lava currently erupting on Venus is roughly equivalent to the output of one Hawaiian volcano, Kilauea - a mere dribble for the planet as a whole."

The surface of Venus seems to be very young. Seemingly, a bulk of the surface has originated only in the last 400 to 500 millions years. However, the planet must be so old as the other members of the planetary family. Already 3.5 billion years have passed since the last restructuring of the Solar System.

On the radar maps, one logically finds no impact-craters that are smaller than three kilometers in diameter. In the dense atmosphere of Venus, all smaller impacting bodies burn completely out, before they can reach the surface at all.

One has been able to identify altogether 912 impact craters on the radar maps. They are statistically very evenly distributed over the whole surface and only very rare (about 20 of them) are marked from the ageing processes, which is a big surprise. One of the acceptable hypotheses, trying to explain this enigma, supposes an extraordinary geologic event about 500 million years ago. Some combination of

intense tectonic deformation or volcanic activity caused Venus surface to be wiped clean, and there was very little geologic activity since then.

There are several hundred thousand to millions of volcanoes on Venus. They are distributed over the whole surface, more or less accidentally. Venus shows numerous forms of the volcanism. One finds small domes, with 10 to 15 kilometers in diameter, nearly everywhere on Venus. One also finds the much bigger shield volcanoes, that resemble the famous hotspot volcano Mauna Loa on Hawaii, mainly at the top of wide rips, that has probably formed over the plumes of the rising hot material from deep within the planet.

Such big quantities of the rising material form also other circular structures, the so-called „crowns", obviously directly connected with the hotspots. A typical „crown" reaches a diameter of 300 km and 2.5 km height and is surrounded with concentric fights of downs. The biggest „crown" on Venus, Artemis Chasm, reaches the diameter of 2100 km.

One had identified „crowns" in all development-stages, from the youngest, where the hot plume had just reached the surface, to such, that were „dead" long ago, with later volcanic activity covering them. Some geologists assume, that a „crown" is the „covering" of an upheaval of the hot material, which bends the surface upward. The regular circle-form of the Artemis-"crown" and its size suggest however, that it could rather be a zone of a strong compression and of collapse, like the oceanic subduction zones on the Earth.

Still other, cobweb-similar structures, the so-called „arachnoids", with the size from 50 to 230 km, has been formed also by the lava coming from the inner of the planet. They are similar to the „crowns", although generally smaller. They look as if the pressure from below the surface very recently would have brought the surface to bursting.

3. 8. 3. The exceptional position of Venus in the Solar System

The determined long periods of a relative inactivity of the surface of Venus, which are interrupted with extremely strong, global volcanism, fit exactly into our picture of the Cosmic Hierarchy of the Sun. In addition, the temporal development of the surface of Venus fits also perfectly into the timescale of this hierarchy. The hardest

impacts, that happen every 295.2 million years in the whole Solar System, have recently occurred exactly 554.663 and 259.462 million years ago. On the Earth, these two events have caused the biggest so far, scientifically proven, mass extinctions.

The earlier of these both event has manifested itself so strongly in the terrestrial geology, that the geologists has marked with it the main boundary in the geologic time, separating the Precambrian from all the younger eras of the Earth's history. The mass-extinction around this border is not so easy to see as some later ones, because the land was yet not populated at that time, and the sea-animals has just started to develop their hard body-parts, like peels, which had formed the first reliable fossils from this ancient time. Nevertheless, many geological results suggest that this next-to-last „bombardment" of the level 8 of the Sun's Cosmic Hierarchy was very hard indeed.

Also the similarly dramatic latter of these events has clearly manifested its implications. Therefore the geologists have marked with it the following transition between two different eras of the geologic time, the Paleozoic and the Mesozoic.

As you already know, during the events of the level 8, 554.663 million years ago as well as 259.462 million years ago, similar dramatic impacts have jarred the whole Solar System. Venus that lies in the center of mass of the Solar System has been hit especially often during each „quantum jump". If several projectiles of the „caliber" 8 have hit Venus almost simultaneously, they surely brought the whole Venus in the vicinity of the melting point. Its surface was also re-melted of course. Therefore its whole surface shows no many older structures after each next such event. The present-day Venus-surface looks not only accordingly young. It actually cannot contain parts older than these 554.7 million years.

The very recent big „renewal", 259.5 million years ago, has wiped out again many of the previously formed structures. Only the numerous traces of the smaller impacts of the level 7, coming with the shorter intervals of 24.3 million years, can be observed as really non-damaged structures. We name the impacts of the level 7 in this context as the „smaller", although, as we already know, just one of such smaller impactors, that hit the Earth 64.975 million years ago, has „annihilated" the still remaining dinosaurs and many other types of animals on the Earth.

One can suspect the direct geological traces of these two last series of the impacts of the level 8 on Venus only under the elevated regions like Aphrodite and Ishtar Terra, which seems to be the crumbled remains of the solidified basaltic lava-streams. All other types of the geologic formation of Venus discussed above had to have be assigned to the younger events of the smaller levels 7 and 6 of the Cosmic Hierarchy. If one takes into account the very hot mantle of Venus, and of course also our previously proposed antipodal correlation of the impact craters and the places of the formation of accordingly big floods of lava, one can probably correlate the „crowns" with the impact craters of the biggest „caliber" - about 70 km diameters and more - lying on their antipodes. In a similar way, one can probably correlate the smaller impact craters (with a diameter from 20 to 70 km, which still regularly originates during the events of the level 6, lying only about 2 million years apart) with such structures, like the arachnoids, some sub-level of the „crowns".

The investigation of Venus and the analysis of the *Magellan* maps is still going on. Nevertheless, the Cosmic Hierarchy of the Sun seems already today to be an essential part of our scientific knowledge about Venus and about its extraordinary place in the Solar System. I hope, the acceptance of this trivial fact will not need such shamefully long time, as it was necessary in the geology for the acceptance of the similarly trivial idea of the plate tectonics.

3. 9. Our modest Milky Way galaxy

We must correct our egocentric philosophy once more again. Our home galaxy of the Milky Way it much smaller than we have thought.

The structure of the Cosmic Hierarchy of the Solar System is confirmed on many different ways. This hierarchy says, among other news, that our own galaxy is a satellite of the Magellanic Cloud, and not reversely, as we have been told until today. The Magellanic Cloud, unluckily neglected so far in the astrophysics, is thus our paramount, grandmother galaxy. Many of those stars, that we have assigned, from quite egoistic reasons, to our Milky Way, belong in reality to this grandmother-galaxy. The Magellanic Cloud, on the other hand, is a satellite of the much mightier supergalaxy, Andromeda. In this way, Andromeda, our conjectural twin galaxy, turns out to be our great grandmother galaxy.

I personally have no problems with this sequence of the galaxies. I gladly give up a few million stars already voluntarily, if I can receive for it a better cosmic family for our Solar System.

3. 9. 1. Traditional view of the Milky Way

In the article „*How the Milky Way Formed"* by Sidney van den Bergh and James E. Hesser (in „*Scientific American",* January 1993, pp.52-60), we read:

> "Much of the stellar araeological information that astronomers rely on to decipher the evolution of our galaxy resides in two regions of the Milky Way: the halo and the disk. The halo is a slowly rotating, spherical region that surrounds all the other parts of the galaxy. The stars and star cluster in it are old. The rapidly rotating, equatorial region constitutes the disk, which consists of young stars and stars of intermediate age, as well as interstellar gas and dust. Embedded in the disk are the sweepingly curved arms that are characteristic of spiral galaxies such as the Milky Way. Among the middle-aged stars is our sun, which is located about 25000 light-years from the galactic center. (When you view the night sky, the galactic center lies in the direction of Sagittarius.) The sun completes an orbit around the center in approximately 200 million years.
>
> That the sun is a part of the Milky Way was discovered less than 70 years ago. At the time, Bertil Lindblad of Sweden and the late Jan H. Oort of the Netherlands hypothesized that the Milky Way system is a flattened, differentially rotating galaxy. A few years later John S. Plaskett and Joseph A. Pearce of Dominion Astrophysical Observatory accumulated three decades' worth of data on stellar motions that confirmed the Lindblad-Oort picture.
>
> In addition to a disk and a halo, the Milky Way contains two other subsystems: a central bulge, which consists primarily of old stars, and, within the bulge, a nucleus. Little is known about the nucleus because the dense gas clouds in the central bulge obscure it.
> ...
> All four components of the Milky Way appear to be embedded in a large, dark corona of invisible material. In most spiral galaxies the mass of this invisible corona exceeds by an order of magnitude that of all the galaxy's

visible gas and stars. Investigators are intensely debating what the constituents of this dark matter might be."

Let's note this fact that the traditional information to the structure of our maternal galaxy has been deduced from the very small part (of only about ten percent) of the galaxy's mass. It would be a real „stroke of luck" for the science, if the structure, and above all the dynamics of the galaxy, which was derived from this small part of its mass, would already agree with the reality and should require no further qualitative corrections more.

On the contrary, in our description of the Milky Way by means of Naturics, with the Sun's Cosmic Hierarchy, and with the universal field of light, there is no place, and no need as well, for any dark matter in the Universe. The dynamics of our cosmic carousel runs perfectly, like a Swiss watch.

3. 9. 2. Open questions in astrophysics

There are many other open questions in the traditional astrophysics. They are too much for to believe in the traditionally proposed structure of the Milky Way. Some of such questions are collected in the introductory article by Ulf Borgeest, „*Questions of the Modern Astrophysics",* to the German series of the „Scientific American" (Digest 4: Astrophysik, July 1996, pp.6-9). For example, we read here:

"With the most efficient telescopes, they are able to see galaxies as they have looked 10 to 15 billions years ago. It is astonishing that already in the early times of the Universe, just so fully formed spiral galaxies are found as in the nearer surrounding of the Milky Way. It could be determined that these distant world-islands contain clearly less heavy elements as the near ones. However, the actual phase of the formation of the galaxies still escapes the observation. ...

However, it remains the probably biggest problem of the modern astrophysics: how the galaxies and the even bigger structures - the clusters of galaxies and the so-called superclusters, consisting of thousands of galaxies - were formed. ...

Also the movement of the galaxies in the clusters is much too fast. There, must be postulated even 99 percent of the dark matter in order to produce a

dynamic balance. For the moment, the astrophysicists can only speculate over the nature of the mysterious material. ...

The formation of the stars is meanwhile much better understood. But the researchers cannot still answer the question: is our Earth a curiosity? Or there are numerous other stars, with planets around them, on which life could exist? One thing is certain: at least 70 percent of the stars exist in double-star systems... "

In a summary of one further article of this series, „*Companions to Young Stars"* by Alan P. Boss (in „*Scientific American",* October 1995, pp.38-43) we read even more clear words:

"The surprising finding that even the youngest stars commonly exist in sets of two or three has revised thinking about the birth of star systems."

And further in the article, we read:

"The finding that binary systems are at least as common for young stars as for older might seem reasonable enough, but for astronomers it came as a shock. Most notions of double star formation had predicted that stellar companions are produced or captured well after a star has formed; hence, the youngest stars would be expected to exist singly in space. Such theories no longer bear weight. There remains, however, at least one idea for the formation of double stars that holds up to the recent observations. It may be the sole explanation for why binary star systems are so abundant in the universe.

The sun, a mature star, has no known stellar companion, even though most stars of its age are found in groups of two or more. In 1984 Richard A. Muller of Lawrence Berkeley Laboratory and his colleagues hypothesized that the sun is not truly a single star but that it has a distant companion orbiting it with a period of about 30 million years. He reasoned that gravitational forces from this unseen neighbour could disturb material circling in the outermost reaches of the solar system, sending a shower of comets towards the inner planets every time the star neared. Muller suggested that this effect might explain periodic mass extinctions: comets generated by the sun's companion would hit the earth every 30 million years or so and - as with the demise of the dinosaurs - would have wiped

out much of life on earth. Because its approach would have sparked such widespread destruction, Muller called the unseen star 'Nemesis'.

Most scientists have not accepted Muller's interesting idea. For one, the closest known stars (the Alpha Centauri triple star system, at a distance of 4.2 light-years) are much too far away to be bound to the sun by gravity. In fact, there is no astronomical evidence that the sun is anything other than a single star whose largest companion (Jupiter) is 1000 times less massive than the sun itself. But living on a planet in orbit around a solitary sun gives us a distorted view of the cosmos; we tend to think that single star are the norm and that double stars must be somewhat odd. For stars like the sun, this turns out to be far from true."

Do you remember our prehistory of the Solar System? Do you remember our explanations following it? Then you surely have no problem with the above reasoning of Alan Boss. Simultaneously, you see the weak points of the really interesting idea of Muller. We have clarified these weak points and we know where the Dark Companion of the Sun is now. We also understand, what a role has the companion played (and still plays) in the life of the Solar System and all its objects.

3. 9. 3. The idea of the Cosmic Hierarchy delivers the most important answers

In the above quoted article by Alan Boss, we read:

"The sun, a mature star, has no known stellar companion, even though most stars of its age are found in groups of two or more."

That is, as you already know the most important point of our book: the Sun has originated, as well as most stars, in a double-star system. And this dynamic system of two stars still exists today, although we cannot admire them as two separately shining objects on the sky.

Alan Boss writes further:

"Planets in double or triple star systems would be excluded from special regions within which they could not orbit stably. Inside this zone, a planet would eventually be tossed out by gravitational interactions. For a double

> system planets could reside either near each of the stars or far from them both."

As you already know, our model of the Proto-Solar System describes the narrow orbits of the proto-planet near each of the stars. During the „hour-zero", however, the outer star was damaged, and its mass was widely distributed along the Kuiper Belt. Such a real possibility has not been considered by astrophysicists until now. In that case the new orbits can be stable also in the previously forbidden zone. The four gaseous giants of the Solar System occupy exactly those orbits today. By the way, we have also fully explained a stability of such an extraordinary orbit, like that of Pluto.

Alan Boss writes also further:

> "What about finding companions of even lower mass? Duquennoy and Mayor produced evidence that as many as 10 percent of solar-type stars are bound to brown dwarfs - that is, they have stellar companions with masses from 0.01 to 0.08 times the mass of the sun. Brown dwarfs are too small to ignite hydrogen the way the sun does but could be massive enough to burn deuterium soon after formation. After that, their radiation would cease, and they would become cool and extremely difficult to detect."

And that is the next important point of our prehistory: the companion of the Proto-Sun was actually a brown dwarf. Its original mass amounted to approximately 20 times the Jupiter mass; its present-day mass in the Kuiper Belt still amounts to 17.5 times the Jupiter mass. It means about 0.02 times the mass of the Sun, exactly in the above quoted range of masses.

How is it possible, that nobody has noticed this mass until today? Quite simply, one has not suspected any larger mass at the edge of the Solar System. One has thus interpreted all observations with particularly this assumption: there is no invisible mass there. Also our present proof and calculations agree with those observations. Above that, however, they additionally prove the existence of the Dark Companion of the Sun. Therefore, we have not to be surprised, that one has discovered hundreds of objects in the Kuiper Belt. It is still possible to „overlook" even whole galaxies in the vicinity of the Milky Way, as we have frequently heard in past decades.

As you know, also the size of the orbit of the Dark Companion - in the language of the traditional astrophysics, the size of the orbit of Pluto - is quite a typical distance for the observed double-star systems. The similarity is surely no by accident. The Cosmic Hierarchy of the Sun represents presumably a standard in the quantum Universe.

3. 9. 4. Reducing our own galaxy

There are of course numerous further examples for this standardization role of the Cosmic Hierarchy. The present book should be readable for everyone, and not only for scientists. Therefore, I would like to save you, the reader, from the typical quotation of all the scientific „pros" and „contras" for each difference between various theories. I just put here the names of the most important observations. If you need any additional confirmation of the idea of the Cosmic Hierarchy, you have thus the possibility to look after such arguments by yourself.

It was observed, for example, that the intensive formation of the stars in the Milky Way and in the Magellanic Cloud proceeds not continuously but in some very clear periods. These periods fit exactly into the events of the level 9 of the Cosmic Hierarchy. The estimated outbursts of the star-formation happened 3.5, 7, 10.5, and 14 billion years ago. And the youngest one happens again already today. It is obvious for us, because we know that, the currently running period of the level 9 will end in „only" 77.9 million years (compare here the picture 9 in section 3.1.1). The present intensifying of the formation of the young stars means that the next cosmic quantum jump of the level 9 has actually already begun.

Equally, the spatial grouping of the most galaxies into the „quantum walls", the gigantic accumulations of galaxies in space, will be realised also with an interval, which comes the period of the Cosmic Hierarchy suspiciously near.

There are published many scientific works over the structure and the formation of the Milky Way and the Magellanic Cloud. Despite this fullness of information, it is still possible, as we have shown in some examples above, that the truth over our maternal galaxy looks quite differently from how we imagine it still today. If our idea of the Cosmic Hierarchy of the Sun becomes generally accepted in the astronomy, the Milky-Way galaxy will be reduced to a probably typical elliptical galaxy, limited in our eyes to the central bulge of our traditional view of the Milky

Way (section 3.9.1). The disk and the big halo have to become then assigned to a re-defined system of the Milky-Way neighborhood. One will then recognize that the traditional spiral arms of the Milky Way actually represent the connection bridges to the paramount Magellanic Cloud, the connection arms of our cosmic carousel of life.

In the eighties, I have discussed several times with Hans J. Fahr about our points of view regarding the necessary improvement in the fundamental science. Hans Fahr finishes his article (written in German) on the problematic dynamics of the rotating galaxies (*"Newton's gravitational-law... only the half truth?"*, Hans J. Fahr and Wolfram Knapp, „*Bild der Wissenschaft"*, March 1989, pp.48-58), with the following words:

> "How this test may ever go out, it can prevent no longer that Newton's laws must be altered. We must simply agree with this consequence from the observations. It goes only about it, which new laws step on their position. .... What we need however sorely, is a new, self-closed theory, which describes the course of the world from the atoms up to the distant nebulae so apt, how the Newton's laws have described his world once."

Since our conversations with Hans Fahr, almost fifteen years ago, no usable theory has been announced, that could properly describe „the course of the world from the atoms up to the distant nebulae". It is also why I introduce the idea of the Cosmic Hierarchy now; it is the presently most advanced application of Naturics. The long-unsolved task of the unification of the Newton's gravity with the Einstein's relativity and the Planck's quantization has been already solved in Naturics successfully. Now, it remains only to hope, that the experienced scientists mean it seriously with their statements and will soon declare themselves ready to pass the new thoughts to the younger generations of scientists, engineers and technologists. A natural progress cannot be prevented for a long time.

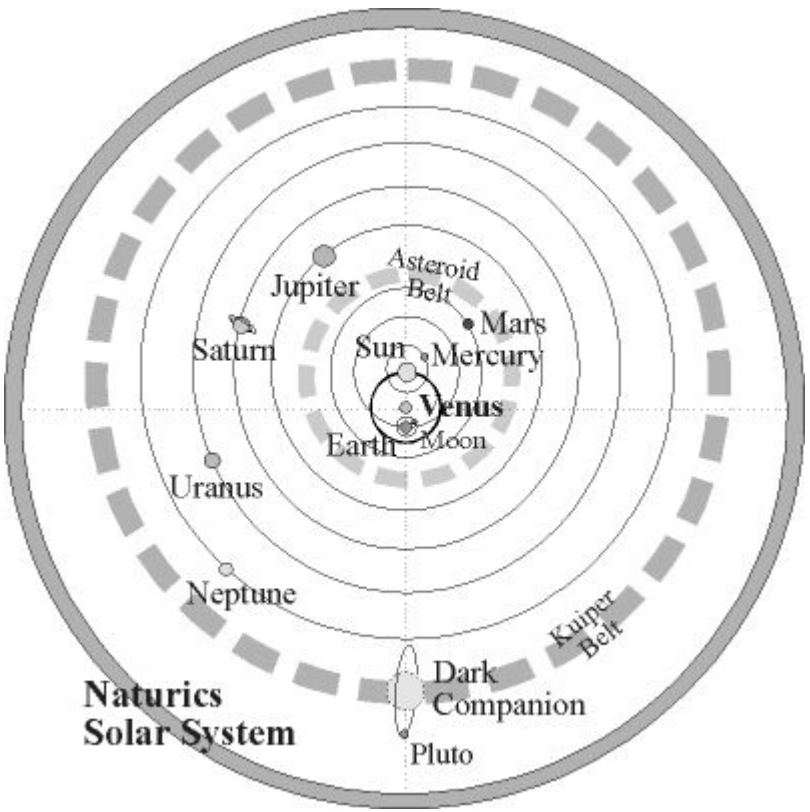
4. The scenario is being rewritten continuously
(Everything is simple first then, if one has really understood it)

4. 1. Do you know the true orbit of the Earth in the Solar System?

In the section 2.1, we have presented how the Solar System looks like from the point of view of Naturics. The most important alteration in the comparison to the traditional description lies in the assumption that the center of the entire mass of the Solar System lies exactly in this point where we see Venus today.

We have already explained that, this center of mass had already accumulated so many scraps of the primordial cloud, during the formation of the Proto-Solar System, that one of the four original planets of the Proto-Sun had originated exactly there. Also after the later re-structuring of the system to the present-day Solar System, what has happened 3506.7 million years ago, this old planet is located in this center of mass, until today.

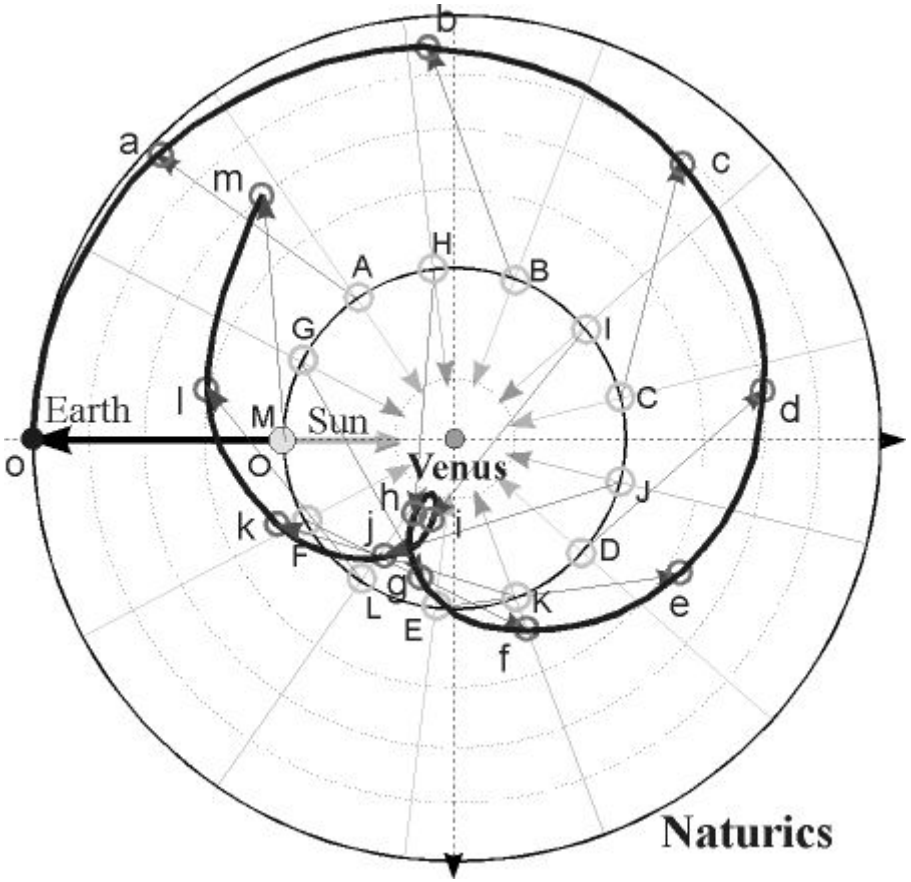
26. The present-day Solar System from the view of Naturics



We can describe this situation on two ways. Either we say that Venus lies in the center of mass of the Solar System, or that this center of mass lies in Venus. The same is meant in both cases.

Which consequences have this alteration of the view for our position in the Universe? Practically, there is no change at all. The Earth moves in the Solar System independently of our favoured philosophy, whether the Ptolemaic, the Copernican, or our own philosophy is meant. Theoretically it does matter however, whether the whole Universe rotates around the Earth, or the Earth runs on a quite round orbit around the Sun. We know since Kepler that neither the first nor the second option can be true. The present-day astrophysics assumes, after him, an elliptical orbit of the Earth about the Sun.

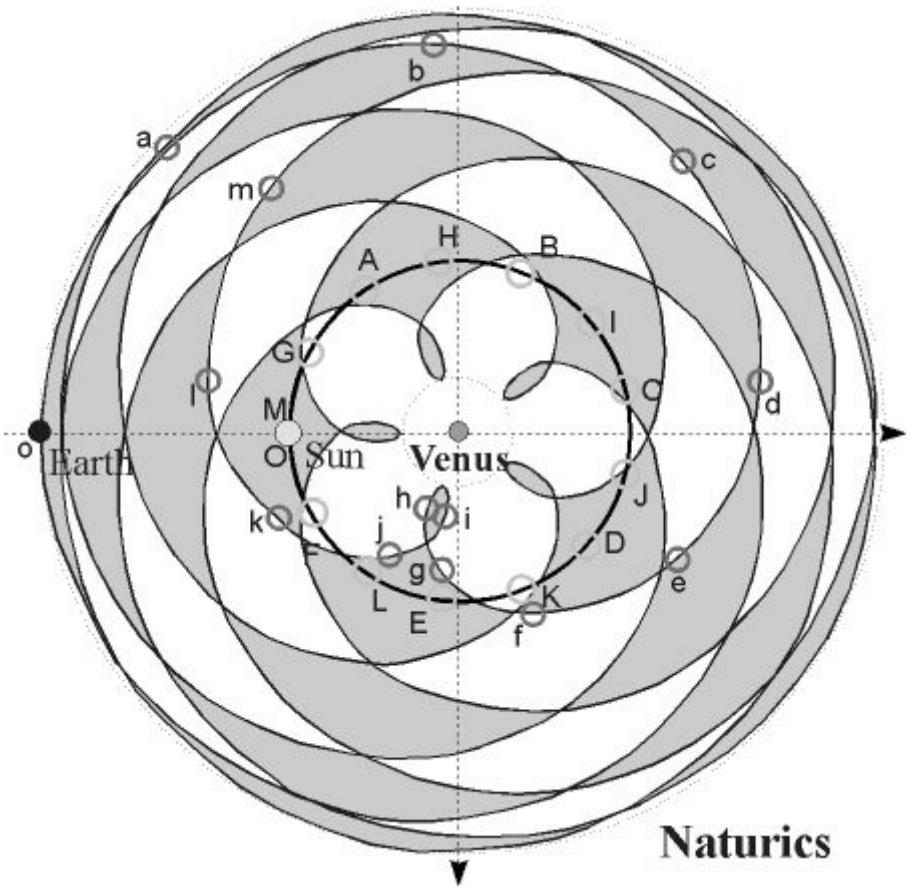
27. Construction of the Earth's orbit in the Solar System



We have already introduced extensively in this book our qualitative and quantitative description of the Solar System, with the asteroid belt, the Kuiper Belt, the mass of the Dark Companion, the Heliosphere and all planets and moons. However, our version of the actual orbit of the Earth shows also a certain aesthetic advantage opposite to each simple ellipse. Therefore now, I would like to present for you the construction of the true orbit of the Earth, around the Sun and simultaneously around the center of mass in Venus.

Without going into the mathematical reasoning of the required relations (the golden section of 5/13), we follow just the above construction, beginning with the point „o" for the Earth and the point „O" for the Sun, in the alphabetical sequence of the drawn points.

28. The full orbit of the Earth in the Solar System



The distance of the respective small and big letters of each pair represents the Earth's distance to the Sun. This distance remains constant in the scale of the drawing. Also the distance of the Sun to the center of mass of the system (in Venus) remains constant. Merely the different orbital velocities of the Sun and the Earth around the global center of mass cause the growing delay of the Earth at each next letter, until the Sun has completed a full revolution. Then, the Sun hunts behind the Earth shortly, reaches its height, and the game begins again, until the Earth comes back to the starting point „o" after eight years again. During this time, the Sun completes 13 revolutions around Venus. The picture 28 shows, which harmonic orbit of the Earth originates from this game.

I personally find this rosette much more attractive than each ellipse. Do you like it also? We cannot observe our orbit like a contrail behind an airplane unfortunately. However, we can simply imagine this beautiful rosette on the background of the stars. Maybe, it helps us to see some of our problems in a more positive light.

4. 2. Two old partners are dancing a cosmic waltz

The Sun and Venus are at least seven billion years old. They have originated simultaneously from the primordial cloud of the Proto-Solar System. The Sun has collected in itself the biggest part of the mass of the primordial cloud. Its small brother has pulled the rest on itself. The entire material that is fallen into the center of mass of the system during the former seven billion years has formed a planet, Venus. We know that all from our prehistory of the Solar System.

We have introduced several mighty arguments for the correctness of the prehistory, in the second and particularly in the third chapter of our book. However, are you really convinced with these arguments? Or maybe, no matter how convincingly these arguments could act, a deeper need after a direct observation with your own eyes still remains.

Such a direct observation of the remains of the dispersed small brother is already realized today. The „new" bodies in the Kuiper Belt become very numerous and gradually larger. A mission to Pluto in next decades will surely discover this dark region of the Solar System also for us and will provide another confirmation of our version of its prehistory.

There is however also another, immediately attainable possibility to check our unusual thesis. I am going to describe this possibility now.

The motto of our book comes from the fascinating book of Carl Sagan, „*Pale Blue Dot"* (Random House, New York, 1994). Late Carl Sagan describes in the first chapter of his book, with the title „*You are here"*, his attempt to persuade the NASA to use the cameras of the spacecraft *Voyager 1* to a unique series of photographs. This spacecraft, one of two probes of the most successful mission of all times, has already finished its actual task then. It was however still able to work and it was able to realize an old dream of Carl Sagan and of many similarly thinking people. He wrote in this chapter:

> "Scientists and philosophers of the classic antiquity knew very exactly, that the Earth is only one point in a gigantic cosmos; however nobody had ever seen the Earth as a point. This was our first, and maybe for a long time, the last chance.
>
> ... From this distance, our planets appear even in a high-dissolving telescope like that of the Voyager-probes like small - sharp or blurred - light-points. Not differently from the planets that we can recognize with bare eye: shining points, that are brighter than most stars. In the course of several months, also the Earth seems to hike like the remaining planets over the sky. One cannot simply recognize with the mere observation of these points how they look exactly, which history they have, and whether life exists there.
>
> ...We see that of course differently. Look at this point once again. Here, we live, we are here at home and with us all people, that we know and love. Here, we live through our joys and sufferings. Everything on religions, ideologies and economic-forms is collected here, all hunters and gatherers, creators and destroyers, kings and farmers, parents and children, inventors and discoverers, saints and sinners in the history of the mankind lived here - on this dust-grain that dances in the sunlight."

Probably under the impression of this dream of Sagan I have realized for the first time, that one could also use the same cameras to truly photograph the dance of the Sun around the center of mass in Venus. One could take some photos of the Sun and Venus on the background of the far, so-called fixed stars. Eight photos with an

interval of one month would actually be enough to demonstrate one full circulation of the Sun around Venus, the center of mass of the Solar System.

My attempt to contact the bosses of NASA was not sufficiently stubborn however in order to have a real chance. It therefore stuck with a remark on the homepage of Naturics. The desire to directly observe the dance of the two old „partners", the Sun and Venus, has remained however. Then, I had a second idea that led to the astonishing success.

In the section 2.1, we have mentioned Tycho Brahe, the master of the astronomic observation. His observations have allowed him to build his „mixed" model of the Solar System. In this model, most planets circle around the Sun. The Sun itself however should circle around one of the planets, the Earth in Tycho's model. This is an important point to note. If one draws the observed positions of the Sun and of the planets on the background of the distant stars, one sees no contradiction to the Tycho's system.

Unfortunately, we cannot sit down on Venus and follow the Sun eight months long for to observe the change of its position on the background of the stars one time around us. We know however that the mass of the small brother still exists at the edge of the Solar System. This mass alters our observational situation, even if we can remain comfortably on the Earth.

Would the Sun stay in the center of mass, we would see the Sun every year in the same point of the stellar background, and Venus would appear quite regularly, with her circulation-period of 224.7 days, somewhere on her orbit around the Sun.

If not the Sun but Venus lie actually in the center of mass of the Solar System, then the situation changes quite dramatically. We still define our terrestrial year after the same principle as previously. That is the time-distance between two moments, in which the Sun appears - from our view - in the same point of the cosmic background. However, Venus doesn't care about our definition of course. She has the Sun danced around herself, firstly with the period of 224.7 days, because of the mass of the Sun itself, and secondly, with the period of 247.19 years, because of the mass of the Dark Companion (interconnected with the mass of the Sun, as we know). Since each motion in the Universe is relative, we can consider the dance of the Sun around Venus also as a dance of Venus around the Sun. And we can observe exactly the slower step of the dance of Venus around the Sun at our own

home computer quite comfortably. All what we need for it, is only an astrophysical program, that is able to animate the motions of the planets of the Solar System. Such programs are easily obtainable in Internet. The series of sketches below demonstrates what a sensational observation results from such an animation.

Most of us have no idea about the distances to the visible stars. What does it mean a near star or a far star, in relation to the astronomic unit or to the light-year. Therefore, let us compare the data of the low table with the distance of 4.2 light-years between the Sun and Proxima Centauri, the next visible star. The ten stars of the cosmic background of our animation have the following distances (as you already know the distances expressed in the light-years are independent of the definition of the speed of light):

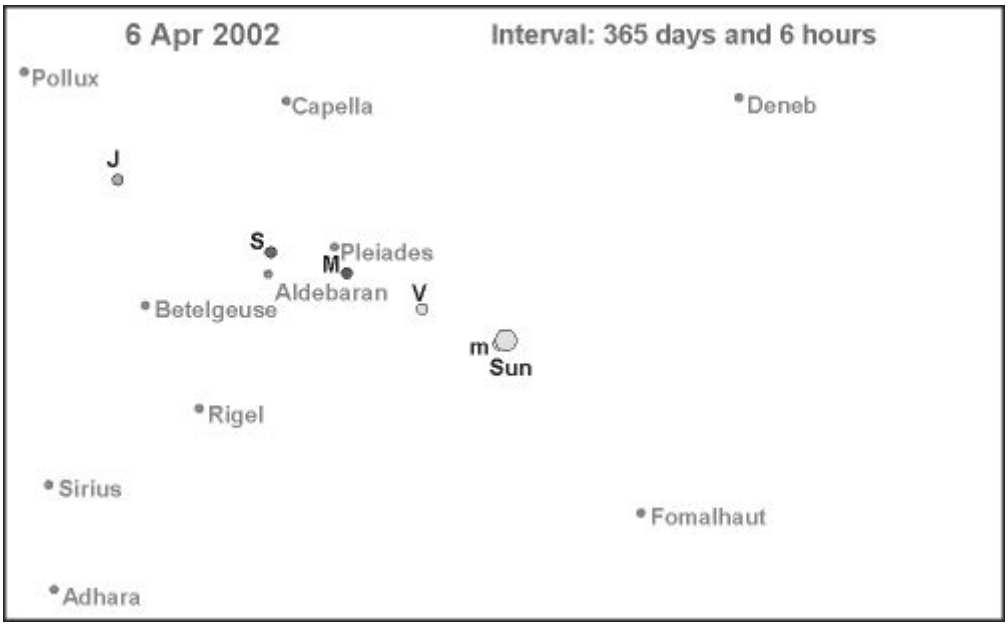
12. Distances of the background-stars
(for the planetary animation)

Near stars		**Farther stars**	
Star	**Distance** [Light-years]	**Star**	**Distance** [Light-years]
Sirius	8.7	Pleiades	410
Fomalhaut	23	Betelgeuse	520
Pollux	35	Adhara	680
Capella	45	Rigel	900
Aldebaran	68	Deneb	1600

We can start the animation of the planetary motions at any location on the Earth and at any time. In my case, it was the sky over Berlin on 6 April 2002. We place the Sun in the middle of the card. The names of the planets are unequivocal: J - Jupiter, S -Saturn, M - Mars, V - Venus, m - Mercury. It is very important that the interval of the animation is fixed exactly to one year. At the start of our animation, the small Mercury was hidden behind the Sun.

We allow the animation to run, year after year. Already in the course of the next eighty years, we observe that certain regular patterns build themselves in the positions of the planets. We observe the positions of Venus especially precisely.

29. The start-positions of our planetary animation



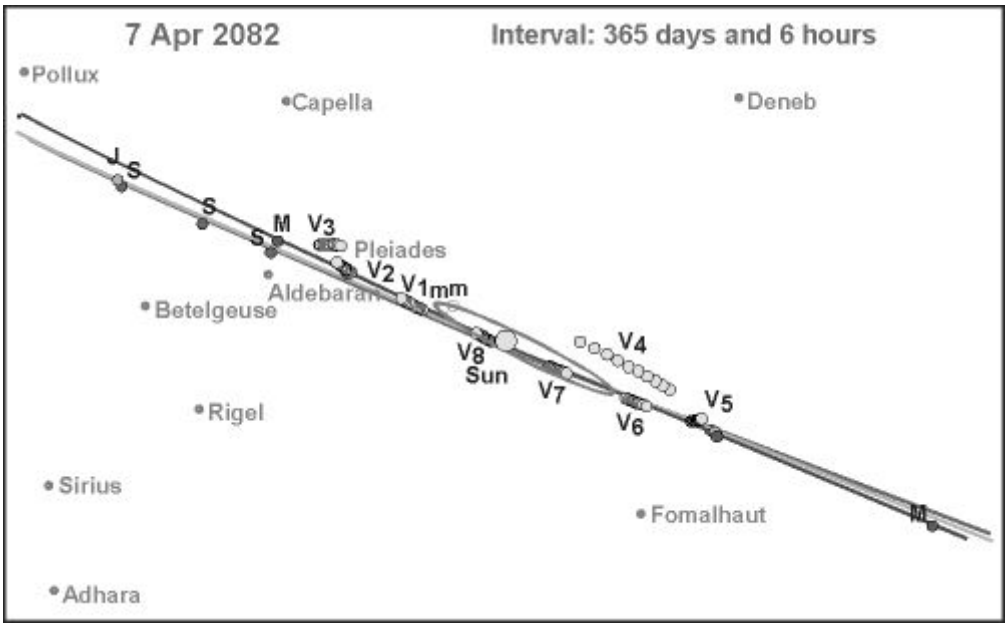
Only for Venus, we have represented all eighty positions on the following sketch. For the remaining planets, we have shown only some of the first positions. The corresponding lines symbolize the rest of their positions. Mercury goes around his closed ellipse several times during these eighty years. It lies even nearer to the Sun than the Earth and Venus. Therefore we never see it removed far from the Sun. The remaining three visible planets, Mars Jupiter and Saturn, orbit the Sun (and the center of mass) in a distance larger than the Earth. We can only see the „open" parts of their orbits behind the Sun.

What interests us here, is the distribution of the eighty positions of Venus. They are evidently not scattered over the whole orbit. Rather, they group themselves to tenth in eight sections of the orbit. We have marked these sections on the following sketches, in the sequence of the visit through Venus, as V1 to V8.

Why divide the apparent orbit of Venus actually into eight same sections around the Sun? The answer on it is in our construction of the true orbit of the Earth, around the Sun and Venus simultaneously (resulting in the rosette-orbit). In reality, the Earth (with us, the observers of the animation) needs eight years in order to

come to the starting-position of its orbit again. In the years between, our true observational positions lie in seven different points of the Solar System.

30. Positions of Venus in the following eighty years

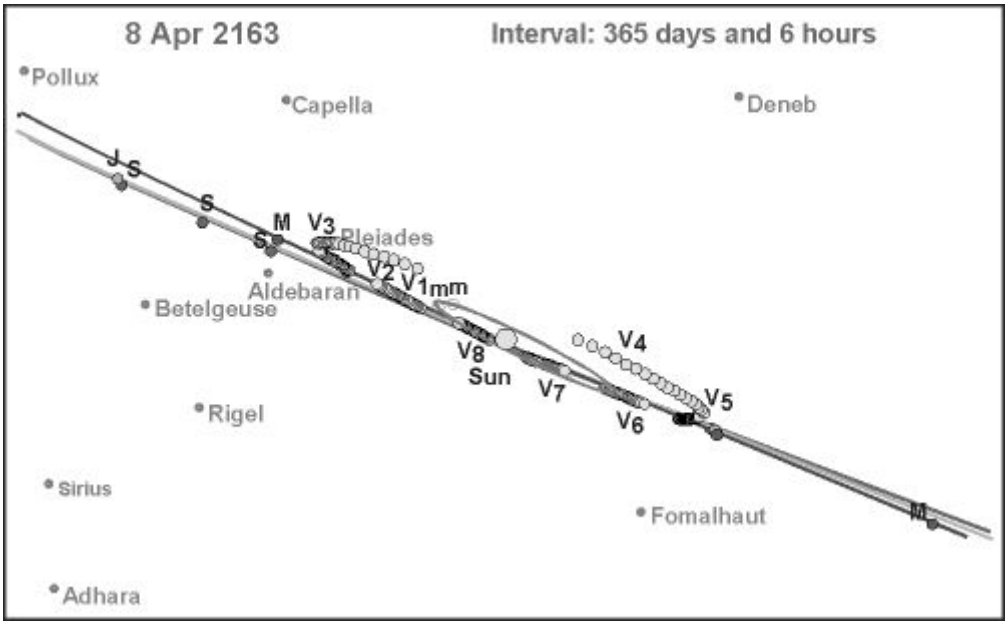


The center of mass of the Dark Companion of the Sun moves each year about four thousandth parts of its orbit; exactly speeking, one to 247.19. Thus, we see the apparent position of the center of the entire mass in Venus as being also somewhat changed on the background of the stars, as observed from our position on the Earth.

After further eighty years, the mass of the Dark Companion has already left approximately two third of its orbit behind itself. The same is true also for the apparent orbit of Venus around the Sun.

The mass of the Dark Companion finishes its run around Venus in the following eighty-seven years and returns to the position from the year 2002, the first year of our animation. In the same time, also Venus turns back to its initial position, as seen from us on the Earth.

31. Positions of Venus in following hundred sixty years



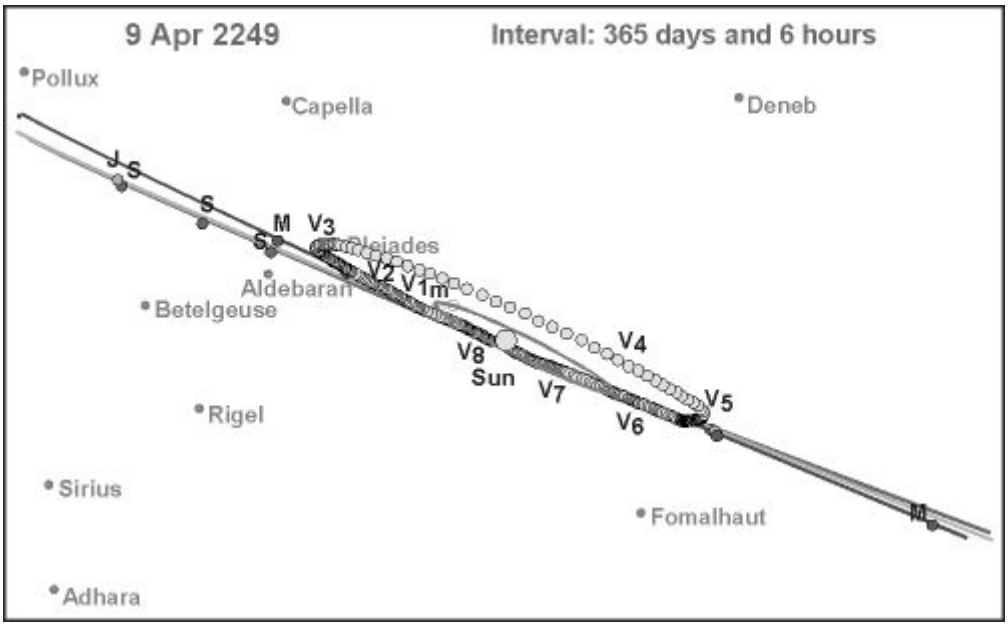
The dance of the two old „partners", the Sun and Venus, goes further, into the next revolution as ever, since seven billion years.

These 247 illustrations of Venus, that meet themselves year after year, as individual „pearls" to a „string of pearls" on the sky, impress me again and again. Such a behavior cannot probably be explained with any other idea as with the existence of the mass of the Dark Companion.

If we would have the possibility to observe the whole Solar System from the perspective of the Voyager-probes, we would be able to observe also the faster dancing rhythm of the Sun around Venus. However, also a good, and properly applied, animation can tell us an impressive story, without requiring the expensive spacecraft. And the animation is surely cheaper and more easily accessible for everyone.

32. Year-to-year positions of Venus during the following period of the Dark Companion of the Sun

(247 years)



4. 3. The universal scale of time

The steps of life - our precise paleontological and geological timescale

Let us now practically apply the table defining the Cosmic Hierarchy of the Solar System (from the section 3.1.1). We can arrange all consecutive time-intervals of the Cosmic Hierarchy along a common scale of time. As we already know, the quantum jumps of the Cosmic Hierarchy influence the geology and the life on the Earth. Through the systematic arrangement of the characteristic periods of all levels of the Cosmic Hierarchy, we define our precise scale of time for all possible boundaries of the geological periods of the Earth's history. Such a scale reflects also the paleontological events during this geologic time, above all the mass extinctions of species of the living organisms.

In order to hold the present section of the book tolerably shortly, we won't display here all the smallest steps of the Cosmic Hierarchy of the Sun since the formation of the Moon of course. Would we wish to display for example only all periods of the step 3 (with the duration of 1118.2 years), we would need for it approximately eighty thousands pages. No geologist or paleontologist could carry out his research of the early geologic times in such details that these short theoretical periods could really help him. Only in the recent sections of the Earth's history, after the end of Precambrian, enough fossils are available to scientists. First since then, one can use the big advantages of our theoretical timescale practically.

Therefore, we list here only the points of our scale of time, which mark the quantum jumps of the level 8, with the interval of 295.2 million years, from the earliest history of the Earth. In the Paleozoic and Mesozoic, we refine the listing with the level 7. We estimate with it, for the first time in science, the actual boundaries of the individual geological periods, from Cambrian to Tertiary, with an up to now unattainable precision of one year.

Finally, in order to specify some - discussed in this book - periods of our history of the terrestrial life, we refine our timescale since the appearance of our order of p*rimates*, 16.3 million years ago, with the periods of the levels 6 to 3.

As the reference-year, we take here the year 2003.

- The steps of life have started with an event of the **level 9** (period of this step lasts 3584.559 My); it happened exactly

3506.673 My ago, with the formation of the Moon.

- The periods of the **level 8** (duration of 295.201 my) have started:

3506.673 My ago -- ; -- ; -- ; -- ; ARCHEAN
3211.472 My ago
2916.271 My ago
2621.070 My ago -- ; -- ; -- ; -- ; PROTEROZOIC
2325.869 My ago
2030.668 My ago
1735.467 My ago
1440.266 My ago
1145.065 My ago
849.864 My ago

554.663 My ago -- ; -- ; -- ; PALEOZOIC ; PHANEROZOIC
259.462 My ago -- ; -- ; -- ; MESOZOIC ;

- The steps of the lower **level 7** (with a shorter period of 24.3109 My) of the last **completed** period of the level 8 (PALEOZOIC) have started:
  554.663 My ago -- ; -- ; CAMBRIAN ; PALEOZOIC ;
  530.352 My ago
  506.041 My ago -- ; -- ; ORDOVICIAN ;
  481.731 My ago
  457.420 My ago
  433.109 My ago -- ; -- ; SILURIAN ;
  408.798 My ago -- ; -- ; DEVONIAN ;
  384.487 My ago
  360.176 My ago -- ; -- ; CARBONIFEROUS ;
  335.865 My ago
  311.554 My ago
  287.241 My ago -- ; -- ; PERMIAN ;
  262.932 My ago

- The steps of the **level 7** of the currently **running** period of the level 8 (since the beginning of MESOZOIC until today) have started:
  259.462 My ago -- ; -- ; TRIASSIC ; MESOZOIC ;
  235.151 My ago
  210.840 My ago -- ; -- ; JURASSIC ;
  186.530 My ago
  162.219 My ago
  137.908 My ago -- ; -- ; CRETACEOUS ;
  113.597 My ago
  89.286 My ago
  64.975 My ago -- ; PALEOGENE ; TERTIARY ; CENOZOIC ;
  40.664 My ago
  16.353 My ago -- ; NEOGENE; TERTIARY; *Ramapithecus*

  - The steps of the **level 6** (2.00209 My) of the currently running period of the level 7 have started:
    16.3533 My ago -- ; NEOGENE; TERTIARY;
    Ramapithecus
    14.3512 My ago

12.3491 My ago
10.3470 My ago
8.3449 My ago
6.3428 My ago
4.3407 My ago -- ; -- ; -- ; *Hominides*; *Australopithecus*
2.3386 My ago Early; Pleistocene ; QUATERNARY;
Homo erectus
0.3366 My ago Late ; Pleistocene ; *Homo sapiens*

- The steps of the **level 5** (164.878 ky = 164878 years) of the currently running period of the level 6 have started:
  336.560 ky Late ; Pleistocene ; *Homo sapiens*
  171.682 ky *Homo sapiens Neanderthalensis*
  6.804 ky *Homo sapiens Sapiens*

  - The steps of the **level 4** (13578.3 years) of the last **completed** period of the step 5 have started:
    171682 y ago*Homo sapiens Neanderthalensis*
    158104 y ago
    144526 y ago
    130947 y ago
    117369 y ago
    103791 y ago
    90213 y ago
    76634 y ago
    63056 y ago
    49478 y ago
    35899 y ago
    22321 y ago
    8743 y ago

    - The currently **running** period of the level 5 has not yet completed any steps of the **level 4**. The first of them, still running (Holocene), has started:
      6804 y ago Holocene;
      Homo sapiens Sapiens

- The steps of the **level 3**, (1118.22 years) of the currently running period of the level 4 (Holocene) have started:
  - 6804 y ago *Homo sapiens Sapiens*;
  - (world-wide deluge-events)
  - 5686 y ago
  - 4568 y ago
  - 3450 y ago
  - 2331 y ago
  - 1213 y ago (in the year 790)
  - 95 y ago (in the year 1908.5)

The next step of the **level 3** is to expect first in 1024 years (in 3027);
the next step of the **level 4** is to expect first in 6774 years;
the next step of the **level 5** is to expect first in 158074 years;
the next step of the **level 6** is to expext first in 1.6655 million years;
the next step of the **level 7** is to expect first in 7.958 million years;
the next step of the **level 8** is to expect first in 35.739 million years;
the next step of the **level 9** is to expect first in 77.897 million years.

Let's notice that the „steps of life" of our timescale always begin, and also finish, with an extreme heat-period, because of the many cosmic impacts on the Earth's surface, and the following volcanism, during each cosmic quantum jump (compare here the figure 9). The relaxation and the cooling of the Earth's surface, follow always against the middle of each period between two jumps. Therefore, we can observe a fine but systematic difference between the exact times of the above boundaries and the traditionally used boundaries, that were defined between corresponding cold periods rather than warm periods of two cycles. A comparison of the theoretical steps of our universal timescale with the most important steps of the traditional geological timescale makes these differences clear (note the actual references under the table):

13. Exact definitons of the geologic boundaries in Naturics in comparison with two traditional scales of time

Period name	Period beginning [My ago]		
	Naturics	**Paturi** (1)	**Shear** (2)
Moon existence	**3506.673**	**about 4600**	**-**
Archean	**3506.673**	**4000**	-
Proterozoic	**2621.070**	**2500**	-
Paleozoic	**554.663**	**590**	-
Cambrian	554.663	590	-
Ordovician	506.041	500	505
Silurian	433.109	440	438
Devonian	408.798	410	408
Carboniferous	360.176	360	360
Permian	287.243	290	286
Mesozoic	**259.462**	**250**	**258***
Triassic	259.462	250	-
Jurassic	210.840	210	-
Cretaceous	137.908	140	-
Cenozoic	**64.975**	**66**	**-**

* - Shear estimates a clear geological boundary between Late Permian and Early Permian exactly at this point of time. Our timescale distinguishes so strongly the levels 7 and 8 in their effect and duration, that the transition between Paleozoic and Mesozoic appears much more natural exactly at that point of time. Note that also the accuracy of all other boundaries quoted here after Shear is much better, than in the standard tables of the traditional geology, like that one of Paturi.

References:

1. Felix R. Paturi, „*Die Chronik der Erde" (The chronicle of the Earth)*, by Chronik Verlag, Dortmund 1991.

2. William A. Shear, Nature, Vol.351, 23 May 1991, pp.283-289, „The early development of terrestrial ecosystems".

4. 4. „Eternal" cosmic clock

One can represent the temporal course of all events of the Cosmic Hierarchy of the Sun on the clock face of a „cosmic clock". Such a clock will always show a current time since the „hour-zero", i.e., since the formation of the Moon. It could perhaps seem not to be an exciting possibility for you. However, the cosmic clock will also show the time, in which we are still allowed to safely play on our cosmic carousel of life, before the next quantum jump will come. If we learn to observe our cosmic clock, we obtain the possibility to better prepare ourselves and our home, the Earth, for the next such jump. As we already know, also the smallest quantum jumps - without huge impactors hitting the Earth - could be quite unpleasant for us on the Earth. It is enough if we try to imagine, that our global climate has changed in an unexpected direction, and for some longer time, in order to see the trouble, which we could have without watching the cosmic clock. (In the last section of this chapter, we present our practical forecasting of the global climate for the next centuries).

How should the cosmic clock be constructed? A pointer of a clock counts the time periods, the intervals, between two consecutive, regular events. If we watch the pointer, the presently shown part of its full revolution, we realize which part of the full interval is already expired until now. Constructing the cosmic clock, we use no pointers for minutes or seconds. We name each interval of the cosmic time an „hour" of the corresponding level of the Cosmic Hierarchy. The hours of each level are shown with an individual pointer. The biggest level receives the biggest pointer, the shortest hours the smallest pointer. One can therefore represent the already expired sections of the time-intervals of the different levels of the Cosmic Hierarchy through the position of the pointers of a corresponding size on the clock face of the cosmic clock.

We know from the section 3.1.1 that the scaling factor of the cosmic intervals doesn't equal to precisely 12 but to 12.1428 (which is the eighth power of the cosmic quantum number; cqn^8). It means that a full cycle of a higher level must include exactly 12.1428 „hours" of the lower level. From this reason, we have to enlarge a little the normal, twelve-hour face of our clock. We symbolically reach that through an additional wedge between the hour 12 and the hour 0 of our cosmic clock. In order to read off the clock right then, we must only remember that it doesn't beat always with full 12 hours but first with 12.1428 cosmic hours.

33. The cosmic clock of the Solar System

The current course of the intervals of the Cosmic Hierarchy yields the following cosmic time at the beginning of the year 2003.

- One hour of the **level 2** and a full circulation of the pointer of the level 1 lasts 92.0896 years. The last hit of the level 2 was recently, in the summer of the year 2000, exactly in the year 2000.59. The next hit of the level 2 comes therefore only in the year 2092.7. The pointer of the level 1 stands therefore approximately one third of the first hour after the position 0. It is one third (of the level 1) past 0 o'clock now.

- One hour of the **level 3** and a full circulation of the pointer of the level 2 lasts 1118.22 years. The next hit of the level 3 comes in 1024 years. That is 11.13

hours of the level 2. The pointer of the level 2 stands therefore approximately one hour after the position 0. It is one o'clock (of the level 2) now.

- One hour of the **level 4** and a full circulation of the pointer of the level 3 lasts 13578.3 years. The next hit of the level 4 comes in 6774 years. That is 6.06 hours of the level 3. The pointer of the level 3 stands therefore approximately six hours after the position 0. It is shortly past six o'clock (of the level 3) now.

- One hour of the **level 5** and a full circulation of the pointer of the level 4 lasts 164878 years. The next hit of the level 5 comes in 158074 years. That is 11.64 hours of the level 4. The pointer of the level 4 stands therefore approximately eleven and two third of hours before the position 0 or a half an hour after the position 0. It is half (of the level 4) past 0 o'clock now.

- One hour of the **level 6** and a full circulation of the pointer of the level 5 lasts 2.00209 million years. The next hit of the level 6 comes in 1.6655 million years. That is 10.10 hours of the level 5. The pointer of the level 5 stands therefore approximately ten hours before the position 0 or 2.04 hours after the position 0. It is shortly past two o'clock (of the level 5) now.

- One hour of the **level 7** and a full circulation of the pointer of the level 6 lasts 24.3109 million years. The next hit of the level 7 comes in 7.958 million years. That is 3.97 hours of the level 6. The pointer of the level 6 stands therefore approximately four hours before the position 0. It is shortly past eight o'clock (of the level 6) now.

- One hour of the **level 8** and a full circulation of the pointer of the level 7 lasts 295.201 million years. The next hit of the level 8 is to be expected in 35.739 million years. That is 1.47 hours of the level 7. The pointer of the level 7 stands therefore approximately one and a half hours before the position 0. It is one third before eleven o'clock (of the level 7) now.

- One hour of the **level 9** and a full circulation of the pointer of the level 8 lasts 3584.559 million years. The next hit of the level 9 is to be expected in 77.897 million years (compare the previous section). Then, the current circulation of the pointer of the level 8 will be completed. These 77.897 millions of years that is 26.3 percent of a hour of the level 8. The pointer of the level 8 stands therefore approximately one fourth of an hour before the position 0. Notice that

this is the last quarter of an hour of the existence of the Solar System in its present-day form. Unfortunately, it is also the last quarter of an hour of the level 8 for the whole terrestrial life. The only realistic candidates for surviving the next quantum jump of the level 9 are bacteria and maybe some plant-spores.

With some practice, one can read off from this cosmic clock many interesting points of time in the course of the evolution of life. Some examples will be given in the section 5.2.1, where we introduce our new correlation between the Cosmic Hierarchy and the taxonomic hierarchy of the Darwinian kingdom of animals.

It would be a useful exercise in applying the cosmic clock to realize, for example, about what time has happened the deadly impact for dinosaurs, or the separation of the order of *primates* from the class of *mammals*, or the „deluge" impacts, from which the present-day humans have originated. Give you enough time to answer these questions. And do not worry, if you are not immediately able to give the right answer. Every new requires a proper time to be fully realized. The correct answer, for your checking, will come later in this book.

Until now, we have mainly spoken about the longer and very long astronomic and geologic time-intervals. However, we can see with a more exact contemplation that we can pursue also the course of our personal life with this clock. If we have the luck to live in a prosperous society and to stay healthy during our whole life, then our life will last a full revolution of the smallest pointer 1. This „hour" of the level 2 lasts 92.089 years namely. About how this period is divided into 12 even shorter intervals and how these shortest periods influence our life, can you read on the homepage of Naturics (www.naturics.de).

4. 5. Predicting the probability of the strongest earthquakes

The frequency and the intensity of earthquakes change strongly from year to year, yes even from month to month. To the first sight however, these parameters seem to show no clear periodicity. Can one nevertheless suspect that the earthquakes appear with a certain periodicity? If yes, then they could be easier to predict.

With each analysis of the predictability of the earthquakes, we have to remember that the scientific observing and registering of all earthquakes are not older than a century. From the former centuries, we have only the sporadic records over the

strongest earthquakes with many victims. On the other side, we already know that the relevant periods, that could be useful for this analysis, are those of the Cosmic Hierarchy of the Sun. These stretch over thousands and millions of years however.

In order to retard some wrong hopes, I must admit that also I still consider unrealistic to wish to predict an earthquake at a certain place with some useful time in advance. Our knowledge of the mobility of the Earth's crust is still too low to it.

Nonetheless, nowadays grows a realistic hope in that direction, especially for those regions of the Earth's surface that are particularly endangered by the strongest earthquakes. Our experience with the Cosmic Hierarchy of the Sun allows us to propose a new solution also in this difficult topic. The kernel of the solution doesn't lie in the forecast for a certain earthquake at a certain place, but in the growing or lowering global probability of the strongest earthquakes.

We have emphasized already several times in this book that a scientific description of the natural phenomena on the Earth cannot be restricted to the Earth itself. We must constantly direct our view into the sky and ask ourselves, which influences regarding these phenomena could have our Cosmic Hierarchy. We must also do the same now, if we try to obtain a meaningful forecast of the strongest earthquakes.

Our first question in this sense is the following: under which physical conditions could the tension of the Earth's crust that has been gradually dammed mainly because of the plate tectonics, relax itself again? Which strength or interaction can mean such a huge physical factor? It must be able to globally change the tension of the Earth's surface.

One such a factor is already known to us. It is the energetic interaction with our Moon, that is capable to move not only the gigantic masses of water in our oceans but also the whole land-masses, actually lying under the wandering Moon.

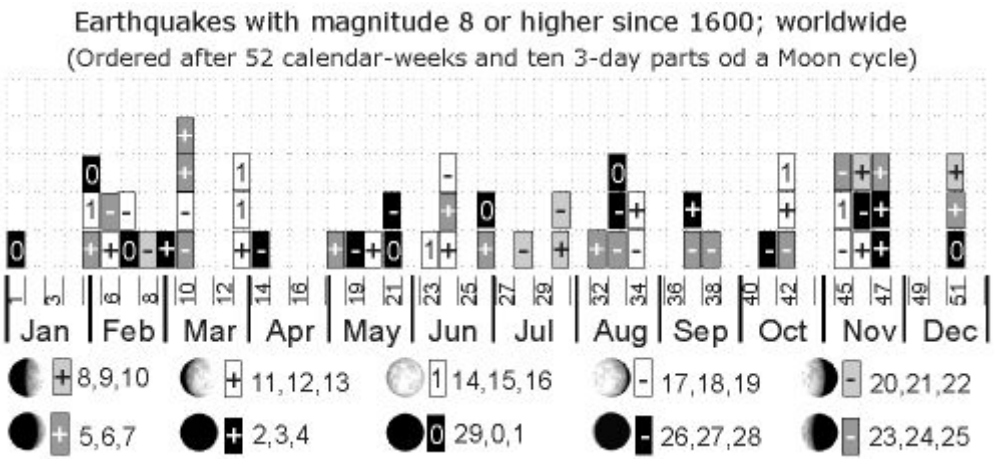
And this is a real factor indeed. For example recently, in summer 2002, I have admired the full Moon again, and I have simultaneously asked myself - as already many times previously - whom will the destiny choose this time. And in the next morning, I have heard in the news that an earthquake of the strength 6.0 has jarred the north of Afghanistan and has demanded many victims. Already two days before, there had already been a similar earthquake there. My former observation, that the earthquakes of the middle strength, between 5 to 7 on the Richter-scale,

especially often occur in the week about the full Moon, has confirmed themselves in this tragic way again. Unfortunately, I lack until now a practical possibility to produce an exact statistics confirming this observation. There are too many earthquakes of this level around the Earth.

However, the situation becomes much easier, if we consider only the strongest earthquakes, of the strength 8 and higher. I was able to produce a useful statistics of such earthquakes since 1600, because the strongest earthquakes (fortunately) don't happen so often. In opposition to the lighter earthquakes, the strongest ones show no clear correlation with the motion of the Moon. How can we obtain this result? Let us consider the following diagram 34.

We distribute all big earthquakes after their date in relation to the next full Moon. We group all these events into ten three-day groups of a single Moon-cycle, according to the difference between the date of each individual earthquake and the next or previous full Moon. To mark these ten groups, we use five levels of the grey-color, with the sign „1" for the full Moon, „0" for the new Moon, „+" for the increasing Moon, and „-" for the waning Moon. Finally, we distribute the proper marks along a scale of the 52 weeks of a year. Then, as a result, we obtain the diagram below.

34. The strongest earthquakes since 1600 and the Moon-phases



With the best will, one can see no regularity on this diagram. The Moon does not influence the probability of the appearance of the strongest earthquakes. Why? It is

rather obvious. Its interaction with the Earth is simply too weak to provoke such big „discharges" of the surface-tension of the Earth's crust. However, what could have an even stronger effect as the near Moon?

The case of the (mostly) invisible mass of the Sun's Dark Companion has taught us some new things. For example, one has not necessarily to be able to see the interacting objects with bare eye in order to sense their influence. The Earth can be influenced in its motion even stronger than through the Moon, without that we will directly observe the cause on the sky. The invisible strength that we have already learned is the cosmic energy-transfer that holds us in our continuous cosmic dance in the Universe. The intensity of this transfer changes periodically, from one quantum jump to the other.

In this way, we find the required connection between the Cosmic Hierarchy of the Sun and the predictability of the biggest earthquakes.

A study of the existing facts over the strongest earthquakes of the 20th Century delivers us an important observation. First of all, we recognize an enormous increase of the frequency of such earthquakes on the whole Earth at the beginning of this century. Let's heed at the moment only the height of the gray lines on the following diagram for every individual year. That is the number of the earthquakes with the strength 7 and higher during this year.

A question arise immediately: is this increase of the earthquakes frequency a real, physical phenomenon? Maybe, it could also have been simply a consequence of the radio - and telecommunication discovered at that time. Since then, one has increasingly applied the new technologies for the global information-transfer around the Earth. It was certainly an important factor of this increase of the registered earthquakes, but definitely also not the crucial one. The diagram shows that the annual frequency of the earthquakes with the strength 7 and higher had reached the averaged value of 10.5 during the period of 1899-1918, then it has decreased to 6.35 in the period 1919-1938 however, and it was never again as high as at the beginning of the 20th century. The development of the global communication has increased against it explosively during the whole century.

We have thus to repeat our question once more. What has been the real cause for that „big-shaking" of the whole Earth at the beginning of the twentieth century?

We know from our consideration of the Cosmic Hierarchy of the Solar System, that we are rotating, together with the entire Solar System, on a huge carousel in the cosmic space. During each single rotation of one of the largest levels, we cross several times a cosmic area of a distinctly higher energy-density, the so-called energy-bridge. It is easily comprehensible that the first reaction of the Earth on such changing energy-density of our surrounding is an according change of the tension in the Earth's crust. A similar reaction shows a spinning top, if it crosses an air-stream of a wind. The analogy is much better however, if the top is not a solid body but a semiliquid material inside a harder crust, like a raw egg.

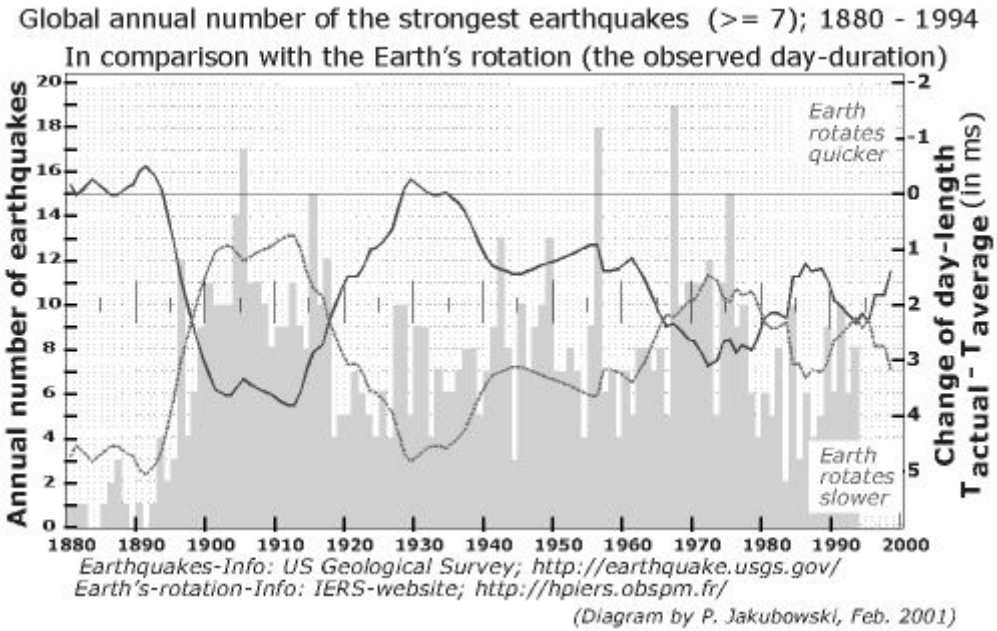
How could we measure the density of our cosmic surroundings? One directly measurable parameter is the exact length of a day on the rotating Earth, i.e., the rotational velocity of the Earth. In the denser space, the rotation will be slowed down. In the less dense space, the rotational velocity will be accelerated again. Why? Is there an invisible hand spinning the Earth slower and quicker again?

Of course there is no. It is the internal, semiliqiud structure of the Earth's interior, which store the rotational energy of the Earth, like a huge fly-wheel. The solid crust will rotate a little bit slower during the passage of the energy-bridge, because of the friction with the denser surrounding. However, the semiliquid internal layers of the Earth's material will still rotate with their previous rotational velocity. These counteractive tendencies increase the tension of the Earth's crust. The crust crunches and the earthquakes will be intensified. After the passage of the energy-bridge the crust can freely rotate again. The stored rotational energy will be gradually transferred from the inner layers of the Earth's material to the crust. The Earth's rotation and the earthquake frequency, return to their normal level again.

The measured rotational velocity of the Earth is shown by the fat curve on the diagram 35. As we see on the right side of the diagram, a decrease of the rotational velocity of the Earth accounts only a few milliseconds in a day. It seems to be very small. One must consider however that a really gigantic energy is required in order to slow down the rotation of the gigantic mass of the Earth. And we are speaking here not about the highest levels of the energy-bridges, with the strongest changes in the energy-density. In our present case we are discussing the very recent passage of the Earth across the energy-bridge of the level 3 merely. Nevertheless you will see that also this relatively low change of the energy-density evidently suffices to move some tectonic plates of the Earth's crust.

Let us summarize the discussed observations. At the beginning of the passage of the energy-bridge, the Earth's own rotation slows down. During the passage, the Earth's crust stays under the tension stronger than normal. We observe a period of an enhanced frequency of the strongest earthquakes. After this period of the elevated tectonic activity, the Earth's crust relaxes. Simultaneously, the rotational velocity accelerates to its normal, higher level again. The frequency of the strongest earthquakes reaches also its average, lower value again. The frequency of the strongest earthquakes therefore changes contrarily to the rotation-speed of the Earth. The science speaks in such a case about an anti-correlation.

35. The strongest earthquakes and the rotation-speed of the Earth



In order to better exhibit this anti-correlation between the earthquake-frequency and the rotation-velocity of the Earth, we horizontally mirror the fat curve into the dotted curve. This mirrored curve demonstrates the just discussed interaction of the Earth with its cosmic surrounding in a very impressive manner indeed. Especially the huge increase of the frequency of the strongest earthquakes to the beginning of the 20th century obtains now its first scientific explanation.

Is this anti-correlation typical for all levels, all quantum jumps of the Cosmic Hierarchy? If yes, then we can expect that also the last boundary of the level 2,

which the Earth has crossed in summer 2000, exactly in the year 2000.59, should demonstrate an analogous relation, although with the lower intensity of the level 2.

A cosmic quantum-jump, a crossing of an energy-bridge, can never happen momentarily. It must last some time, as the following version of the diagram 9 - diagram 36 - clearly shows. From the description of the Cosmic Hierarchy of the Sun, in the section 3.1.1, we know that all quantum jumps of the hierarchy always have the same qualitative course. They differ from each other only in their intensity, according to the current level of the hierarchy. How should we thus interpret this particular cosmic quantum jump in details?

Let's look at the upper diagram more exactly. We notice that the maximal value of the frequency of the earthquakes was not reached exactly in the year 1908.5, the year of the recent cosmic quantum jump of the level 3. Rather in the contrary, exactly at this moment, we can observe a „break" in the tension of the Earth's crust, like in the center of a cyclone. During the break only half so many big earthquakes were registered as four years before or six years after it. This behavior is also obvious. The Earth is slowed in its rotation; this causes many earthquakes. Whereas it runs through the dense space, no new tension-change is necessary. The number of the earthquakes clearly decreases. Then, when leaving the dense area, the Earth's rotation becomes accelerated, because the quicker rotating inner material of the Earth gives its stored rotation-energy to the crust of the Earth back. The number of the earthquakes increases again for some time, until a regular motion of all layers of the Earth is reached again.

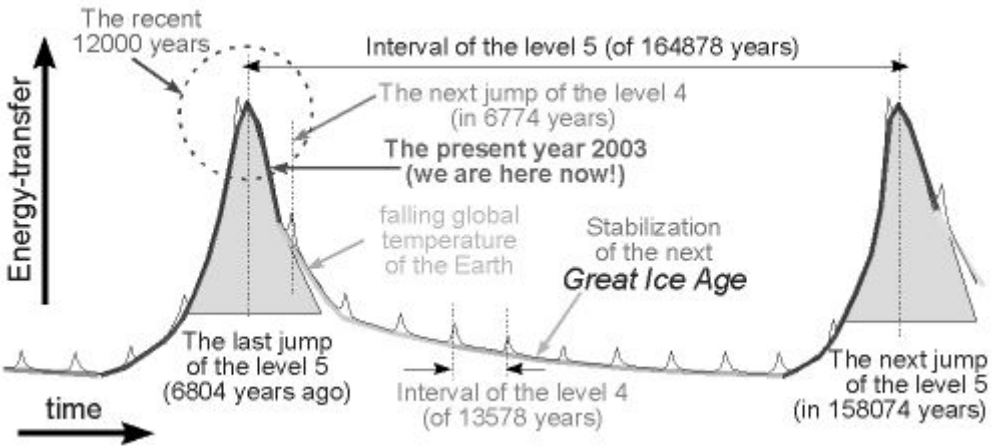
Now, let us look at the newest data for the strongest earthquakes around the boundary-year of the recent quantum jump of the level2, the year 2000.59.

For a comparable precision as before (at the level 3), we must now pursue not only the annual records of the earthquakes but also the monthly records. According to the published data of the American seismological service, the monthly frequency of the earthquakes of the strength 7 or more has reached the average value of 2 in the year 1999. This number climbed on 5 earthquakes in November 1999 however. Between January 2000 and April 2000, it decreased on 1. Then however, it climbed on 1.5 for the rest of the year 2000 and reached the value 4 earthquakes in November 2000 and even 5 earthquakes in January 2001. After that, the Earth has relaxed again.

It is quite the same pattern, as during the time of the „big" quantum jump of the level 3 about the year 1908.5. Merely the scale of time was shorter now. The length of the „quiet-zone" for this level 2 lasted approximately only one year, in the comparison to twelve years of the case of the level 3.

One can therefore extrapolate our new knowledge over the correlation between the tectonic activity of the Earth and the cosmic quantum jumps also into the opposite direction of the higher levels of the Cosmic Hierarchy. One can appraise then that the recent crossing of an energy-bridge of the level 5, 6804 years ago, had had to last approximately 1700 years; ($1728=12^3$). If we increase the encircled segment of the diagram 36, then we can see the recent 12 thousand years of our human history with several quite interesting, even sensational details.

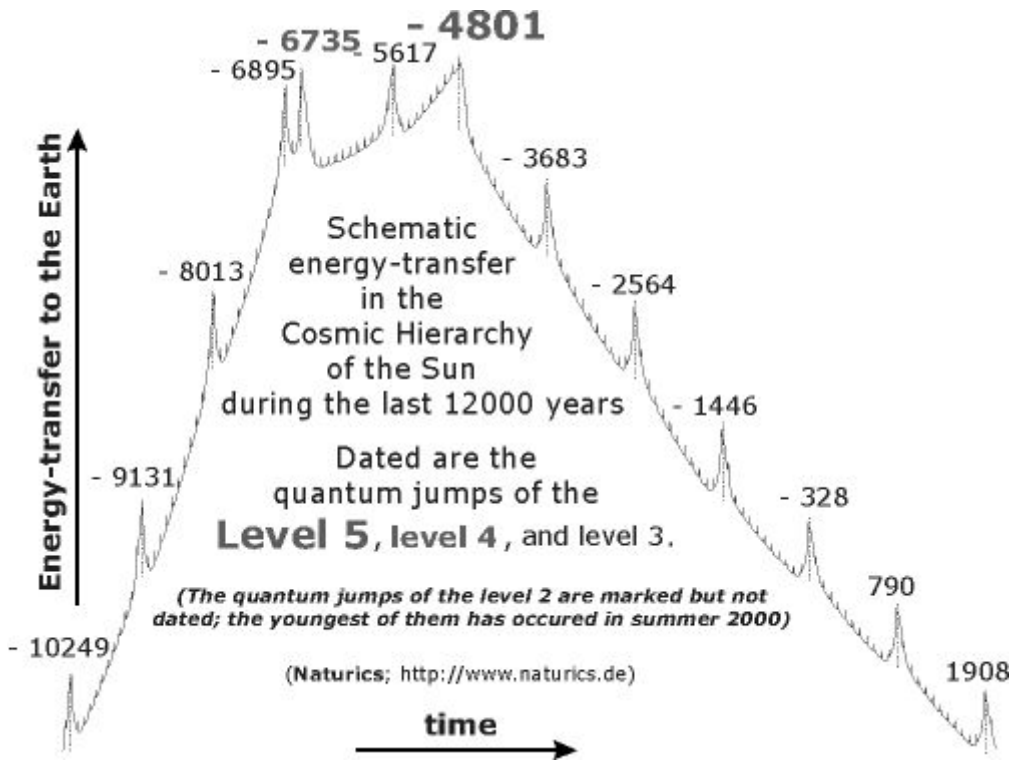
36. The last one and the next quantum jumps of the Cosmic Hierarchy of the Solar System



One can hardly imagine the vehement earthquakes, which had to occur during the most active phase of the Earth's tectonics of the recent quantum jump of the level 5. This restless phase should be located between -7000 and -4000 years before the beginning of „our" calendar. Let us forget for a moment the dramatic cosmic impacts at each next boundary of the level 4 and the level 5 itself. Only the huge landslides in the mountains and in the seas had have surely contributed to the deluge-like floods, which have accompanied the birth of the modern human being and the so-called great civilizations. Let's be glad that we had not had to personally

experience the whole dramatics of these times (compare the corresponding part of our timescale in section 4.3).

37. Recent twelve thousand years of the energy-transfer to the Earth



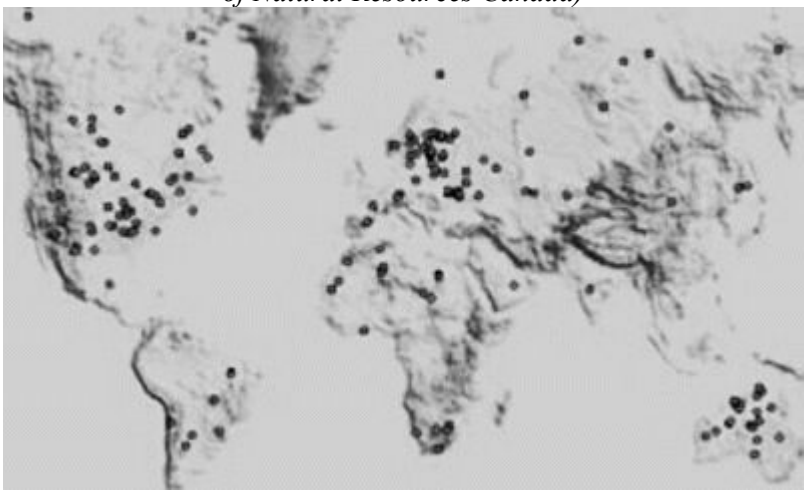
In this section, we have demonstrated the exact anti-correlation between the rotational velocity of the Earth and the frequency of the strongest earthquakes. Through it, we have also demonstrated that the Earth has experienced the last quantum jump of the level 3 of the Cosmic Hierarchy of the Sun in the year 1908.5. That was the theoretical start-shot for our first global civilization.

Let's now summarize our long-term forecasting of the probability of the appearance of the strongest earthquakes. If one exactly observes the rotational velocity of the Earth, one can globally predict the tendency to the appearance of the biggest earthquakes. The probability for the strongest earthquakes grows if the Earth is slowed down in its rotation, and reversely, this probability decreases after the Earth has accelerated its rotation again. The quantum jump in the year 1908 has

marked the beginning of the present, 1118.22-years-long period of the level 3 of the Cosmic Hierarchy. Such an accumulation of the strongest earthquakes, like at the beginning of the 20th century, is therefore not expected in the whole current millennium. Every 92 years, however, the frequency of the strongest earthquakes will reach the values of the years 1999-2001 again.

4. 6. Discovering 20 old impact craters in Germany

38. The investigated impact craters on the Earth
(after the Homepage of the Regional Geophysics Section of Natural Resources Canada)

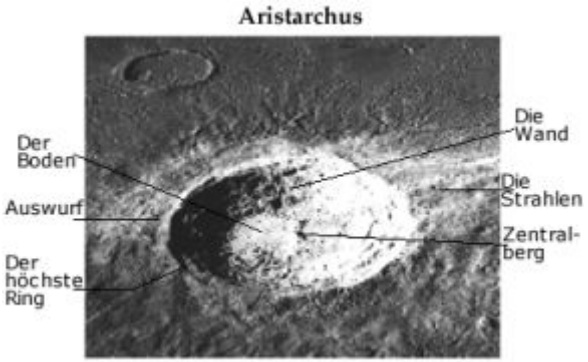


An article in the „Star Observer" brings our current topic to the point.

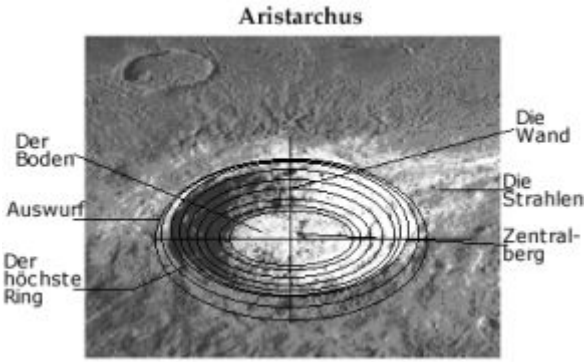
> "Who counts diligently the Moon craters and then transfers the result on the Earth's conditions, will be perplexed, because therefore approximately 400.000 impact craters would be expected on our planet. Actually, geologists and astronomers could identify some big, round craters. Today, approximately 150 structures are localized. However where has the enormous rest remained?"

Observing the full Moon with bare eye, one recognizes only the dark maria on the bright background of the remaining surface. Observing the Moon through a binoculars or a small telescope however, one additionally recognizes innumerable craters that actually cover the whole surface of our companion. When looking still more exactly, one recognizes also the various structures of the craters, according to their size and age. On the lower picture of the following page, we have retouched a little on the example-photo of the Aristarchus crater on the Moon, in order to exhibit its typical ring-structure more clearly.

39. Aristarchus crater on the Moon



40. Typical structure of the Aristarchus crater



There are hardly weathering processes on the Moon. The impact craters remain visible over millions of years, until they are spilled completely by the material ejected from the newer impacts someday.

Do you remember, what we have already learned previously about the impactors, the cosmic bodies colliding with the planets and moons of the Solar System? Most

impactors don't come from the Solar System itself but from many wider space of the Universe, where the higher members of the Cosmic Hierarchy of the Solar System are „at home".

You know, in opposition to the popular opinion, there are in reality no true impacts on the objects of the Solar System but merely collisions of these objects with cosmic bodies of the other levels of the Cosmic Hierarchy, which the Solar System meets on its trip through the Universe. Therefore we can say that the Earth and the Moon cause the collisions and destruction by themselves, ramming the other bodies without pardon. This new paradigm of the cosmic impacts clearly differs from the old view of the traditional astrophysics.

After the old model, all impacts happen:

- only accidentally, without any „timetable" (therefore they are unpredictable), and
- always individually, with one exception, if an impactor breaks apart shortly before the collision.

After our new model, almost all impacts happen:

- after an exact schedule of the Cosmic Hierarchy of the Sun (they are thus exactly predictable, similarly to the exact predictability of the shivers of the known meteoroids), and
- rather in groups than individual, particularly for the lower levels of the hierarchy.

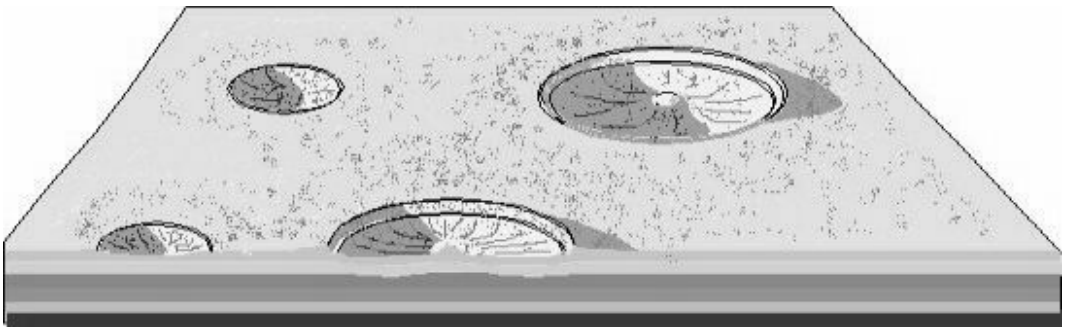
Only the rare impacts of the asteroids and other fragments of the cosmic bodies wandering through the Solar System happen after the old pattern of the astrophysics. We cannot consider them here. Their impacts are really not predictable. One needs many engaged scientists and governments in order to illuminate this „dark" side of our immediate cosmic neighborhood. Also the best theory helps with the accidental events not so much as a direct supervision of the potential „wrongdoers". The international program „*Spacewatch"* is the best example of such practical observation.

Nonetheless, our general knowledge about the predominantly systematic cosmic impacts and their consequences for the life on the Earth will be the better, the more craters we have examined exactly. The thesis of this section of our book is therefore: there are still thousand or so big impact craters on the Earth, waiting to

be investigated. Their examination can widen our knowledge over the Cosmic Hierarchy of the Solar System very much.

How will an impact crater be formed? We must start with the examination of the nature of the Earth's surface, on which the crater emerges. The Earth's crust has the mechanical properties lying somewhere in the range between those of an elastic membrane, on the one side, and those of a dry powder-layer, on the other side. We speak in this case of a half-elastic membrane because the elasticity is rather restricted. For this reason, the inflicted deformation of the hit ground solidifies already after a relatively short time. The membrane doesn't come back completely to its previous form. The impact crater remains visible on the surface for a very long time.

41. Model-development of the smaller impact craters



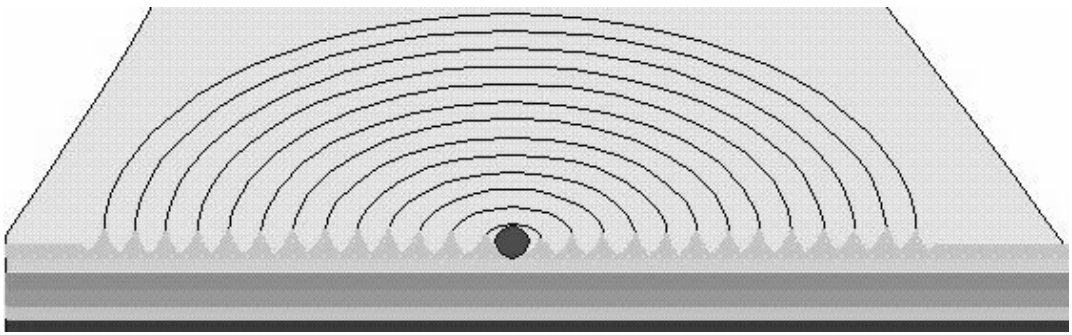
At the smallest craters (with a diameter under one kilometer on the Earth and a few kilometers on the Moon, at 1/6 Earth’s gravity), that is only a round, smooth deepening of the ground. The ratio of their depth to their diameter is about 1:6.

In the moderately sized craters, symbolized with the bigger craters of the upper sketch, a characteristic central peak originates through the half-elastic reaction of the ground. After the initial pressure of the shock wave, the ground-material grows back to the height and oversteps its own limit of the elasticity with it. The ground solidifies in the uplifted position, because there is no sufficient tension pulling it back into the depth again. These moderately complex craters can reach a diameter of several kilometers on the Earth and some dozen kilometers on the Moon. They are also shallower than the smallest craters; their depth-to-diameter ratio grows from 1:10 to 1:20.

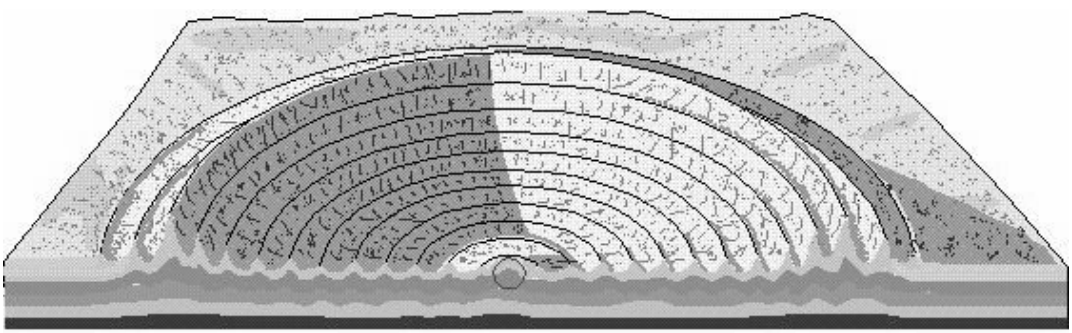
The most interesting for our investigation here are the really complex craters formed after the collisions with the cosmic bodies of the size of 0.5 km and more. First at such huge impactors and the correspondingly high energy of the impact, one observes the true half-elastic effect of the Earth's crust. This time, not only the most upper layer of the Earth's crust becomes compressed but also several layers lying under it, which possess a higher elasticity together. Therefore, the elastic reaction of the ground of the big craters does not longer finish immediately after the first lifting of the central peak. The ground swings several times up and down, through what a concentric elastic wave runs through the whole emerging crater, away from the impact position at the center of the crater.

Immediately after the impacts, big quantities of the material of the Earth's crust become ejected so that the crater floor delves altogether. The circular wave modifies the already deformed ground further until its elasticity-limit is overstepped again and the crater material solidifies in a row of concentric, terrace-like rings.

42. Big impactor generates an elastic wave of the ground



43. A big impact crater emerges



The crater floor shows always the following characteristics.

- The central lifted area, that is however many wider, as the individual central peak of the moderate-sized craters.

- The wavelength (a distance between the following concentric rings) resembles the size of the impactor (marked in the center of the crater).

- The number of the wave crests from the center of the crater up to the outermost ring of the wave (at the outer edge of the crater) depends only on the half-elastic properties of the ground, and therefore is approximately constant for all big craters on the Earth; there are always 12 or 13 wavelengths.

- The elasticity-limit of the ground-material is first reached always between the wavelengths 8 to 11; there always emerges the highest ring of the mountains and the deepest faults. The middle rings, between the central-lifting and this highest ring, are better manifested in the larger craters. On the Earth, these rings become fully visible only in the craters with a diameter of approximately 60 km.

- The one or two most outer rings, that correspond with the 12th and 13th wavelengths from the center of the crater, lie only seemingly outside the crater, because their height clearly decrease and they are mostly covered by the ejected material.

In summary, the original profile of a big crater always resembles the following form:

- a central lifting of the crater floor stretches up to the second or third wave crest from the center;

- farther from the center, the crater delves and reaches the deepest point at the 5^{th} or 6th wave crest;

- from then on, the ground climbs terrace-like, until it reaches the highest point at the 8th to 11th wave crest;

- the two outermost terraces slope to the surrounding-level again.

We should have this upper list of the four characteristic areas of a big impact crater before our eyes, if we want to look after the traces of the terrestrial impact craters.

We still add to it two practically important characteristics, that are directly interconnected with the weathering on the Earth.

- The aging craters are often filled with water. A lake can even with its sediments the deepening of the crater floor. Even also the whole central lifting can be completely smoothed; a crater-plateau will be formed then.

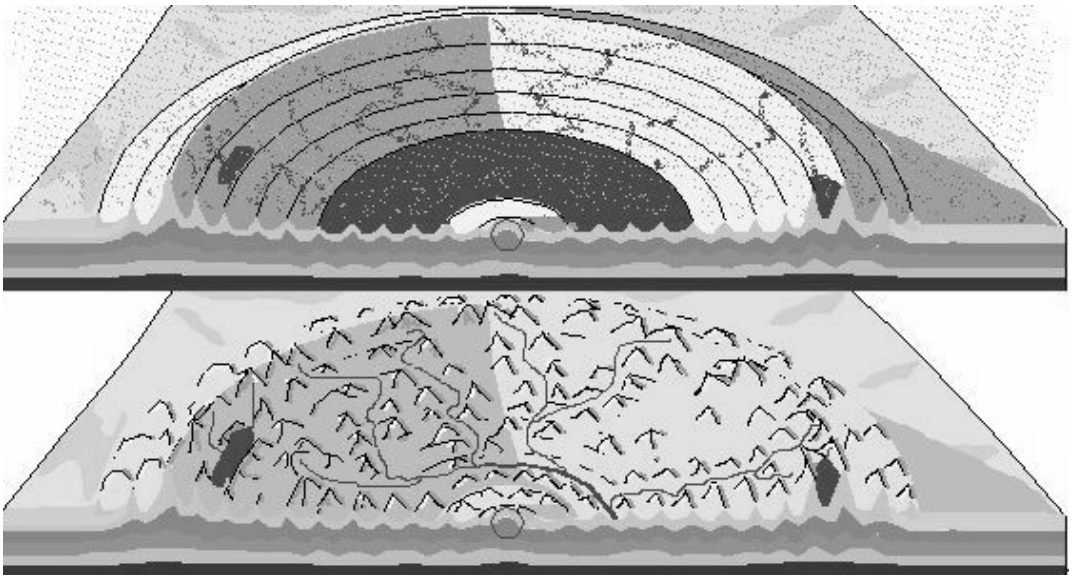
- The later course of the rivers through the crater relieves the task to distinguish between two (or more) overlapping craters.

Below in this section, we discuss three examples, which make the effectiveness of this weathering on the Earth especially clear. On the example of the Ries-crater, we will experience, how effectively the sediments of a post-impact lake can flatten the central part of a big crater. Secondly, the crater lakes that primarily originate between the neighboring crests of the deformation wave of the big craters, will be especially often meet on the North-German Plain. Thirdly, the important role of the course of the rivers in the identification procedure will be demonstrated on the example of the Franconian craters in the area around Würzburg (in Central Germany).

The main difference between the easily observable craters on the Moon and the still mostly undiscovered terrestrial craters is to be attributed to the very effective weathering processes on the Earth. Already after a relatively short time, the solidified „terraces" of the Earth's crust disintegrate to circular chains of mountains and to individual hills. They are demolished with the time more and more. Sometimes, though not very oft, they could be enlarged again, if some next impact will occur in the proximity. We try to demonstrate the effect of this weathering-decay on a big impact crater on the two following sketches.

The lower of these two sketches shows a picture having really only little in common with the well conserved Aristarchus-crater on the Moon. However, it is exactly this picture that we should expect, if we want to look after a big - still undiscovered - terrestrial impact crater.

44. Weathering processes alter the structure of the impact crater



Our examination method can be divided into four steps.

Laborious step

- One chooses a region of the Earth's surface about a few hundred to many thousands square kilometer in area. One takes an exact map of the area. The map should contain information about possibly many hills and mountains, with an estimated height, and with a precise localization, of 1 km or better. One transfers these data on a work diagram. (In our present case, the cartographic company „*GeoData"* from Stuttgart could leave this work directly to their computers, because they have already been fed with the required data anyway.)

Crucial step

- One looks for an interrelated group of preferably many heights that could correspond with our pattern of the concentric rings at least partially. Two additional conditions are important with it:
    - the „wavelength" of the deformation wave of a potential crater must remain unchanged across the whole investigated area, i.e., the distances of the selected chains of mountains and hills or the distances of the ring-bows of individual mountains to each other must remain unchanged, and

- in the geometric center of the selected chains or bows must be located an elevated central sector, a formation of the ground, that is flowed through by no river.

Complementary step

- One tries to supplement the found mountain-chains and ring-bows around the selected center to a full ring-structure with 13 full rings. However, one can undertake no adaptation of the positions of the mountains with it. Only in a case of a clear mistake of the former position, it can be corrected. Otherwise, each small deviation of the current pattern should be considered as a hint for its imprecision.

Testing step

- One tries to repeat the second and the third steps, to try out all possible variations of the assignment of the heights to a „solidified" elastic wave of the crater floor.

If it gives no contradictions with the general characteristics of a crater at the end of the adaptation, we can assume that we have discovered a new impact crater indeed. Of course, the „cartographic" discovery still demands a geologic confirmation of the corresponding metamorphose of the material of the ground during the impact, and the investigation of the exact age of the crater. Our „cartographic" method delivers only hints to the crater localization, but not a final proof of it.

However, if there remain some serious contradictions at the end, then we still have two possibilities. Firstly, we look for a physical cause for some extraordinary conditions in the investigated area. It could be for example the movements of glaciers across the area in the geologic times after the impact. Such movements are able to change the look of the landscape considerably. It could also be a vertical movements of the land-masses in the impact area, changing (positively or negatively) its elevation relative to the sea level. Or it could be some later cosmic impact in the neighborhood. Its ejected material could partly cover the original pattern of the investigated crater. If we have found such a cause, we start with the second step again, under the additional consideration of the new knowledge.

Only in the second case, if we are not able to find any reliable and unambiguous cause of the difficulties of the adaptation indeed, we have to give up, and to try the same procedure from the very beginning with some other area.

I have worked for this section of my book with the series of 13 maps of Germany: „*From the ADAC for its members",* (Falk-Verlag, Hamburg 1998, by „*GeoData"* in Stuttgart), with the scale of 1:200000, 1 cm = 2 km. In some few cases, I still have used the support of the car-atlas „*Deutschland/Europa 1999/2000"* (Falk-Verlag, Munich 1999).

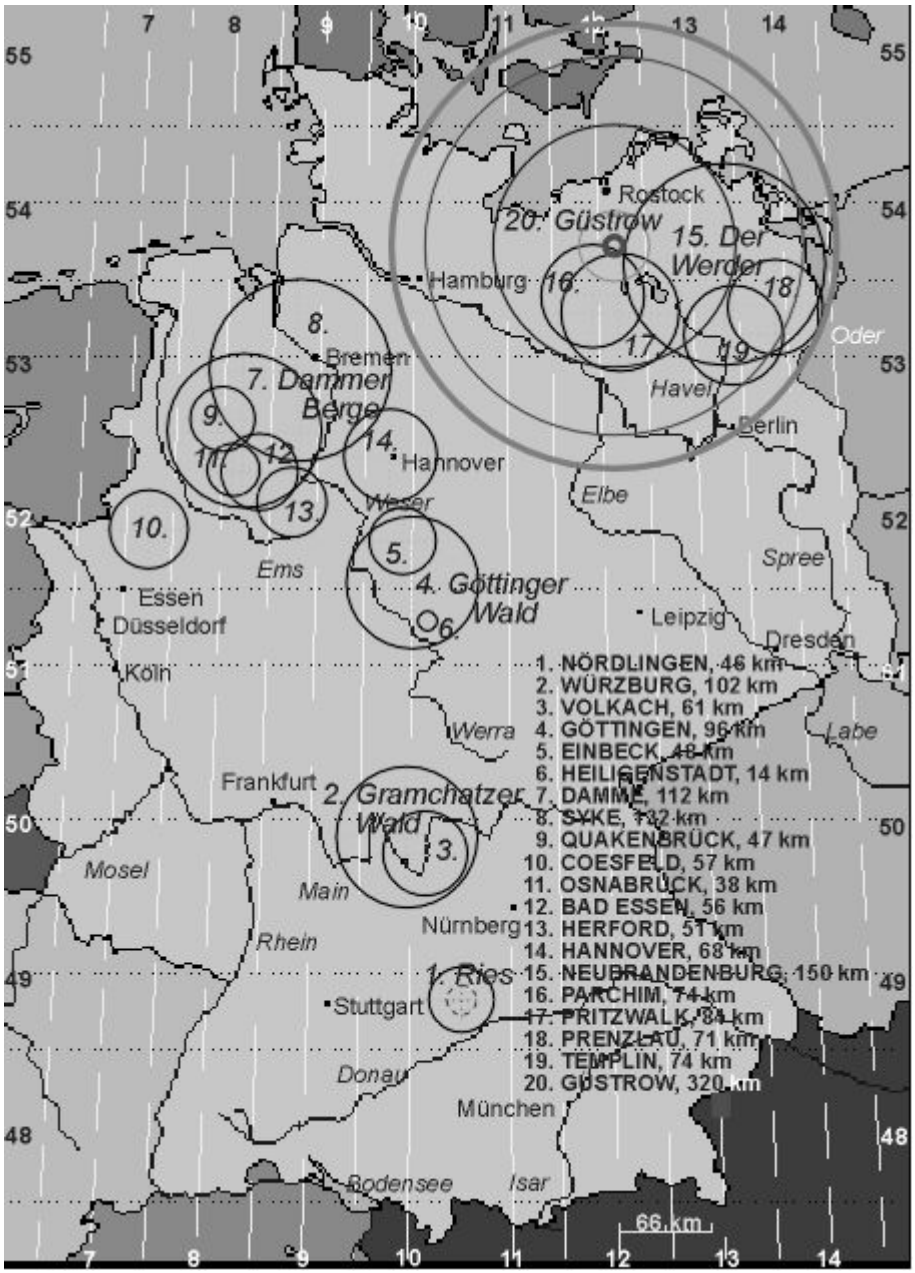
During only a few weeks, with the method described above, I have discovered 19 big impact craters in Germany. Until now, only one impact crater bigger than 10 km in diameter was localised in South-Germany. It is the Ries-crater between the Swabian and Franconian Alb, near the Danube-valley. The application of the new method to this crater has also led to a sensational observation. It turns out that this crater is actually doubly so large as assumed until now. We are going to discuss this observation just below in this section.

I have reserved the number 1 for this „oldest" crater. The newly discovered craters can be collected into five separate groups, according to their geographical position. They are marked on the following sketch of the map of Germany with circles, which size corresponds to the real size of each crater (note the scale-bar of 66 km at the bottom of the sketch). The five groups carry the names of their biggest member:

Group 2: with center in Gramschatz-Forest at Würzburg; (craters 2 and 3);
Group 3: with center in Göttingen-Forest; (craters 4 to 6);
Group 4: with center in Damme-Hills; (craters 7 to 14);
Group 5: with center in Werder at Neubrandenburg; (craters 15 to 19);
Group 6: with center at Güstrow in Mecklenburg; (the giant crater 20);

Altogether, there are over 2000 mountains and hills that have been used for the identification of these craters. The result of some weeks of work is presented on the upper map of Germany.

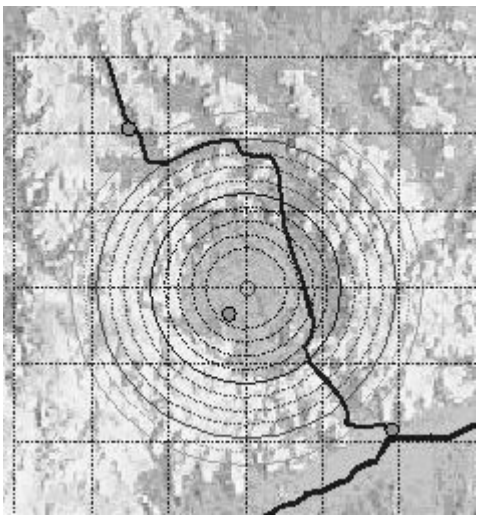
45. Twenty big impact craters in Germany

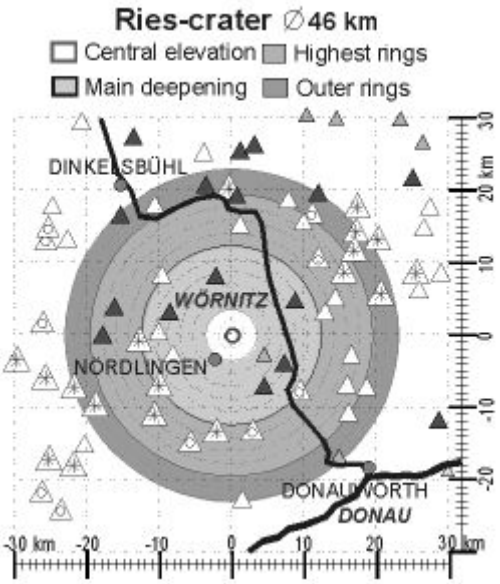


Let's now come to the three promised examples of the individual craters. As the first example, we take the Ries-crater.

Viewing an air-photo of the Ries-crater in some reference work (like that already mentioned in the section 4.3, „The Chronicle of the Earth"), one always sees only the central plateau of the crater, with the town Nördlingen south-west from its center. Such a view suggests that the crater is actually limited to the first ring of the mountains around the plateau. The traditional geology has placed the border of the crater exactly there indeed.

46/47. Ries-crater is twice as big as its plateau

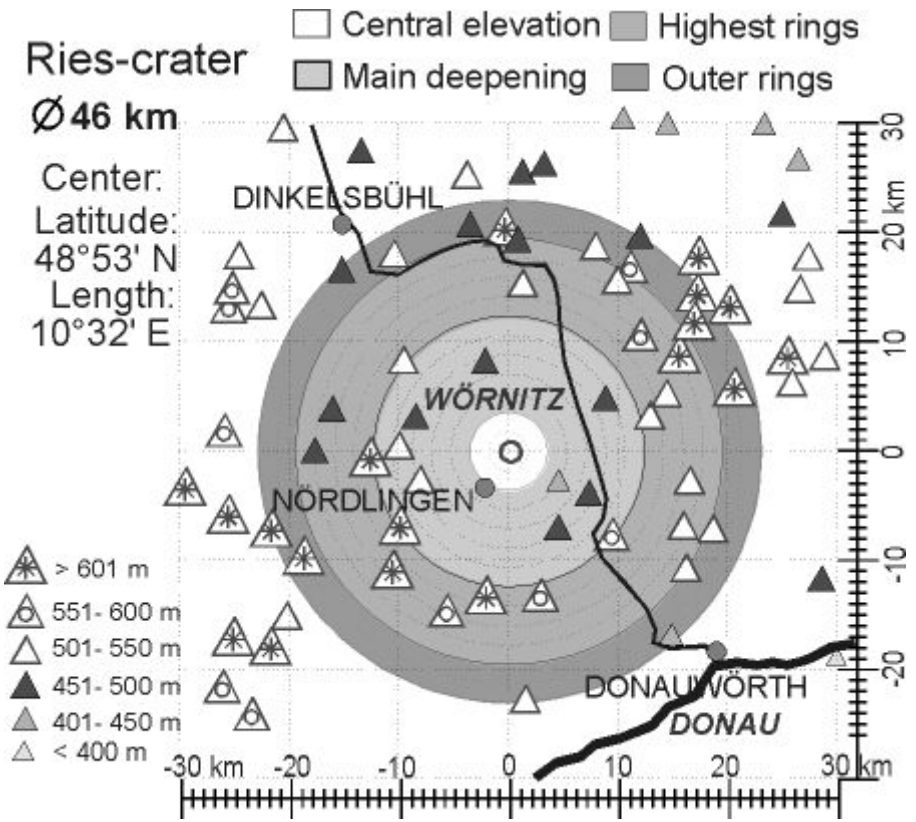




On a radar-photo of the area (here above left) one recognizes however clearly that the circular group of the mountains extends much further from the center of the crater. On this picture, we have added the rings of the deformation-wave from our method and the course of the rivers Wörnitz and Danube. On our sketch of the crater (on the right side), we have also shown all bigger hills of the area (the height-scale is shown on the following enlargement of the picture). With some experience in our method, one recognizes that the real edge of the crater must be shifted from the traditional value of 23 km to about 46 km. In reality the Ries-

crater extends between Donauwörth and Dinkelsbühl. The enlarged sketch of this crater, just below here, represents its actual structure more clearly.

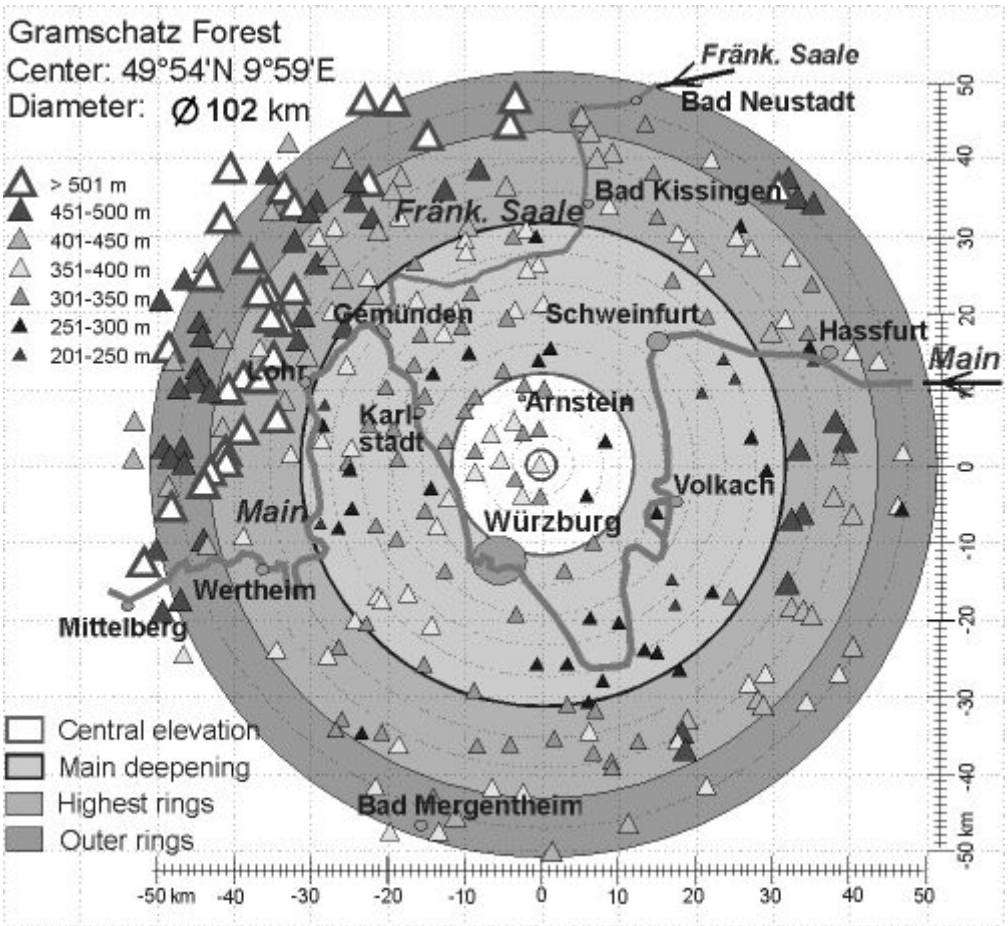
48. Ries-crater and its mountain-rings



On the sketch above, one can very clearly recognize, why the Wörnitz had to take exactly this engulfed course, in order to come from Dinkelsbühl to Donauwörth. Firstly, the river had to find a breakthrough through the outer rings of the crater in order to come inside the crater. Then it had to find a way out to the outside again. The Danube makes also a smooth, though unambiguous bow at the southern side of the crater.

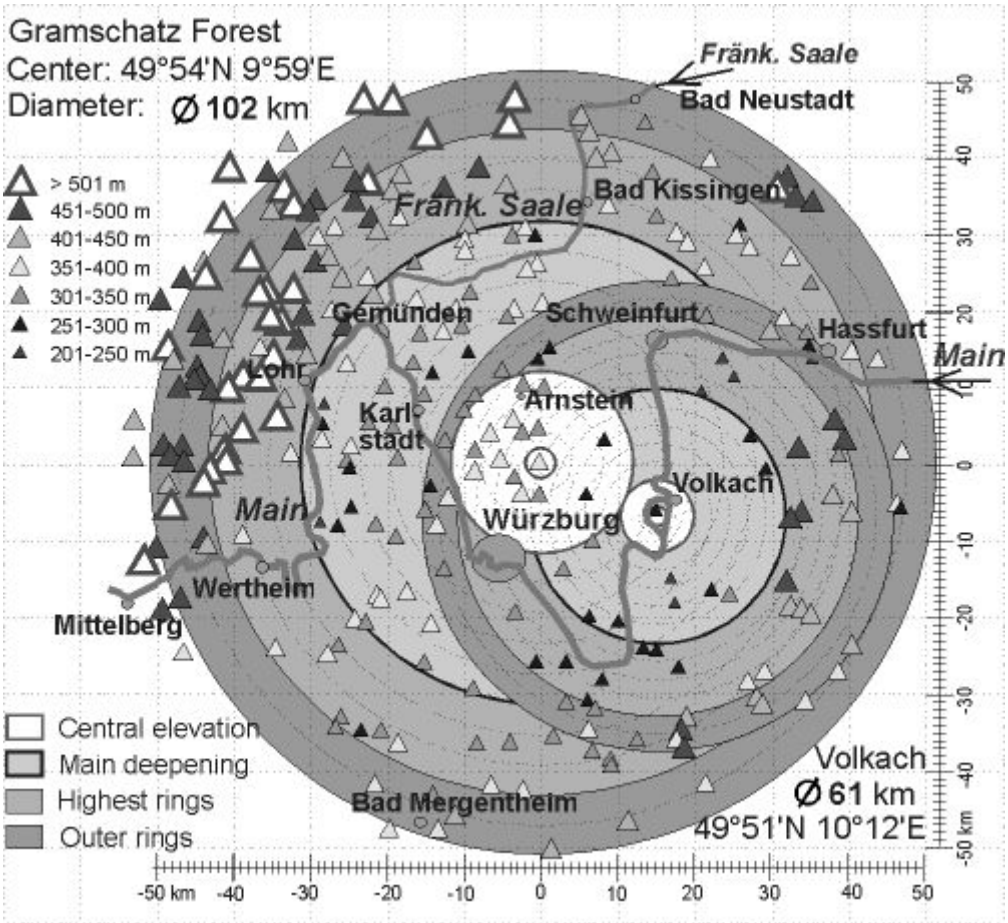
49. An impact in the Gramschatz-Forest

(The engulfed course of the rivers through the crater)



Our second example demonstrates a similar, though more engulfed course of the rivers through a crater landscape. This time, it is the course of the Main and the Franconian Saale near Würzburg. The sketch below represents the area about Würzburg, approximately 8000 km^2. Its center lies in the Gramschatz-Forest, between Würzburg and Arnstein. With help of a generally accessible map of this area, one can identify approximately 270 mountains and hills that are higher than 200 m. In order to receive an overview of the physical formation of this area, I have collected the heights in seven groups.

50. Two Franconian impact craters



Let's observe the strange course of the rivers through this area. They appear in the area at the right upper corner of the picture. Both, the Main and the Franconian Saale follow there the general inclination of the European continent towards Atlantic. Then however they meet a more favorable inclination and turn from the original direction towards the center of the area. However, they don't reach this center, but turn again. Remarkably that the Franconian Saale flows around the center on its northern side, while the Main turns off southward. That can only mean that some local wall has originated between Bad Kissingen and Schweinfurt.

The course of the Main through this area is typical for a marble that rolls into a flat peel with a central elevation and a light inclination from north-east to south-west. After the Main has overcome the outer edge of the „peel", between Hassfurt and Schweinfurt it flows first in direction of the center. Then at Schweinfurt, it is forced to turn southward and wins more speed by flowing around the center. With the won energy it comes too near at the rising edge of the „peel" again; this edge forces it back in direction of the center. Its energy, still reinforced by the general south-western inclination of Central Germany, brings it to the west side of the center (near Würzburg). Like a marble, it cannot stop at the central elevation of course. It flows further to the opposite edge of the „peel". Here, near Gemünden, it meets the Franconian Saale and must turn back again in order to find a suitable place to leave the „peel". It finally finds such a place at Wertheim and can freely flow again.

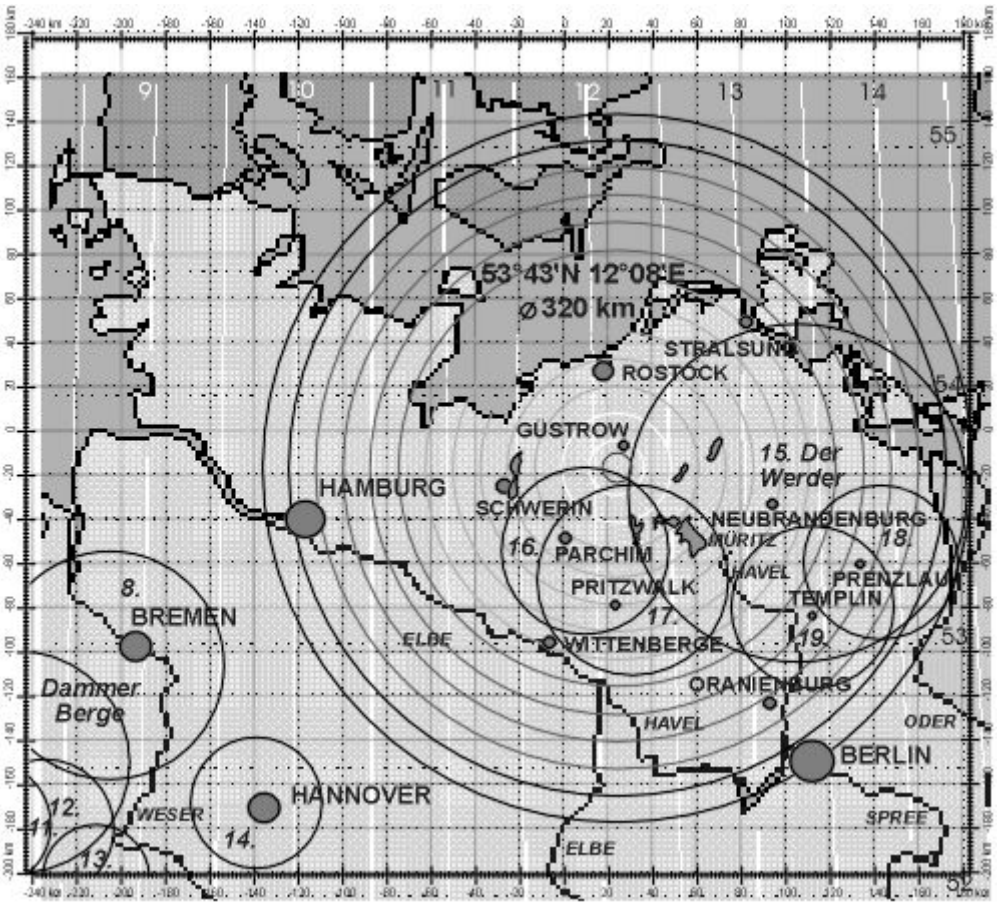
The course of the two rivers proves to be the truly optimal variation for the water, if we have still taken into account the smaller crater around Volkach, as the sketch 50 demonstrates.

An engulfed course of a river, like that of the Main in the area of Würzburg, occurs rather rarely. The course of a river around a central elevation, or outside, around a crater around, is against it typical for all rivers that we have observed. Therefore, an analysis of the course of the rivers helps us to identify a crater or its central height.

Now, we come to the last example of our crater analysis. This time, we choose the largest of the discovered craters, a really giant crater. The collected experience enables us to identify such crater in the North-German Plain. We realize that a single impact crater has once formed the entire Mecklenburg Plain, from the mouth of the Elbe at Hamburg in the West until Usedom in the East. This crater is really a giant between the terrestrial craters investigated up to now. With its diameter of approximately 320 km it is comparable with the biggest registered crater of the Earth, the Vredefort-crater in South Africa.

The crater is too big for to be completely presented in our previous scale, with all individual hills. It is better to present its outlines on the background of the map of Northern Germany.

51. A giant crater has formed the whole North-German Plain



One recognizes on this sketch the similarities of the structure of the North-German Plain with the expected form of a big impact crater, which we have discussed above. The whole floor of the crater is slightly inclined towards the North. We recognize the central elevation of the crater (at Güstrow), marked with the white central rings of the sketch. There are no larger lakes on it, no rivers flowing through it. Next around the center, it comes the deepest part of the crater, marked with the grey rings on the sketch. Between the adjacent crests of the deformation-wave there is a lot of place for many larger and smaller lakes there. In the northern, lower side of the crater, the deepening is already partly overflowed with the water of the Baltic Sea. The deepening is surrounded with the highest rings of the crater structure, marked with the dark-grey rings. We see there such prominent land-

elevations as the Lüneburger Heide, the Altmark, the Uckermark, the island Rügen and the Danish islands Falster, Lolland and Langeland. The two outermost rings of the crater are marked with black on the sketch.

We can only speculate about the age of the Mecklenburg-crater at the moment, prior to any geologic investigation. It must have originated in one of the last ten episodes of the level 7 of the Cosmic Hierarchy that had happened since the end of the Paleozoic (259.5 million years ago). On the other hand, it cannot be younger than the last episode of this series. Therefore, it is at least 16.4 million years old. It is also sure that this crater is older than all craters of the „Werder"-group (with the numbers 15 to19 on our map of Germany); they all cover the already existing giant crater.

14. The biggest impact craters in Germany

(The stand from the year 2000)

No	Name	Dia-meter [km]	Geographic Location	Remarks
1	Nördlingen	46	48°53'N 10°32'E	The previous diameter of the Ries-crater was with 20 to 24 km clearly underestimated
2	Würzburg	102	49°54'N 9°59'E	Central height: Gramschatz-Forest
3	Volkach	61	49°51'N 10°12'E	Central height: Kreuzberg at Volkach
4	Göttingen	96	51°36'N 10°0'E	Central height: Göttingen-Forest (Plessenberg)
5	Einbeck	48	51°51'N 9°49'E	Central height: Bartshausen at Einbeck
6	Heiligenstadt	14	51°20'N 10°11'E	That is the smallest crater, that one can identify exactly with the cartographic method. Its central height: Flinsberg
7	Damme	112	52°33'N 8°13'E	Central height: the Damme-Hills (northern from Damme)
8	Syke	132	52°56'N 8°47'E	Central height: Hohe Berg at Syke
9	Quakenbrück	47	52°38'N 7°59'E	Central height: Badbergen in Artland
10	Coesfeld	57	51°55'N 7°15'E	Central height: Berg at Coesfeld
11	Osnabrück	38	52°14'N 8°06'E	Central height: Osnabrück-south

12	Bad Essen	56	52°17'N 8°22'E	Central height: Rattinghausen at Bad Essen
13	Herford	51	52°07'N 8°43'E	Neustädter Feldmark at Herford
14	Hannover	68	52°24'N 9°45'E	Central height: Schulenburg at Hannover
15	Neu-Brandenburg	150	53°38'N 13°22'E	The second-biggest crater of the list. Its central height: the Werder
16	Parchim	74	53°23'N 11°55'E	Central height: Siggelkow at Parchim
17	Pritzwalk	84	53°15'N 12°19'E	Central height: Halenbeck at Pritzwalk
18	Prenzlau	71	53°22'N 13°56'E	Central height: the area north-east from Prenzlau
19	Templin	73	53°11'N 13°28'E	Central height: Gandenitz at Templin
20	Güstrow	320	53°43'N 12°08'E	Central height: Zehna; south from Güstrow

It could seem almost impossible to someone, especially to someone with a geologic knowledge that so many big impact craters could remain undiscovered for so long time until today. In order to understand the situation however, we should take into account the following circumstances. Firstly, the typical weathering processes and, in addition, the numerous glaciations of the German Plain have levelled down the rings and later also the individual hills to sometimes only a few percent of their original height. Secondly, the agriculture and the urbanization have effectively covered the remaining landscape with the modern elements. Thirdly, the most of the discovered craters are really big craters. We can live in one of them, nevertheless having no notion of its existence. Only if we have learned to select in our surrounding the specific signs of the existence of the crater structure, we will find such signs more and more.

On the other side, because we already know so exactly, for which signs we should look, it seems astonishingly simple to find some further craters. There are still several places in Germany indeed, where we could suspect an impact crater. Not all of them are however so unambiguous to identify, like those listed in the above table. For example, our method is to be applied only with caution for such areas, where the impact craters and the volcanic craters seem emerge together, like in the Eifel, or where many smaller, younger craters seem to have spilled the older craters very strongly, like in the Weser-highland.

The Mecklenburg-Plain is a very good example, to demonstrate the numerous and vehement injuries of the Earth's crust through the cosmic impacts. The evolution of life on the Earth receives a quite other perspective through the true intensity and frequency of the bombardment. The fact that life does exist despite all that, proves our previous strong underestimation of the strength of the biological transformation of the solar energy.

Like on the Moon, also the Earth's surface is completely covered with impact craters. Even if one takes into account the relatively fast weathering, the craters are almost everywhere to be found. After my estimation, there is dozen of craters of the level 7, that one can find on the Earth's surface (like the Güstrow crater), or in the flat sea (like the famous Chicxulub-Krater). In addition, there are surely still hundreds of craters of the level 6 on the Earth. About one hundred of them should be of the size of about 100 km, some further hundreds with a diameter from 40 to 80 km. Most of them are younger than 259.6 million years, the remaining are only rarely older than 554.7 million years. The Earth had not suffered from the bombardment much less than Venus. The traces of the former impacts of these two levels are however already almost completely „removed" from the Earth's surface.

From the former periods of the geology, one can still identify on the Earth approximately one dozen of the biggest craters of the level 8, with a diameter of 400 km to 1400 km. The investigation of the age of these craters would be very important for the geological and biological history of the Earth. We find the most conspicuous examples of such craters in Africa: the Zaire-basin, the area around the lake Victoria, or the Libian desert.

Recent satellite-photos of the Earth are made accessible also for the civilians more and more, so that also the science can profit of them. Our method, in a combination with various magnifications of such photos, can decisively contribute to the identification of all craters of the Earth. One can expect with tension, how strongly the just successfully completed radar-surveying of the Earth's surface, will accelerate the research of the impact craters. That brings us a large step forwards in the enlightenment of our connection with the wide, mysterious, fascinating, but also dangerous cosmos.

4. 7. The future development of the present-day global cooling

Several months have passed since the disastrous floods in Central Europe in summer 2002. Besides the only one autumn hurricane at the end of October, the weather-kitchen doesn't remain especially active in these months. It admittedly rains or snows rather often, but in general rather normal autumn and winter govern there outdoors.

It is clear of course, the Central Europe is not the whole world. The Australians complain about an extreme dryness, the glacier of Kilimandscharo shrinks further. But otherwise the world-climate seems to be still in order today. However, what has happened with the dreadful visions of the „boiling“ Earth, with which we were so often confronted in the last years?

About two years ago, on the occasion of the UN-climate-conference in The Hague, we have yet often read, that the world stands shortly before a climate collapse. Some scientists had predicted a temperature-increase of about 1,4 to 5,8 degree Celsius up to the end of the present century. Such a tremendous warming had to slowly show its serious effects on the world climate. However, a very wet summer, a cold autumn, and a standard winter don't belong to the „expected“ pattern, in no way. And today this is already the fourth year, without the prophecies of the catastrophe-supporters going in fulfillment.

There are however also many scientists calling for caution with the playing with the climate models. They says, for example, that the weather extremes are not to be immediately put together with a climate catastrophe. In the present-day reality, the so named climate models don't yet really treat the climate and its changes but primarily the weather and weather-scenarios. It is so, because the present models are many-layered expansions of the complex models of the weather prognosis, that underlie the daily weather reports of the audiovisual mass media.

We want to remain on the side of the fundamental physical phenomena rather than on the side of the complicated statistics of the fragmentary data. We admit, the climate is a complex phenomenon indeed. Its physical basis is however certainly much simpler than the physical assumptions of the present-day models of the global climate. Nevertheless, we do not intend to inflame here the old debate to the global warming again. Instead of that we intend something more important. We are going to give you a practical, reliable forecast of the global climate for you and

your children. It is very important in our highly industrialized world to know at least the correct tendency of the future development of the Earth's climate.

Firstly, we want to put an end to two prejudices against the global climate.

Prejudice 1:
The sun is only a possible cause of the global warming.

This is the biggest misunderstanding of all. Sometimes it appears to me so, as if some climate researchers, also like some geologists, would still believe, the Earth is a „disk". They still refuse to accept the Earth as a member of the Solar System, and with it, as a member of the gigantic Cosmic Hierarchy of the Sun. They miss then the right perspective and a right comparison-scale, when they try to explain their own, undoubtedly correct observations. As we already know, the Earth receives its energy from outside, from the cosmos, exclusively. It was so during the formation of the Earth and it is also so today. Therefore the global climate changes in principle only because the delivered amount of the energy alters constantly.

Prejudice 2:
We people are responsible for the 20th-century-warming of the Earth.

It sounds for me rather arrogant to claim something similar. We are maybe the world-masters in the changing of our environment, although the bacteria, fungi or insects are not much weaker in this sense. We are capable probably already today to make our world uninhabitably for us. However, the global climate is much more than the sum of the current weather forecasts. It is a result of the energetic balance of the whole Earth, kept since billions of years. We cannot seriously change it in any way. We have not enough energy available on the Earth. Even if we would like to burn all forests of the world and the oil and coal resources all at once. We doubtlessly contribute to the global warming of the Earth, but on a very low level; to approximately one tenth maybe, and surely not much more.

Let's summarize the most important facts known up to now.

The modern warming of the global climate is a real phenomenon. It is really something exceptional. Something similar has not happened in the last 1000 years. However, we have already overpassed the maximum of this warming in the year 1990. Such extremely warm years, like the last two decades of the 20th century,

don't come back in the whole third millennium. The number of the extremal weather conditions, which we name too readily as natural catastrophes, will decrease however only slowly. The summer floods, for example, will be replaced gradually by the winter floods caused through the drift of ice.

In the section 3.4 we have presented our explanation of the global variability of the solar activity. Our theoretically obtained curve of the diagram 11 represents the relative changes of the solar activity during 200 cycles, between the years 347 and 2510. The course of this curve can be still simplified, if we take once more a long-term average of its values. The simplified curve reflects then directly the historical changes of the global surface temperature on the Earth. The following diagram 52 presents the historical changes of the global temperature in the recent thousand years and the tendency of its future changes in the next five centuries. The grey sectors of this curve mark the cooling periods with the falling global temperature, whereas the dark sectors are the warming periods with rising global temperature.

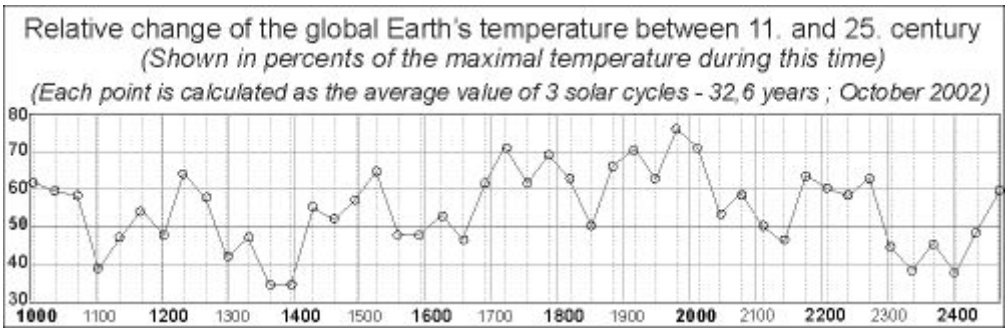
Also in that simplified form of our diagram, we clearly recognize the three phases of the „Little Ice Age“, where the global temperature has sunk under 50 percent of its maximal value of the whole period. The best known and scientifically documented is the last of these periods, betwen 1540 and 1680, originally named as the „Little Ice Age“. However, also the previous two phases of the global cooling, lasting from 1070 to 1210, and from 1270 to 1420, were very dramatic for the mankind. These times are hardly documented scientifically, because the temperature measurement was still unknown then. Especially the second of these periods had to be a really dark period for the people in Europe. The global temperature of the whole 14^{th} century was surely significantly below the documented temperature of the last phase of the „Ice Age“ (in the 16^{th} and 17^{th} century). The extremely long lasting cold time was the physical background for many disastrous events of the 14^{th} century. The Black Death killing half of Europe’s population in only three years (between 1348 and 1351), or the Hundred Years’ War between England and France (since 1337) are only the best known examples of such disasters.

On the diagram 52, we recognize also the climbing tendency of the temperature after 1660 and the really extreme growth of the global temperature between 1860 and 1990. Unfortunately, this last section of the whole curve was exclusively used as a supporting argument for all previous hypotheses of the expected catastrophic warming in the 21^{th} century. Nevertheless, our theoretical extension of the curve

on the coming 500 years demonstrates very impressively that the top of the modern climatic optimum is already behind us. It demonstrates also the expected falling of the global temperature to the mark of nearly 50 percent again. It will already take place during the lifetime of the generation of our children. The next „Little Ice Age“ in the 24th century will be not less dramatic than the previous one.

52. Theoretical long-term average value of the global energy-transfer to the Earth during the last 1000 years and in the coming 500 years

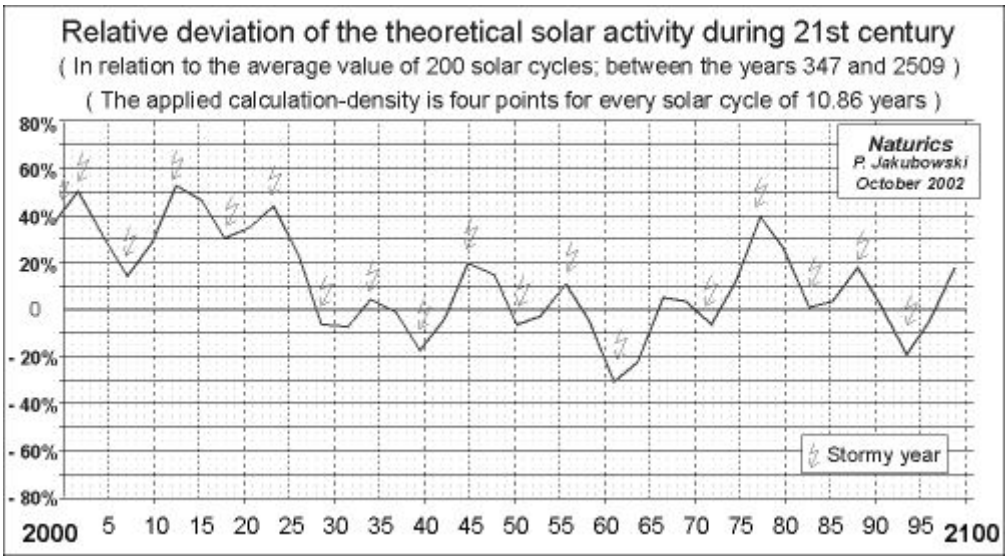
(in percent of its maximum-value during this period)



It could be very useful to compare the historically documented period of the world history between 1160 and 1460 with the period between 1900 and 2200. The course of our theoretical curve is very similar to each other in both these periods. Merely the absolute temperatures are in the present period about 10 per cent (0.4 degree Celsius) higher than during the former period. We have the possibility to learn already today from the available historical descriptions of the previous period. We could investigate for example which were the drift of the climatic zones in those ancient times between 1260 and 1460. We can expect the analogous changes in the global climate also in the following two centuries.

As we see, the averaged curve perfectly reflects the global tendencies of the climatic change over some long period of time. For a detailed annual prognosis however we have to go back to the originally calculated values, prior to any averaging procedure. An example of such a original curve for the present century is given in the following diagram 53. Having some basic experience in the reading of the climatical implications from such a curve, one is able to give a reliable annual prognosis for many years ahead.

53. Theoretical prognosis of the global Earth's temperature in 21th century
(as deviation from the long-term average value)



From the curve of the diagram 53 we can read, for example, that during the next three decades we are already on a march into the next „ice age". However, up to the year 2026 we still remain on the comfortably high niveau of the global temperature.

Notwithstanding, we and our economy will surely experience in a dramatic way the cooling by about 20 per cent of the maximal temperature alone in the next three years (until 2006). These years will be more than average wet. The precipitations, particularly in the winter months, will change from rain to snow more and more. The winter floods and the spring floods become more probably through it.

On the other hand, the storms and hurricanes become first in the years 2006 and 2007 dangerous again, with a rising probability for a storm tide in the coastal regions. The general weather circumstances in these years will return to those of the sixties of the 20th century.

The years 2008 until 2011 will be essentially drier again. Also some cold winters and hotter summers could then happen.

The global temperature of the Earth will only hardly reach in the year 2012, for the last time in the coming 500 years, the level of 2002. We will have to survive some heavier storms as our price for it again.

The years 2013-2016 will be generally cold and wet again. First the year 2017, and maybe 2018, can become warmer and drier again. The year 2019 will be probably dry. However it also could be rather cold than warm. First from the year 2024, the earthlings are gotten to sense the true fall of the global temperature. Hopefully, we will succeed during the coming two decades in preparing the world economy for this coldest period of the present century.

It stands besides question that we all together and everyone for oneself have a big responsibility for our environment. The above forecasting should help us to realize the responsibility and develop some alternative sources of the usable energy, before the Earth will reach its next really cold period.

The global climate forecasting was our last of the seven examples of a direct application of the Naturics-idea of the Sun's Cosmic Hierarchy to the practical solution of the scientific problems. Many further examples are shortly displayed on the Naturics website (www.naturics.de).

5. The supporters and the actors appear
(Curtains drawn, the time is running)

5. 1. Plants and animals populate the Earth

5. 1. 1. General and terrestrial conditions for the evolution of life

The evolution is no necessity of the animate matter

The evolution of the animate matter too higher developed organisms is in no way a natural consequence of the life itself. The life can exist over billions of years on a certain step of its development without any evolutionary change.

In the last decades, we have started to explore not only the Solar System but also the depths of the world-oceans. Especially in the oceans we have found such old forms of life that nobody has expected there. There are, for example, the bacteria processing the sulphur compounds. These bacteria are able to live quite well around the volcanic slots in the deep ocean, completely without light and oxygen, in temperatures up to 300°C high. They are so much perfectly adapted to these extreme conditions that the scientists have immediately took the possibility into consideration, that the origin of the entire terrestrial life would be maybe to seek there. These bacteria seem to live there since several millions of years under always the same conditions, without demonstrating the lowest desire to their own evolution.

It supports the thesis that the evolution of life runs only due to the changing environmental conditions. There is also other evidence for this thesis. The evolution can run positively, in direction of the higher developed organisms, if the outer, physical conditions change favorably for life. The evolution can however also proceed negatively, with a degeneration of living organisms, if the outer conditions should change unfavorably. On the Earth (and in our book) we describe mainly a positive evolution that has managed up to the *Homo sapiens*. We know however also many local examples for a negative evolution. That happens even still today, for example, with the human groups that must live under an extremely negative environmental influence. This could meet also us all, especially if we will make our global environment worse and worse.

Evolution does not need a long time of billions of years in order to develop a „thinking" organism. On the Earth, it has lasted almost 3.5 billion years until the first people appeared not because of a low performance of the evolution-machine, but because of the almost 3 billion years ongoing unfavorable environmental

conditions. The average temperature of the Earth admittedly climbed constantly in that time, from -32°C until +8.4°C today. Nevertheless, almost all bigger reservoirs of the water, protecting the emerging life, had been deeply frozen over 3 billion years. Only approximately 700 million years ago had the average temperature of the Earth's surface reached the melting point of the water ice (0°C). That was the starting signal to the known explosion of life at the Cambrian-boundary, at first in the liquid oceans and later also on land.

Evolution doesn't run continuously but in jumps, from one environmental change to one other. The cosmic influences, that are inevitable because of the embedding of the Solar System into the general Cosmic Hierarchy, show a perfect hierarchical periodicity. With the same periodicity proceeds also the evolution of life on the Earth. An apparent stagnation of the evolution always occurred in a quiet phase. After it however, during each next quantum jump, the evolution was accelerated more or less dramatically, according to the step of the corresponding quantum jump. The acceleration was necessary in order to keep the step with the quickly changing environmental conditions. Therefore always simultaneously with the mass extinction, the evolution had had to develop its full performance in order to be not interrupted.

The bigger the quantum jump in the framework of the Cosmic Hierarchy, all the more probable was the „big dying" of the organisms most sensitive at the time of the jump. So have died for example during the last quantum jump of the level 8, 259.462 million years ago, 90 per cent of all at that time living forms of animals. It was exactly this dramatic event that was later accepted in the geology as the end of the Paleozoic era and the beginning of Mesozoic. It is very difficult for us today to imagine such a dramatic dying around the whole Earth. Let us make a small exercise. Try to write down twenty types of animals you know at the best. If you are ready, erase eighteen of them. Now try to understand that the erased animals will never appear on the world again. One estimates the variety of the terrestrial life today on at least 10 millions species. Let's erase 90 per cent from them. Could you imagine how differently does look the „new" world then?

Also the environmental alterations accompanying the smaller quantum jumps should not have been much friendlier for the life. At the end of the Cretaceous period, 64.975 million years ago, in a quantum jump of the level 7, besides the last big dinosaurs died also 70 per cent of the remaining species.

Not quite so dramatic was the last only moderately strong quantum jump of the level 5, 6804 years ago (compare the figures 36 and 37 in the section 4.5 again) The sudden warming of many regions of the Earth during this quantum jump has finished the about hundred sixty thousand years long period of the recurring glacial times on the Earth. Following the warming had finally died the last of the Neanderthal men, the cousin-family of our own family. Together with them also died then all the „ice age" species of the big animals, with the best known of them, the mammoths.

The energetic interplay of the animated matter with the inanimate matter takes place throughout the Universe

The cosmos from the view of Naturics is very alive. In the entire observable Universe, there are regions, where the prerequisite for a primitive life on the step of the prokaryotes, bacteria and blue-algae, is fulfilled. Prokaryotes are the most primitive single-cellular organisms that do not have a distinct nucleus.

This prerequisite for a primitive life is a relatively stable temperature (stable in the space and in the time), with the values in the range abut the universal temperature of the field of light, it means, from 243 K (degree Kelvin) up to approximately 400 K (it equals to the range from -30 C to 127 C). Such regions of the cosmic space are to be found around each star. According to Naturics, the universal temperature of the field of light is the average temperature of the entire Universe.

This most primitive step of life does not need planets to develop. For the prokaryotes is enough a single „snowball", a stone, or possibly even a bigger dust-particle, that moves in the energetically favorable area for long enough time and relatively slowly. For this step of life, it is enough to dismantle such material „underground" into the individual molecules, to win the necessary energy to life. On the other hand, the small bearers of life can deliver the smallest creatures with only a small amount of energy. Therefore, from the energetic point of view only, no evolution to some higher steps of life is possible on such small objects.

In opposition to the simplest forms of life, the next higher step of the animated matter, the nerve cells, need a well insulating, protective surrounding. Such a support can guarantee only the bigger cosmic bodies, orbiting some center of mass. The relatively constant delivery of the energy from the central source (a star) must

be so much productive that it enables the living organisms to decompose the „consumed" molecules onto the individual atoms. On the other hand, in order to be able to survive such enhanced energy-dose, the organisms forming their nerve cells need a shield in form of a liquid or a dense atmosphere, in which they can dive. If such a protective surrounding is given, and the positive evolution is started, the eukaryotes originate, the organisms composed of one or more cells with visibly evident nucleus.

The cell nucleus of an eukaryote represents the first form of a nerve cell, which is able to function on its own. However, also the cell membrane of the bigger prokaryote, approximately 5 μm in size, fulfils already the most primitive function of a nerve cell. Against it, the cell membrane of the biggest (50 μm in size) eukaryote fulfils already also the first functions of a brain cell. Nevertheless, an independent brain can develop itself only in the highest step of life, in a multi-cellular organism.

The highest step of life - in which the organisms are capable to develop a brain - must populate even more favorable bearers of life. Such organisms need so much energy, taken more exactly, so high energy-density of the energy-transfer, as much is necessary to a total ionization of the atoms or fission of the bigger atomic nuclei. They must therefore be even better protected from an energy-overdose. Such a protection, as one has in the Earth's ocean or under our thick atmosphere, one doesn't easily find throughout the Universe.

Viruses - the smallest quanta of the animate matter

Let's turn into the schooldays shortly and let's look at what the school books say to viruses.

- Viruses are the smallest known objects that are held by some scientists to be living organisms and by others to be complex protein molecules containing nucleid acids. The smallest of all are viroids. The viroids consist only of one single nucleic acid molecule. Despite their minuteness, some illnesses in useful plants (as potato) and probably also in men and animals are caused by them.

- A virus consists against it of one or several nucleic acid molecules that is surrounded from a protein cover. The size of the viruses lies between the one of

the biggest protein molecules (20 nm) and that of the smallest bacteria (300 nm). In viruses, one finds only one type of nucleic acid, therefore either DNA, in DNA-viruses, or RNA, in RNA-viruses.

- A retrovirus, like other viruses, is composed of RNA. Unlike other viruses, it forms a DNA copy of itself that can be incorporated into the genes. Thus, although the virus is acquired, it can be passed on genetically to one's offspring. Leukemia and AIDS, for example, are two diseases believed to be caused by retroviruses.

- Many viruses are pathogenes; they cause various important diseases. In human being they cause not only catarrh or influenza but also polio, measles, smallpox and presumably also some types of cancer, for example.

- The viruses do not yet carry all characteristics of a living cell. They are capable of growth and multiplication only in other living cells because they lack an individual metabolism. Therefore they „attack" some host cell in order to multiply themselves. The host cell usually will be damaged as a result of the attack.

- At least at some viruses, one has proven that their organization proceeds by itself. The molecular interactions join the molecules of the virus-protein and the virus-nucleic acid so together that a condition of the lowest energy content originates. The scientists speak in such a case about a self-organization.

- A group of viruses, the bacteriophages, „attack" bacteria. The bacterium wall is dissolved locally by an enzyme and through the originated hole the nucleic acid is „injected" into the bacterium cell. The bacterium cell explodes about 20 to 30 minutes after the injection and releases 30 to 200 new bacteriophages.

What does Naturics still add to this knowledge?

Viruses are the natural quanta of the animate matter on the lowest level of its organization, i.e., on the first level above the universal field of light. They must therefore appear in the cosmos very often. They represent the smallest objects that originate spontaneously, like the fluctuations, from the universal field of light in direction of the living organisms. The emerging viruses depend always on their actual surrounding. With changing physical conditions of a cosmic region change

also the variety of viruses there. The same involves also the inner environment of a human body. A material consumed in a bigger quantity, like food or medication, alters the chemical surrounding of the viruses in our body. A new „family" of viruses emerges leading us to believe that the individual viruses were clever enough to adapt themselves to our pharmaceutical products.

Naturics introduces the right order again in our description of the animate world. It is definitely not the brainless single-cell individual that should stand at the top on a scale of the cleverness and could outwit all other organisms. It is not the virus that „attacks" the others organism, „injects" the nucleic acid, „uses" the host cell or „adapt" itself to our medication. They are always new viruses, which originate in the new situation also directly from the field of light, but this time into somewhat different physical circumstances, and possess therefore some new properties, again and again. The viruses alone have no such „needs", as killing of the bacteria or making ill the animals or people. They originate only directly from the field of light, and in fact there, where the surrounding is favorable for a certain type of viruses and only so long as it remains favorable. Let's make the particular actual surrounding no longer attractive for certain viruses and we are free of them again.

On the other hand, viruses are the main source of nutrient of the living organisms. It is the bacteria, that nourish themselves from viruses, and not reversely. Having eaten up a virus, a bacterium, a bacteriophage for example, is satiated for a moment. However, since the bacterium does not own a digestive system, it cannot process the „food" directly into the pure energy. In the favorable surrounding inside the bacterium, new bacteriophages originate quickly, directly from the field of light, bringing the host cell to bursting soon.

One has already earlier observed such spontaneous formation of the inanimate matter particles directly from the level of the field of light. It could be for example the formation of the soot-particles over the flame of a candle. In the newest times, many exciting discoveries of the spontaneous formation have come to it in the nanotechnology, like the only few nanometers big soccer-balls, named fullerene, or the similarly built nanotubes.

We are probably alone in the Universe

The slowly increasing temperature of our terrestrial environment has produced a continuous „pressure" to develop the ever bigger brains in the last 3.5 billion years. The long string of the accidental events leading to this effect was surely rather exceptional and maybe even only singular in the wide Universe.

Only the most primitive life exists throughout the Universe. How big is the chance however that a sophisticated life, like on the Earth, could also develop itself elsewhere?

The primitive life on the virus level is just so widely dispersed across the whole Universe like the chemical molecules. The life on this lowest level of the matter-complexity has originated together with the Universe. It is therefore definitely already more than ten billion years old.

When and how exactly has originated the Universe, remains also in Naturics an open question. As we have seen in our prehistory of the Solar System, the today still most popular model of the formation of the Universe in a „Big-Bang", finds in Naturics no application. The previous observations of the expanding Universe (in reality not more than the different speed of different galaxies and the existence of a background radiation) can be interpreted quite differently with our unified physics.

The life turns more and more to an exceptional state the higher the reached level of the animated matter. The evolution to ever higher levels, from multi-cellular organisms, over the organisms with specialized nerve cells, to the organisms with specialized brain-cells, can be reached only through a soft and lengthy alteration of the physical surrounding of the animate matter into the favorable direction. One over billions of years proceeding, not interrupted evolution of the organisms, as on the Earth, is probably unique in our whole Universe.

That can of course never be proven with full certainty. A theory can certainly be refuted only. If we would be able to discover someday an extraterrestrial civilization, we would know that the upper thesis was wrong. Unfortunately it doesn't works vice-versa. With an absolute certainty, we can say only following: the whole Universe will never be scanned completely after the intelligent life.

5. 1. 2. The cosmic origin of the Darwinian hierarchy

The hierarchical organization of the empire of the living organisms is an exact reflection of the Cosmic Hierarchy of the Solar System; both these hierarchies are based on the same timescale of the cosmic events.

The classification of living organisms (the taxonomy) orders all organisms into five major groups, or kingdoms: monera, protista, fungi, plants, and animals. The basic criteria of the classification are the evolutionary and structural relationships among organisms. Each of the five kingdoms is divided into phyla (as in the kingdom of animals) or into divisions (as in the kingdom of plants). The further classification goes through classes, orders, families, genera, and species.

Already Charles Darwin has recognized in 1859 the hierarchical structure of the kingdoms of organisms. He has led it back on some branching process. He determined that each new level in the taxonomic system represents another branch of the evolution. Naturics goes a step further and considers every such branch as resulting from a unusually rapid changes in the environmental conditions, which in turn are the consequences of a quantum jump of the corresponding level of the Cosmic Hierarchy.

Connecting the traditional idea of the evolutionary branching process with our idea of the Cosmic Hierarchy, we can say that each branch in the evolution process of a certain level does happen first then, when the cosmic events of the corresponding level have altered the environmental conditions so strongly that only one alternative remains for the living organisms: to adapt itself to the new conditions or to die.

Let's compare the Darwinian hierarchy of the evolution of animals with the Sun's Cosmic Hierarchy now. We take our own species as an example.

What do these cosmic periods mean for the organization of the kingdom *animalia*? In order to „be able" to split the phylum *vertebrata* into some new classes, the evolution requires such mighty impulses, which can be expected only during the cosmic impacts of the highest level 8; they happen every 295.2 million years. Two last events of this level have taken place in the Solar System 554.663 and 259.462 million years ago. Let's compare to it the lower table and the following diagram

that have been produced on a basis of our precise geological and paleontological scale of time (section 4.3).

15. Hierarchical order in the kingdom of animals

(Our new correlation between the levels of the cosmic and the taxonomic hierarchy)

Level	Object of the Cosmic Hierarchy	Cycle, Interval [years]	Taxonomic hierarchy of the animal-empire	Evolution hierarchy of a human being
9	Coma (?) hypercluster	3585 M	Phylum	Vertebrates
8	Hydra (?)supercluster	295.201 M	Class	Mammals
7	Virgo cluster	24.3109 M	Order	Primates
6	Andromeda Group	2.00209 M	Family	Hominidae
5	Magellanic Cloud	164878	Genus	Homo
4	Milky Way	13578.3	Species	Sapiens
3	Orion-Minigalaxy	1118.22	Population	Civilization
2	Local Group of stars	92.0896	Generation	Individual

If one uses the lengths of our geologic periods between two consecutive branches of evolution, then one can calculate how many branches of a certain level have happened since a certain time of the Earth's history. Let us adopt for the first attempt the approximate value of 12 for our cosmic quantum number (you remember, the value of 12.1428 is the scaling factor of the Cosmic Hierarchy). Then we obtain a division of the phylum on up to 12 classes, and further on about 144 ($=12^2$) orders, about 1700 ($=12^3$) families, about 20000 ($=12^4$) genera, and about 250000 ($= 12^5$) various species. These „basic" numbers describes the simple frequency of each division. They are nevertheless a suitable guidance in this question. They represent the theoretical number of the past possibilities to create some new branch of the evolutionary tree of *vertebrates*. How many of them actually have been used, is already a separate question.

If we observe the phylum of *vertebrates* on the left side of the following diagram, we notice that the splitting of the class *mammalia* from this phylum took place in the literally „last hour". The next such splitting, that comes in 35.7 million years, will be the really last possibility to create some new classes of animals. The then following thirty two millions of years, shortly before the next quantum jump of the level 9, will surely be a very unpleasant time in the whole Solar System.

From this diagram we can also see that our own order of *primates* has separated from the class of mammals also relatively late (at ten o'clock of the level 8 of our cosmic clock from the section 4.4). Further, we see also that our family *Homo sapiens* has originated at 8 o'clock of the level 7. It theoretically means that after our own yet three further families of primates will split in the future.

On the contrary to our class *mammalia* and our order *primates*, our *Homo sapiens* family is relatively young. Only two splittings of it into separate genera had happened until now. The *early Homo sapiens* were followed with *Homo sapiens Neanderthalensis*, and with our genus, *Homo sapiens Sapiens*. Our own genus is an example of an extremely young genus in the whole Kingdom of animals. There was until today at all no splitting of the genus. We all belong to the first species of this genus. Though we name our species also *Homo sapiens Sapiens*, it is not quite correct after the original idea of Darwin. We should add one further descriptive part to the species name. I propose *Homo sapiens Sapiens Modernus*, for the modern species of the genus *Homo sapiens Sapiens*.

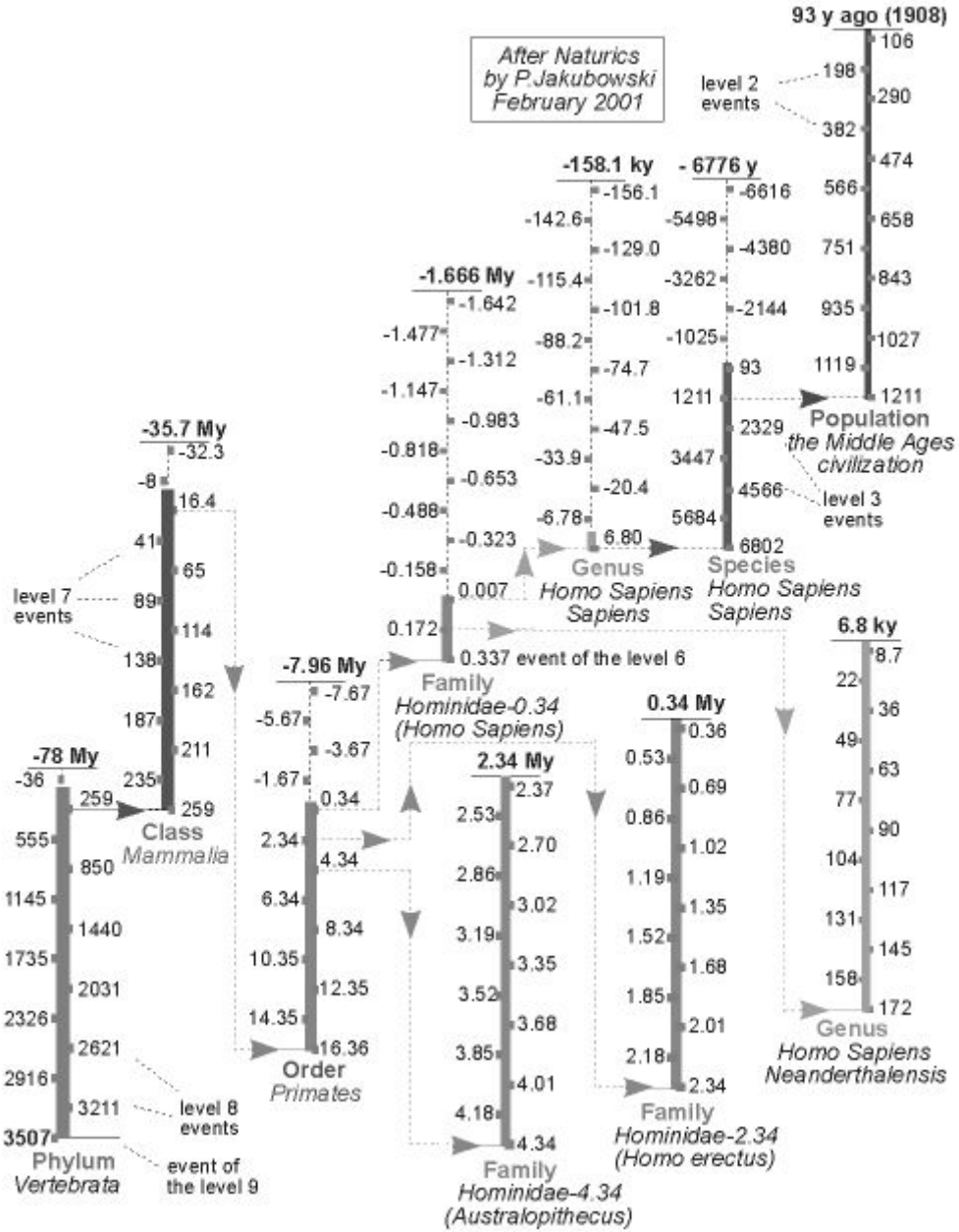
We see further from the diagram that our own species is today in its best years, in the midway of its life-course. It has originated at 5 o'clock of the level 6 and should still live six further hours of this level. Our modern species has originated simultaneously with our genus, in an event of the level 5 (with the world-wide deluge and related happenings). However, the end of our species will be not so much dramatic. It will be accompanied with the next event of the level 4, reaching its culmination in 6774 years.

Finally we see that our own civilization originated (theoretically) in the year 1908. After the six ancient civilizations, which had existed since the deluge-time, and after our present, the first really global civilization on the Earth, our species (the modern *Homo sapiens Sapiens*) has a chance to build yet five further civilizations.

One of the unsolved enigma of the traditional evolution is the question why the splitting to our own class has actually happened in the geology so late and not earlier. You however already know the cause for the „delay". The evolutionary machine had to wait, until a moderate part of the „stage of life" became free from the permafrost, and until the water-filled oceans have emerged. As these conditions were finally fulfilled, approximately 700 million years ago, the evolution has started its unbelievable explosion.

54. Genealogic tree of the phylum *vertebrates*

(with each splitting up to our civilization)



The first then coming possibility to develop new classes, 554.7 million years ago, has released an explosion-like trying out of all variations of the evolutionary plans, which had been „designed" up to this time. All structural plans of the new organisms, that previously had to be literally put on the ice, now could be generously used and realized. All the plants and animals, that could thrive only in small niches around the heat-sources so far, have now spread quickly across the whole globe, conquering the young seas and the land. Also the vehement cuts of the quantum jumps of the level 7 have not been able to prevent this explosion of live. The only really critical moment for the terrestrial life since then was the recent event of the level 8, 259.5 million years ago.

In the relatively long time of 295 million years, between these two recent quantum jumps of the level 8, our „stage of life" was equipped with many different variations of „decoration". Innumerable species of plants and animals had lived and became extinct in this span of time. It seems maybe strange for some traditionally educated person that most of the classes of the organisms, that we know today (as for example the classes of conifers, flowering plants, insects, amphibians, reptiles, birds, or mammals) have not appeared already much earlier in the Earth's history. We know however the solution also of this puzzle. Thanks to our connection of the evolution history with the cosmic hierarchy of the Solar System, we understand that it was no a indecision of the evolution, which has led to the long time of waiting. Between the time-points of 555 and 259 million years ago, there was simply no possibility to split new classes from the existing phyla, no cosmic impulses with the energy high enough to ignite such a splitting.

In the retrospection we recognize now clearly, what luck we actually had with exactly that fragment of the Proto-Mars, which had met the Proto-earth 3.5 billion years ago. Would the fragment be a bit smaller or slower, the Earth would have received a smaller push in direction of the center of the Solar System. Then, it could easily happen that the Earth has reached the magic temperature point of 0°C first today, or only recently. In such a case, the evolution would not have sufficient time (in the remaining 78 million years to the end of the current period of the level 9) to manage up to the human being therefore. Then we would have never experienced which big chance we have missed. Staying still on the level of protozoa or worms we would have surely no desire to explore our own evolution.

5. 2. Homo sapiens enters the stage

5. 2. 1. Three families of hominids

In order to „be able" to split an order of organisms into some new classes, the evolution requires such environmental impulses, which can be expected as a result of the cosmic impacts of the level 6; they happen every 2.00209 million years. As we already know, our order of *primates* has already experienced eight such splittings, four are theoretically to be reached yet. The three recent events of the level 6 have happened (not only on the Earth but simultaneously in the whole Solar System) before 4.3407, 2.3386, and 0.3366 million years. Hominids is the common name of the three youngest families of *primates* which originated from these splittings.

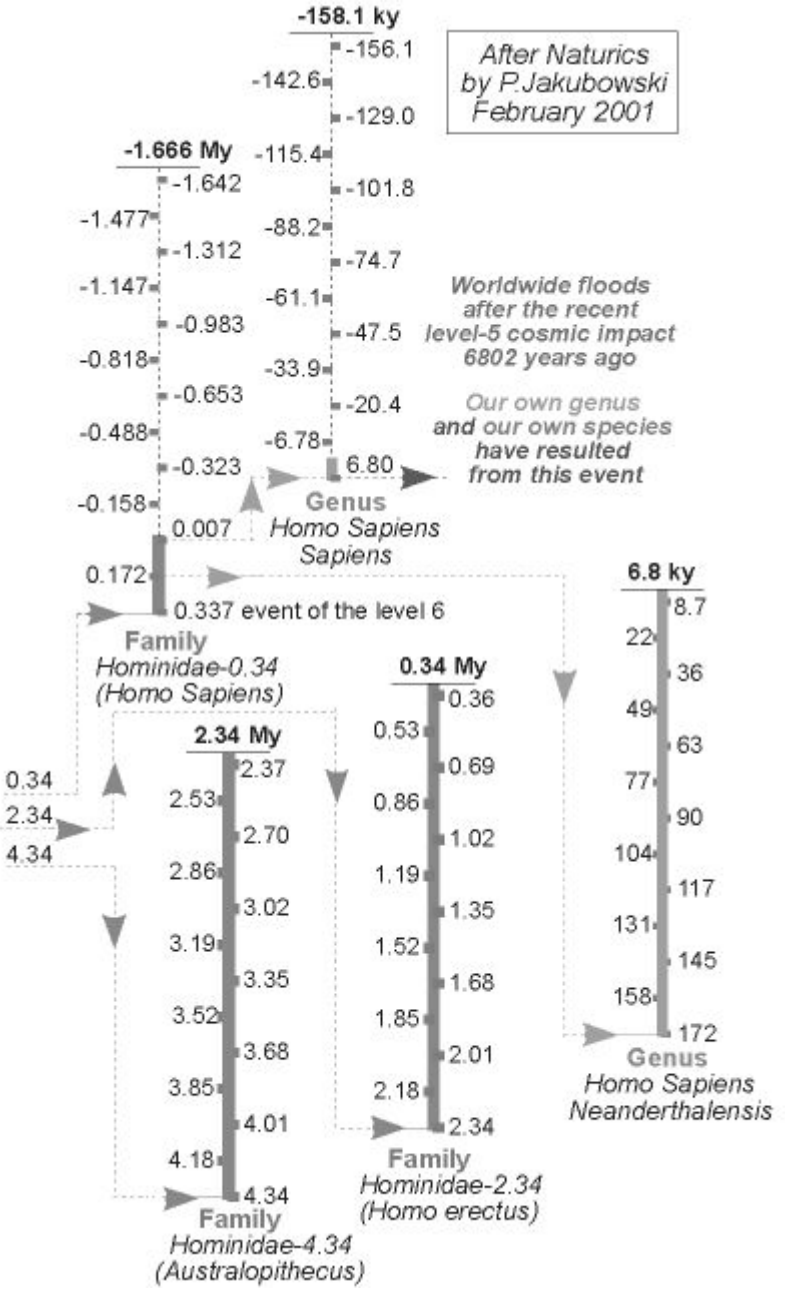
The oldest family of the hominids, *Australopithecus*, became extinct already 2.34 million years ago, simply because of the natural aging of the whole family. It made place for the following hominids family. We name here the second family *Homo erectus*, after its best known representative. The family *Homo erectus* mastered to populate the Earth over the next two million years. It had brought at least twelve own genera. However, also these all genera became already extinct.

During the recent 336.6 thousand years, the Earth remains under the reign of the youngest hominids family, *Homo sapiens*. This reign can theoretically still last 1.6655 million years. The first splitting of the family has produced a genus, from which only very little is known until today. It is sometimes named *early Homo sapiens*. I cannot remember to have learned something interesting about them. But they have done the hardest job for us, the first step towards the modern thinking hominid like ourselves.

The second splitting of the family *Homo sapiens* has resulted with the birth of the Neanderthal men, 171.7 thousand years ago. In the opposition to the *early Homo sapiens*, this second genus, *Homo sapiens Neanderthalensis*, is very well known; especially, if one lives, like me, only a few kilometers away from the Neandertal Museum. The genus of the Neanderthal men is often considered (however not correctly, as we explain in the next section) as our cousin-relationship.

And now we come to an important point. The genus of the Neanderthal men had theoretically had, like each other genus, the „life expectancy" of 164878 years.

55. Splitting of the families of *hominids*



This time has run out for them only 6804 years ago. The youngest fossils of the Neanderthal men have thus to be much younger than ten thousand years. One has still to find them however.

The times around the culminating year of the recent cosmic quantum jump of the level 5, 6804 years ago, seem to be deeply researched in various branches of science. Notwithstanding, there are known only a lot of separate facts which are still waiting to be unified. A compact story of the birth-hour of our own genus and our own species is still lacking. Our understanding of the cosmic connection of the evolution of the terrestrial life is an important step towards such a unifying story. The planetary volcanism, the abrupt end of the ice age, the world-wide deluge (with the best documented examples in the Mediterranean and in the Black Sea), all this has provoked such intensive changes in the environmental conditions on the whole Earth that a new genus could originate from the family *Homo sapiens*. Saying more exactly, the new genus had to originate in order to master this exceptional challenge then.

5. 2. 2. The seemingly lost continuity of evolution

For the reason of the previous point, I would like to separate (in the taxonomy) all species of the seemingly „modern" human beings, who have lived before this recent quantum jump of the level 5 of the Cosmic Hierarchy, from our present-day species of the *Homo sapiens Sapiens Modernus*. The former human beings count to the last species of the Neanderthal men or to maybe other contemporarily living species of hominids. Let's consider the problem more exactly.

One knows today many places on all continents (besides the Antarctica) where the fossils of the so-called „modern human being" have been found. They are about 50 to 10 thousand years old. The excavations at these places prove his highly developed abilities for hunting and gathering. However he was also able to bring his mental ability, his thoughts and feelings to the expression; for example, over jewelry or cave-wall painting. His physical structure, and above all his brain, was similar to our own body so very much that the science would necessarily like to regard him as our direct predecessor from the same species.
There is a problem however with this assignment. We still have too few excavated findings in order to be able to construct a continuous picture of the evolution of our own family *Homo sapiens* without using any reliable theoretical scale of time. It

was already recognized by Darwin that a family splits in course of thousands of years into different genera. First later, in accordingly shorter intervals, new species originate from these genera. We have to apply the same scheme also for our own family. The fragmentary findings are still too rare for a reliable solution of the assignment.

Naturics brings here an enormous help with its precise, hierarchical timescale. If we look more exactly at the enlarged middle part of the graphic representation of our genealogical tree, we immediately see a conspicuous peculiarity of the recent splitting of the family *Homo sapiens*. The problem, shortly discussed previously, is so extraordinary that we want to repeat our explanation a little wider here.

Let's look more exactly at the last diagram again. Firstly we see that the family *Homo sapiens* has developed from the order of *primates* only 0.34 million years ago. The vertical „course-beam" of the family *Homo sapiens* shows that our family is still relatively young. It was split into genera only twice until today. Theoretically, ten further splittings will follow.

This small number of only two splittings is very important for our task. We have to accept this number as a real fact. Among all possible fossils, we can find only examples of the two former genera of our own family (with possibly also a series of some contemporary genera). Until now, there were simply not more than two consecutive genera of our own family.

With the fossils of the two former hominids families, the *Australopithecus* and the *Homo erectus*, we could have more luck. Despite the whole shortage of the findings, we can find relatively many different remains of the representatives of the former genera of these families. Each of these families has already produced a full collection of at least twelve different genera in course of their life before they became extinct. The differences between various genera of these extinct families are thus easier recognizable because the whole period of their life lasted two millions of years, in comparison with only 340 thousand years for our own family.

On the contrary, there are no scientific differences within the millions of skeletons of the modern human beings that populate the Earth in the recent 6.8 thousand years. All these fossils belong to the same genus. The scientists have also not found any recognizable differences between the modern people and races, which could suggest that we belong to more than one species today.

The reason for this abrupt change in the fossils characteristics becomes clear now. It has been no real discontinuity in the evolution or in the archaeological and paleontological findings. We are simply the first species of our new genus that has still experienced no further splittings into other species. Therefore, the impression emerges of the apparent jump from the strongly varied early hominids that have lived more than 6804 years ago, to the homogeneous big civilizations of the modern human being after this point of time. It has been a quite regular development however.

5. 3. How should it run further?

5. 3. 1. The aging species and civilizations

We have already learned in this chapter that the hierarchical organization of the kingdoms of the living organisms is an exact illustration of the Cosmic Hierarchy of the Solar System. Each level in the taxonomic system represents a splitting of the genealogical tree. Naturics goes a step further and considers each of these splittings in interconnection with the events of a corresponding quantum jump of the Cosmic Hierarchy.

We have already said that each branching of the genealogical tree can happen first then, when the cosmic events of the corresponding level have altered the environmental conditions so strongly that only one alternative remains for the living organisms: to adapt itself to the new conditions or to die. The traditional evolutionary science calculates that only approximately one percent of all smallest branches of a phylum can survive over long spans of hundreds of million years. Nonetheless, just those that have succeeded awaken this impression that evolution would have worked purposely and exactly after the hierarchical principle.

This traditional line of the research leaves however one important aspect of the evolution history untouched. Why become extinct also the most successful of the organisms someday? Why did the dinosaurs die? The scientists know today that most of the dinosaurs had already died, before some big cosmic body had hit the Earth 64.975 million years ago. Why became the very successful *Homo erectus* extinct? Why became extinct also our very robust relatives, the Neanderthal men?

One can apply the same questions also on the historic times. Why have finished equally mysteriously also all great historical civilizations, independently of how successfully they once were. Let's name only Babylonians, Egyptians, Romans, or Mayas for example. Naturics lets also these questions appear in a quite new light, what can enable a complete answer in the next future.

The idea of the Cosmic Hierarchy helps us once more. It is enough to consider the periodicity of our cosmic carousel of life and its influence on the contemporarily living organisms in all these historical times. We can begin our consideration with the individuals, with their natural life expectancy of 92.01 years, over the civilizations, with their „life expectancy" of 1118.22 years, and continue with species (13578.3 years), genera (164878 years), up to families, with their natural „life expectancy" of already 2.00209 million years.

The following thesis results from our consideration. Each level of the hierarchical organization of the living organisms, from species up to phyla (or divisions), has its own life expectancy, depending on the corresponding level of the Cosmic Hierarchy of the Sun. Each living organization experiences during this time - quite similarly to the life of an individual - its childhood and youth, become ripe and old, and, if no „fatal accident" has happened earlier, it simply dies because of senility at the end of this period, independently of it, how successfully it was in its best years.

5. 3. 2. How should we go on?

Our own genus of *Homo sapiens Sapiens* is only 6.8 thousand years old. It is therefore still in the „baby-age" and theoretically has yet about 158 thousand years to become really old. Our species, also *Homo sapiens Sapiens*, or better *Homo sapiens Sapiens Modernus*, is the first splitting of this genus. Twelve further species can still come theoretically after us, if we won't make the Earth uninhabitable already earlier.

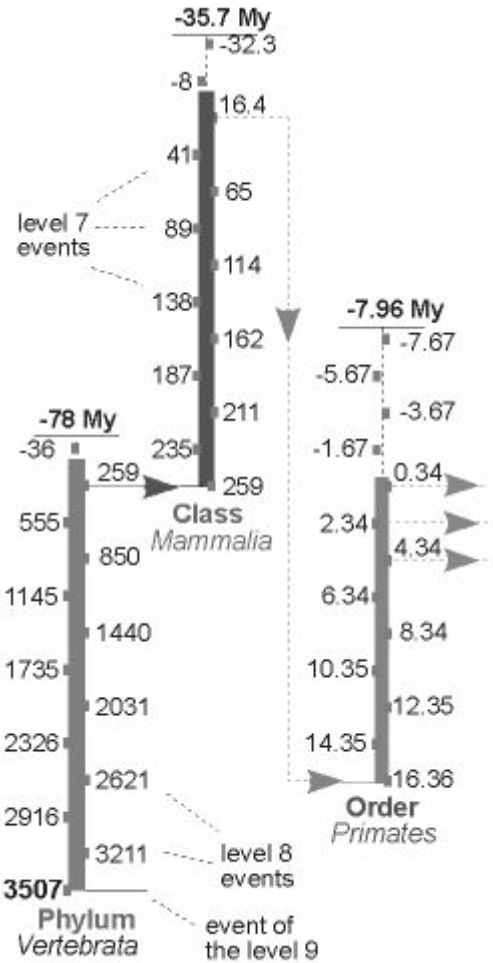
Our present-day species of the modern human being, with its theoretical life expectation of 13578.3 years, has reached its best age. It is approximately the age, in which an individual (with its life expectancy of 92.09 years) has reached his midlife-point of approximately 46 years. However, we cannot be sure, especially in view of the history of the 20th century, whether our own civilization, and the five

following civilizations of our species, will be able to peacefully enjoy our reached knowledge about ourselves.

Since its birth, the modern human being has already lived through six full cycles of the big civilizations. Our present, very young civilization, that began only 1908, is the first really global civilization. It will be replaced with some next civilization not earlier than in 1023 years (compare the figure 54 once more).

56. Splitting of the order *primates*

(from the phylum vertebrates and the class of mammals)



Let's look back at the early times of our genealogical tree again. We see that although our family and the genus *Homo sapiens Sapiens* are still very young, they belong rather to the last representatives of *mammals*. After the extinction of our order *primates,* it can only come one new order, and then it is the end with the class of *mammals*, yes even the end with the whole phylum of *vertebrates*.

The extremely deep cut in the evolution of life, which has marked the boundary between Paleozoic and Mesozoic, 259.2 million years ago, gives us only a premonition of the situation which the descendants of this last order of *mammals* have to expect in 35.7 million years.

However, it will come still much more dramatic after that. The end of the terrestrial history of *vertebrates* in 77.9 million years means again, like during the birth-hour of the Moon at the start of the history of our carousel of life, the literally boiling surface of the whole Earth, with all terrestrial life on it. In that situation, it will be without any meaning for the evolution, whether the Sun will also die then, like its small brother 3.5 billion years ago, or not. In any case, the Earth - should it somehow survive - will surely get no new chance to cross the right area the surface temperature, which could repeat the evolution of *primates* for a second time.

I am not sure, how do you fill yourself when you are reading such a precise prognosis. I am personally very glad to have understood this natural limit. The time for us to leave the Earth (alive or dead) is much shorter than the traditional science has told us. However it is still much longer than the time that we needed for to develop from the first hominids to our present level. Perhaps the shorter limit of time will help us to live already our own life more consciously and productively rather than destructively. Any positive motivation for us to live this way would be an extraordinary success of the present book.

5. 3. 3. What do we all have in common?

Unity despite differences

Many scientists have supposed since a long time some real periodicity in the evolution of the terrestrial life. We have demonstrated in our book that the true cause of this periodicity is the periods of the Sun’s Cosmic Hierarchy, the periods of our cosmic carousel of life. The multiple repetitions of some similar periods of

time, separated however with dramatic changes of the environmental conditions, has led to the seemingly endless multiplicity of the species of plants and animals on the Earth.

We know today exactly that currently with each, also very low fluctuation of the environmental conditions, always many of the weaker organisms had to die. However, in some other regions of the Earth, where the same fluctuation had a little more inferior effect maybe, other organisms of the same species could have survived. They have developed further. The biology knows many examples for such differentiation of the groups separated through simple fate. On the other hand it is well-known that the evolution can proceed much more quickly, if the bigger environmental changes stay out over some longer time. The evolution of the human being was also not free from these both aspects of the development.

In the previous section of our book, we have claimed that all modern people have a common origin; we all belong to the same species. It is however also right to emphasize now that all races and cultures on the Earth have an independent history. Despite our biological unity, we should accept these differences. On the other side, it seems today that we can maintain the sound Earth for the further stages of the evolution of life only then if we learn to act as a global unity, despite our differences.

Progress thanks to differences

The independent history of each race and culture simultaneously means an independent struggle for existence. How easily one can lose such a struggle, we know that from the world-wide excavations of remnants of many magnificent cultures, that became extinct only in the recent 7 thousand years. The successful evolution of hominids has lasted however thousand times longer.

All present-day races and cultures - how colorful and differentiated they seem to appear - are therefore equally admirable, because they all have not given up their hard fight for the survival until today. What we all have won with it, is our global - although correspondingly differentiated - experience about how we could survive the next unavoidable environmental change.

This experience-potential is our best - if not the single - guarantee that we will still remain some time on the Earth. The time of the only locally working environmental changes comes to an end someday. Each next catastrophe can have global consequences. It must not be an accidental collision with an asteroid (what we have not discussed in this book). It can be just the next „Little Ice Age" in 24th century. We have to overcome the global consequences of such a happening only all together, despite our differences.

Do we remain a part of nature also in future?

We are a part of nature, we think, and that means for most of us that as long as nature as a whole still works further, also we can live further. It is however very important here that we are ready to correctly understand a simple and actually well known fact.

Human being is really the „crown of creation". That means however that especially we, people, have moved us farthest from our roots in the field of light. We are therefore far from the stable conditions. Therefore we will be the first victims of each next environmental change, which will hit us all the more the more we ourselves will contribute to the change and the longer we will hesitate with the understanding of the actual dependence of the Earth of the Cosmic Hierarchy of the Solar System.

One final remark yet. We generate no horror-scenario for the cosmic impacts with this book. As we have already experienced, the Earth goes even toward a quiet phase, without any dangerous regular cosmic events in the next centuries. The better understanding of these events in the Earth's past should only help us to prepare the future generations of *Homo sapiens Sapiens Modernus* for the further steps of our evolution.

5. 4. How long will yet rotate the cosmic carousel of life?

How important is our future for us? It is a relative question. The answer depends in each case on how distant is the future in this question. No matter whether an epidemic or a war has tormented the mankind in quite distant past, it does us no

longer aching today. Equally it is actually of no matter for us, what could happen with the world in a few thousands or more years.

The non-practiced human spirit is not capable to comprehend such a distant future as a simple extension of the personal future. From the view of an individual, this restriction of the power of imagination is a biological necessity. A mother, who would be able to imagine all the dangers, to which her child is exposed in its life, would have never wanted to bear the child.

However, already from the view of a nation - or even more important, from the view of a civilization - the problem looks differently. At the present-day level of science, we are already able to know - if we only want - which exactly estate have left behind the bygone civilizations for us. The following civilizations will also exactly know which global problems they have our civilization to owe. I won't like to glorify the bygone times in any way. I am glad to be not born earlier. Nevertheless, we cannot overlook the advance that we owe the previous civilizations. For example, the richest nations reach already today an average expectation of life of their members very close to the biological limit of 92 years. One another example, a big part of the earthlings belong already today a global, world-wide civilization.

If we therefore think in the categories of the civilizations, we must consider also the somewhat more distant future. It is of course important to know, what we could reach for us individually. It is also important to see in which world our children and grandchildren should live. That has obviously the highest priority for everyone. As the members of the first global civilization however we must also think now and then, how it should go further with the mankind, in the next two, three generations.

In order to be able to seriously imagine this more distant future, we must consider at least the few known factors that are able to influence our future. One of these serious factors is, for example, the size of the natural reservoirs of energy-suppliers for our extremely „energy-hungry" civilization. Another factor runs like a guide through our book. It is the probability of a cosmic impact on the Earth.

Here again, I would like you to separate two things from each other. On the one side, we have the wandering-around members of the Solar System, like the dispersed asteroids or comets, with the best known example of the comet

Shoemaker-Levy 9 that had hit Jupiter 1994. They became caught from the Solar System some time ago and turned into the quasi-members of the system. These potential impact-bodies are in this respect dangerous, as they behavior is not predictable. One can hardly see them, one doesn't therefore know their tracks. A global, well working and financially supported program looking for these bodies is necessary. The international „*Spacewatch"* program is an important forerunner in this direction. With all respect for these efforts however I cannot imagine that we can build a reliable protection against these vagabonds without a massive rethinking in this area.
On the other side, we have the cosmic objects outside the Solar System, which we approach during our trip on the carousel of life. That is the objects of the corresponding energy-bridge at each level of the Cosmic Hierarchy which we currently cross. The collisions with such objects happen to the Earth regularly since billions of years. They are relatively easy to predict, what we have proven in this book. One of the last meetings of this series of the level 3 was surely the Tunguska event in summer 1908.

After this explanation, we come back to the problem of our future. The book, that you have read so bravely up to this point, has illustrated that the cosmic impacts, which meet the Earth in the framework of its membership in the Cosmic Hierarchy of the Sun, are predictable in some sense. We cannot foresee the exact impact-place on the rotating Earth's surface. We can predict however the time of the impact, the average size and the energy of the impactor. Furthermore, our analysis of the known impact craters on the Earth and on the Moon has shown that almost all of the observed craters have originated exactly after the schedule of the corresponding quantum jumps of the Cosmic Hierarchy, and not in the intervals between them. This observation reinforces our thesis saying that the danger to be met by a big object wandering around inside the Solar System can be classified as rather very small.

The carousel of the terrestrial life rotates further. How long yet, however? As we have seen previously, the biggest danger for life in the current millennium, that seventh millennium of the species *Homo sapiens Sapiens Modernus*, can come from us ourselves. If we don't make the Earth somehow absurdly uninhabitable, our successors can still create five further global civilizations. Our young genus *Homo sapiens Sapiens* has yet 158.1 thousand years of time, until it become replaced with an even more advanced genus, emerging after a next torrential event (like the recent deluge; compare to it the diagram in the section 5.2.1 once again).

Our family *Homo sapiens* can still use the Earth 1.666 million years; under the prerequisite that it will manage to use its big brains for so long time. Three last families of the order *primates* come yet after it. In 7.96 million years, the last primates will be extinct however. Which order will earn their place, we don't know of course. There are probably still no representatives of the next order among us today. We also cannot look into a much further future.

We can only say, no matter who will populate the Earth after this time, they won't have it easily. The next order will already be the last order of the class *mammals*. At the end of this class (in 35.7 million years), the last hour will ring out also for the whole phylum of vertebrates. The whole Solar System will have to experience the same heavy time in 77.9 million years as it was the case in the times of the death of the small brother of the Sun and the birth of the gaseous planets and the Moon. A chance to survive hardly exists for any creature on the Earth, who will have grown out at this time over the level of the bacteria.

I am sure that our successors won't really take it from us badly if we will spare ourselves the further worry about the Solar System or about the whole Universe beyond this time.

Until it is so far, maybe also you will perceive at least a breath of my fascination about how many knowledge can be reached with help of only so few assumptions. In this sense: much fun and much success with the application of Naturics, wish you

the author.

Appendix

6. A look behind the scenes
(What one should know in order to be able to play actively?)

6. 1. A look behind the scenes of Naturics

Naturics advantage lies above all in its integrity. Each physical explanation in the language of Naturics is complete, from the own „alphabet" until to the practical applications. Naturics is easily comprehensible and strictly controllable. To this purpose, Naturics uses such ideas like the uniform family of all physical quantities, the material dependence of the physical quantities, the relativistic quantum of matter and the quantum spectrum of matter. Here, we shortly explain these most important characteristics of Naturics. For more information and many practical tutorials please visit the internet address: *www.naturics.de*.

6. 1. 1. The milestones of Naturics

- The universal field of light is the origin and the fate of all matter.
- The energy-transfer is considered as the universal interaction in the world of matter.
- The uniform family of all physical quantities reduces the necessary definitions until on the absolute minimum.
- The quantum spectrum of matter describes all possible materials in all possible states of matter.

What do these statements mean in each case?

The universal field of light; the origin and the fate of matter

Naturics sees the only source of all matter in fluctuons, the quantum fluctuations of the universal field of light. The quantization of fluctuons involves all their qualities (like their energy, size, speed, electric charge etc.) simultaneously. The field of light itself is the origin level of this quantization. If there were no fluctuations, what is theoretically and practically impossible, the field of light itself would have remained the only existing component of the Universe. Such a universe however could not be observed, from no observer and in no way.

All models of the traditional physics - that is the three classic models (the Newtonian dynamics, the Maxwellian electrodynamics, and the thermodynamics from Boltzmann), the quantum models (from Planck, Bohr, Schrödinger and

Heisenberg) and the relativity model (from Einstein) - coalesce in Naturics to a universal description of nature.

The energy-transfer; the universal interaction of matter

The long search of the traditional physics after a unification of the so-called elementary interactions still remains unsuccessful. It throws suspicion on the correctness of this traditional way of the unification.

Naturics has gone a simpler way. An old interaction of the energy-transfer has been defined in a new manner, under the consideration of the quantization, the relativity and the hierarchical structure of the whole nature, from atoms up to galaxies.

The quantized transfer of energy takes place not only in the micro-world. A cosmic energy-transfer is also responsible for the periodic quantum jumps on the cosmic scale.

The unified family of all physical quantities; the uniform description of matter

The human being needs various auxiliary means in order to be able to describe the world around him. The physical quantities are such human auxiliary means. The biggest goal of science is to describe the whole nature as exactly as possible with help of preferably few physical quantities.

In order to reduce the number of the necessary physical quantities to an absolute minimum, we must meet three prerequisites:

- we must determine how big is the minimal number of the necessary physical quantities actually;
- we must be confident that all natural processes are completely definable with so few physical quantities;
- we must find a possibility to eliminate completely the superfluous physical quantities from our description of nature.

Naturics - in its standard-version - defines all possible physical quantities unequivocally as descendants of only two selected quantities. In our case, these are

the characteristic time and the characteristic dimension of a quantum of matter. All other physical properties of matter have been defined completely through these two selected quantities.

In our book we have already partially included also the newest version of Naturics. In this version, we reduce even further the minimal number of the necessary physical quantities to one single quantity, the energy-transfer (or action). In this case coalesce together the two last axes of length and time of our standard version of the unified family.

The quantum spectrum of matter; all possible states of all materials

Naturics is the first successful theory that examines both the inanimate as well as the animated matter with the same precision. All possible conditions of the animated and inanimate matter are described in the same way, by means of the same fundamental ideas.

Also the problematic classes of matter that are still not perfectly investigated in the traditional science, the atomic nuclei and the brain-matter, become defined in Naturics as separate classes of matter, just as precisely as all other classes.

Each quantum level of matter is defined exclusively by a corresponding value of the unique material parameter. Let's imagine a scale that reflects a description of the quanta of matter in relation to the universal quanta of the field of light. In Naturics, we name such a scale the relative quantum spectrum of matter. The relations between physical quantities in various states of matter are very often used, for example in order to compare various materials to each other.

The absolute quantum spectrum of matter comprises against it the absolute values of each physical quantity for each possible state of matter. The material parameter for each possible state of matter is inserted into the Naturics-definition of each physical quantity. The current value for this quantity is then calculated on the basis of the corresponding value of the field of light. Such absolute values are of topmost importance for the manufacturing of new materials and for other technological tasks. An experimental exploration of such values can sometimes cost several million dollars. In Naturics against it, one can simply calculate these values theoretically.

6. 1. 2. The news of Naturics in an overview

Now, we summarize the fundamental innovations of Naturics in a brief comparison with the traditional science. Please notice first of all the small difference in the Maxwell's equations. Practically only the sign of the fourth equation has been altered. The remaining innovations emerge as a direct consequence of this alteration. Our whole standardization of science has become possible first after the discovery of this until then unheeded form of the Maxwell's equations.

16. Naturics in overview

Traditional science	Naturics
Maxwell's equations	
1. div D = rho	1. div D = rho
2. div B = 0	2. div B = 0
3. curl E = - dB/dt	3. curl E = - dB/dt
4. curl H = dD/dt + j	4. curl H = - dD/dt - j
Universal state of matter	
no one	Field of light
Elementary interactions	
1. Gravity	Energy-transfer
2. Electromagnetic interaction	*(no other necessary)*
3. Weak nuclear interaction	
4. Strong nuclear interaction	
Classes of the states of matter	
1. Solids	1. Brain cells
2. Liquids	2. Nerve cells
3. Gases	3. Simple biological cells
4. Plasmas	4. Membranes
-	5. Molecules
-	6. Atoms
-	7. Atomic nuclei

Fundamental physical quantities	
1. Length, **r**	Length, **r**
2. Time, **t**	*(no other necessary)*
3. Mass, **m**	
4. Electric current, **i**	
5. Temperature, **T**	
6. ... (and yet some more)	
Fundamental physical units	
1. Length, meter, m	Length, meter, m
2. Time, second, s	*(no other necessary)*
3. Mass, kilogram, kg	
4. Electric current, ampere, A	
5. Temperature, degree Kelvin, K	
6. ... (and yet some more)	
Fundamental physical constants	
1. Length, Bohr radius; $r_0 = 5.29177*10^{-11}$ m	Universal length; $r_u = 5.0735751*10^{-9}$ m
2. Speed, „vacuum" speed of light; $c_0 = 2.99792458*10^{8}$ m/s	*(no other necessary)*
3. Permeability, „vacuum" permeability; $\mu_0 = 4PI*10^{-7}$ Vs/Am	
4. Action, Planck's constant; $h = 6.6260755*10^{-34}$ Js	
5. Electric charge, elementary charge; $e = 1.6021773*10^{-19}$ C	
6. Gravity, gravitational constant; $G = 6.6726*10^{-11}$ m^3/kgs^2	
7. Thermodynamics, Boltzmann constant; $k_B = 1.380658*10^{-23}$ J/K	
8. ... (and many, many others)	
Universal speed of light	
"Vacuum" speed of light; $c_0 = 2.99792458*10^{8}$ m/s	Universal speed of light; $c_u = 2.574116*10^{4}$ m/s
Universal temperature	
Temperature the cosmic background-radiation; $T_{bg} = 3$ K = -270 °C	Universal temperature; $T_u = 243.3559$ K = -29.794 °C

6. 2. We have learned to ask new questions

The first step to some new knowledge is to have asked some new question. The scientific practice has demonstrated that the likelihood to reach a truly new idea is the highest in such a case when we direct the new question to the outskirts between two or several scientific domains. The art to be able to ask the right questions wants to be learned, like each other type of art.

In this book, we have introduced many new ideas. The ideas will establish themselves in the heads of the active players on the carousel of life first slowly. Most new ideas do not have easy to become generally accepted. One of my favorite authors, G.L. Verschuur, wrote: „... the acceptance of a new vision is seldom easy". In that situation, it encourages surely to know that one stands with his ideas not quite alone there, and that there are also other people, who think and feel in a similar manner. In the present section, we introduce only some quotations from the scientific literature possibly describing a parallel way to our own ideas.

In the following section, we shortly summarize our own answers to some main questions of this book.

6. 2. 1. Some quotations from the scientific literature

Gerrit L.Verschuur writes in „*Interstellar Matters"* (Springer-Verlag, New York, 1989), on the page 305:

> "We need only look at the history of the human species to see the extraordinary power exerted by beliefs, especially those used to bolster our personal cosmologies regarding the nature of life and the universe. Religious beliefs, in particular, exert enormous power over us because they provide security in the face of the infinite unknown. Yet it is this same unknown that the scientists seek to probe with new technologies, so as to reveal the truth beyond the comfortable illusions created by our beliefs and expectations as to the nature of things. However, scientists are human and they also struggle with issues related to changing their minds. That is why scientific paradigms, are notoriously slow to change. The new generation has to wait for the previous one to die off before the paradigm (a set of widely-held scientific beliefs) is redefined."

And further, on page 307, he writes:

> ”The scientist must find the tools, or the language - such as mathematics - to demonstrate the validity of his discovery or insight. In other words, the personal thrill of discovery must be turned into the beauty of shared understanding. Only then is the discovery accepted. This is the very essence of the scientific endeavor and usually requires further experimentation.”

G.L.Verschuur closes his book with the following words (page 308):

> ”Today, we know that space is filled with clouds of atoms and dust grains whose nature is partially understood from laboratory simulations. In addition, life-forming organic molecules of wondrous complexity exist in clouds within which stars are continuously born, clouds spread out along the spiral arms of our galaxy and other spiral galaxies throughout the universe. What were once believed to be voids in space are, in fact, filled with diffuse matter and are permeated by magnetic fields which thread their inevitable way between the stars to control the motion of interstellar matter and the process of star birth.
>
> The realization that space contained matter never burst upon the astronomical community as a sudden discovery, one that was immediately accepted. Barnard’s often tortured struggle to come to terms with what his photographs revealed illustrated this. His dilemma highlights the fact that the acceptance of a new vision is seldom easy.
>
> Today we must ask, what else is out there? What complex molecules lurk as yet unrecognized? What is the cause of the sudden disappearance of quasars behind interstellar ghosts moving amongst the stars? Hundreds of astronomers are engaged in the quest to solve these, and many other mysteries related to the goings on in space between the stars. Finally, there are those who dare ask, ‘Is there life in space between the stars?’ This question, in particular, may be too far ahead of its time for us to draw meaningful conclusions from available data, yet the very question is another sign of our insatiable curiosity as we probe deeper and deeper into the intimate details of interstellar matters. It is left to future generations to explore farther and to answer these questions.”

Tjeerd H. van Andel writes in „*New View of an Old Planet”* (Press Syndicate of the University of Cambridge, Cambridge, 1985), in Perspective, page 237:

”Of all the elements that make up the history of the earth, the first few billion years of the evolution of life were the slowest. Then, less than a billion years ago, life suddenly blossomed and outpaced in its infinite capacity for change and variety every other phenomenon on earth.”

And in Perspective, page 296:

”The history of life is the history of evolution, and it rests on two uncomfortable truths: The great biological panorama is the fruit of random variety, selected by the environment and its changes, and the road from bacterium to man is not progress, but merely improved adaptation.

The general course of life, from the Precambrian prokaryotes to the flowering plants, from the thriving fauna of shallow Paleozoic seas to the human condition, is well documented. There is no doubt about the trend, and there are no inexplicable precursors, no Cambrian turtles or Cretaceous primates. Diversity, except for the occasional setback, has continuously increased, and with it the demands on organisms living in an ever more complicated setting.

The reversals have been dramatic, however: Catastrophes that, intermittently afflicting life, have challenged the imagination of scholars and public alike, sometimes beyond prudence or common sense. These catastrophes illustrate not only that nature is vulnerable and fallible but also that science is not always as dispassionate as it ought to be.

The major transitions between life forms are often obscure, but that need not trouble us unduly, because the geological archives are full of gaps, and the fossil record is no exception. We need not be surprised that the theory of evolution rests more firmly on the biology of living organisms than on the paleontological record of the past.

The first evolutionary challenge was the colonization of unoccupied territory: the surface waters of the open sea, the muddy bottom near shore, the land. As each came to be colonized, the challenge shifted to competition, with the better equipped taking over from the less endowed. Throughout, there were continual changes in the environment, the propensity of the earth being never to remain the same for very long. The Paleozoic vividly illustrates the occupation of new territory, and continental

drift and climate provide examples of the power of environmental change. We should like to know more about each, but the knowledge will come in time."

Claude C. Albritton Jr writes in „*Catastrophic Episodes in Earth History"* (Chapman and Hall, 1989), Preface, page xv:

"The world view with which I was first indoctrinated was emphatically earth-bound. Granted that Meteor Crater and few smaller holes in the ground had been formed by the impact and explosion of meteorites, extraterrestrial agencies were not considered to have played important roles in the ancient history of our planet.

So much has changed. Wegener's hypothesis of continental drift, after going through several mutations, emerged in the 1960s as the theory of plate tectonics. Evidence of seafloor spreading from the loci of oceanic ridges has proved that the ocean basins are not permanent global features. Cores of ocean-bottom sediments have failed to recover fossils older than around 150 million years, only about a fourth as old as strata on the continents containing the oldest fossils in abundance. Evidently the deep-ocean record of the earliest marine life has been destroyed by subduction along colliding plates.

Moreover, our older earth-bound view of earth history has been supplanted by something more cosmic. This change in perspective has precipitated an intellectual movement that has often been called neocatastrophism. Central to this new catastrophism is the idea that relatively brief episodes of rapid environmental changes over the globe have repeatedly interrupted the normal course of events. A related idea holds that these episodes were attended by crises in the history of life leading to mass extinctions of species.

The most recent and most thoroughly documented of the major biotic crises came near the close of the Cretaceous Period, around 65 million years ago. In 1980, Luis Alvarez and his associates boldly proposed that this episode of mass extinction was triggered by the impact and explosion of a large extraterrestrial body. The Alvarez hypothesis has been widely publicized in the mass media. No doubt this public interest has been aroused in part by

the fact that the dinosaurs, most popular of fossils, were among the creatures that disappeared.

...

A remarkable feature of the present controversy is that representatives of nearly all branches of natural science have been drawn into it. In addition to geologists and paleontologists, who heretofore have claimed the patent on the mass extinction puzzle, astronomers, physicists and geophysicists, chemists, botanists and zoologists are now having their say. Approaches to a common set of problems from widely different specialist perspectives admittedly have sometimes led to a confusion of tongues, but not yet to madness.

Regardless whether the impact and explosion of an extraterrestrial body was the cause of the terminal Cretaceous extinction, it now seems clear that the Earth has been bombarded by such objects at intervals throughout its long history. Meteorites, asteroids and comets course about in the solar system and have left their marks on the moon and the other terrestrial planets; and there is no reason to suppose that our planet has escaped being a target."

Albritton writes further about the present status of neocatastrophism, page 175:

"As applied to the ancient history of the Earth, catastrophism embodies two principal ideas. The first is that major changes in the Earth's configuration and in the successions of organic communities upon it have been episodic rather than gradualistic. Relatively brief episodes of rapid change interrupt longer intervals of more gradual changes. ...

The second idea is that the historical record of configurational changes over a few thousand years is too brief to provide orders of magnitude for changes that have occurred during the past few thousand million years. For example we have not witnessed anything approaching the vast outpourings of lava during the Late Cretaceous, nor the catastrophic floods of the kinds attending the draining of glacial lakes in the northern Great Plains of the United States. Fortunately we have not witnessed the impact and explosion of a meteorite capable of forming a hole the size of Meteor Crater. The Tungushka event was a frighteningly close encounter; and had the meteor

exploded over London or New York City, neocatastrophism might have got off to a faster start than it did."

6. 2. 2. Some questions on the main topic of the book and their answers

Whether we have put the best or exclusively the right questions in this book can be questioned surely. Nevertheless, we have advanced with our new ideas rather far into the „infinity of our ignorance". This allows us to think that our question cannot have been quite bad. In order to close the book with a practically usable section, we repeat here some of our main questions again and give a short answer to each of them. These answers could possibly serve as a motivation for further research in this direction.

The following popularly-scientific articles are quoted below in this section:

- David Raup, „*Extinction: bad genes or bad luck?"*, New Scientist, 14 September 1991, pp. 46-49.
- Andrew H. Knoll, „*End of the Proterozoic Eon"*, Scientific American, October 1991, pp. 42-49.
- Jeffrey S. Levinton, „*The Big Bang of Animal Evolution"*, Scientific American, November 1992, pp. 52-59.
- Michael Hambrey, „*Secrets of a tropical ice age"*, New Scientist, 1 February 1992, pp. 42-49.
- Paul Wignall, „*The day the world nearly died"*, New Scientist, 25 January 1992, pp. 51-55.
- Tom Gehrels, „*Collisions with Comets and Asteroids"*, Scientific American, March 1996, pp. 34-39.

Let us take the following words of David Raup as motto to the presented list of problems:

> "In fact, it is rather arrogant for us to assume that our tiny slice of the Earth's history includes a representative sample of that history."

We shortly discuss here the following exemplary problems that have been solved with Naturics:

1. How old are animals?
2. How old are the evolutionary blueprints on the level of phylum?

3. How probable is a new explosion of the variety of animals?
4. What has caused the barrier between the environmental conditions of Precambrian and Cambrian?
5. Why the massive global glaciations in the late Proterozoic?
6. The fate of dinosaurs: an exception or a regular event?
7. Why the oscillations of the sea level?
8. Are the mass extinctions predictable?
9. Where the most dangerous impacting bodies come from?

Problem 1.
How old are animals?

Quotation 1, Knoll (p.42):

> ”Living organisms have inhabited the surface of our planet for nearly four billion years. Yet the plants and animals that define our everyday existence have far more recent origins. The ancestors of modern trees and terrestrial animals first colonized land only about 450 million years ago. In the oceans, animals have a longer record, but macroscopic invertebrates did not appear even there until about 580 million years ago - roughly 85 percent of the way through life’s history. ...
>
> The surprisingly young age of the fossils presents a most interesting puzzle. If life is so ancient, why did animals appear so late in the evolutionary day? Why - once the basic blueprint of life was drawn - did animals not emerge for more than three billion years? Alternatively, is the fossil record misleading? Is it possible that animals are far older than the record suggests?”

Naturics explanation of the problem 1:

Yes (to the last question), it is exactly so. Not only the kingdom *animalia* is very old, but also our own phylum of vertebrates makes proud 3.5 billion years meanwhile. However, during the first 85 percent of the geologic time, this phylum could split itself only into some very slightly-differentiated classes. It was so because also the environmental conditions before and after everyone division-point has been distinguished only very little of each other during this long period of the Earth’s history. The whole Earth was very dry and deeply frozen, with exception of the impact episodes and the regions close to active volcanoes. First after the Earth

had reached the distance to the Sun in which the freezing point of water of the global temperature of the Earth's surface was overstepped, approximately 700 million years ago, the oceans could originate and the life could explode.

Problem 2:
How old are the evolutionary blueprints on the level of phylum?

Quotation 2, Levinton (p.59):

> ”Are the phylum-level body plans, so ancient and so durable, truly the optimal solutions to the problems of survival and reproduction, reached through an early, fast bout of natural selection before development congealed? Or are they just random combinations of characters assembled by accidents of history? I think the best to be said for now is that there is some truth in both alternatives.”

Naturics explanation of the problem 2:

It is neither the optimal solution nor the accidental accumulation of qualities. The construction-plans on the level of a phylum became adjusted to the specific environmental conditions shortly before, during and shortly after the main splitting in the terrestrial evolution 3.5 billion years ago. This splitting was triggered by the collision of the Proto-Earth with the Proto-Mars. It has resulted in the formation of the Moon, the pushing of the Earth in direction of the Sun, and changing the environmental conditions in a manner unique in the whole history of the terrestrial life. Most of the construction-plans could never be realized. Theoretically, next such „opportunity” for the evolution on the phylum-level comes already in 78 million years again. Practically however, I do not believe that the Earth will remain habitable after this quantum jump.

Problem 3:
How probable is a new explosion of the variety of animals?

Quotation 3, Levinton (p.59) *(quotation 2 continued)*:

> ”Evolution at the species level continues unabated, but variation in the surviving body plans does not seem to occur. For whatever unknown reasons, there will probably never again be an explosion of animal diversity on the earth like the one that took place sometime around the early Cambrian.”

Naturics explanation of the problem 3 *(compare also explanation 4)*:

Yes, a new explosion of life is impossible indeed. It is impossible to push the Earth again through such regions of the Solar System which it had crossed between 850 and 600 million years ago, changing the Earth's global surface-temperature from negative values to positive values.

Problem 4:
What has caused the barrier between the environmental conditions of Precambrian and Cambrian?

Quotation 4, Knoll (p.45):

> "What physical events might have facilitated the evolution of the macroscopic animals? Specifically, what kind of environmental barrier might have separated a world inhabited by unicellular organisms and seaweeds from one harboring large animals? ... „

And further, p.49:

> "Jan Veizer of the University of Ottawa has measured the isotopic composition of strontium in carbonates that are 600 to 850 million years old and found the ratio of ^{87}Sr to ^{86}Sr in them to be unusually low. He concluded the late Proterozoic must have been a time of anomalously heightened hydrothermal activity."

Naturics explanation of the problem 4:

Before the huge collision with the Proto-Mars, 3506.7 million years ago, the Proto-Earth circled around the Proto-Sun on an orbit about 33 percent larger than today. The corresponding surface-temperature amounted to -32.3°C at that time. Because of the collision, the Earth has experienced a push towards the Sun. It brings the Earth in average 14.2 meters in a year nearer to the Sun. Even if this tiny value is not directly measurable in short intervals, the radius of the Earth's orbit shrank in these 3.5 billion years at about 50 million kilometers since then (to the present-day radius of 1 AU, approximately 150 million km). The average surface-temperature grew through this approach to the present value of +8.4°C. And exactly in the middle of the discussed period between 850 and 600 millions years, the Earth has crossed the important mark of 0°C. Exactly this physical barrier between the life-

limiting negative temperatures and the life-accelerating positive temperatures is the main cause of the environmental barrier between Precambrian and Cambrian.

This environmental barrier has to be separated from the geological barrier between the geological Precambrian era and the Paleozoic era (with its first period - the Cambrian). The geological boundary is directly connected with the cosmic quantum jump of the level 8, 554.7 million years ago. The evolutionary consequence of this event was the first great mass extinction of the then scarcely developed higher life on the Earth. We still have to learn to search after the traces of the soft „fossils" of the early organisms.

Problem 5:
Why the massive global glaciations in the late Proterozoic?

Quotation 5a, Knoll (p.48):

> "Such an association has provided critical insights into late Proterozoic environmental change. Although the oldest-known continental ice sheets formed between 2.3 and 2.4 billion years ago, major glaciations did not recur until the late Proterozoic. At least four major ice ages occurred between 600 and 850 million years ago as the earth's climate fluctuated between greenhouse and icehouse conditions. One of them, the Varanger ice age of about 600 million years ago, was probably the most severe in earth history. It is clear that the planet was undergoing dramatic physical changes during the period immediately preceding the Ediacaran radiation."

Quotation 5b, Hambrey (p.43):

> "The late Proterozoic glaciation, lasting from about 950 to 570 million years ago, seems to have been the most extensive. All the present-day continents were affected by glaciation, but dating techniques are not precise enough to tell how far the ice spread at any one time. Within the limits of palaeontological and radiometric dating, there seem to have been several discrete glacial periods. In at least one of these, ice seems to have been more extensive than at any time in Earth's history.
>
> ...
>
> The late Proterozoic glaciations are unique in several ways. Perhaps the most surprising one is that the ice sheets seem to be more important at low latitudes; they were equatorial rather than polar."

Naturics explanation of the problem 5:

As the average surface-temperature of the Earth had reached the point of 0°C (compare the explanation 4), more and more water on the Earth's surface went from the ice-state into the liquid-state over. That was the first time in the geologic time that all ocean-basins filled themselves with the liquid water. This new condition has enormously intensified the evaporation of water, particularly in the equator proximity. On the other side, this has caused the extremely strong snowfall during the natural colder periods, lasting not only millennia but sometimes also millions of years. The global glaciations on all continents (also over the equator) were the consequence. This natural circulation of the water on the Earth's surface was slowed not until the temperature of the Earth had climbed 1°C or 2°C above the point of 0°C.

Problem 6:
The fate of dinosaurs: an exception or a regular event?

Quotation 6, Wignall (p.54):

> ”A few years ago, a fourth theory was aired, albeit briefly, by several Chinese geologists. If a meteorite impact annihilated the dinosaurs at the end of the Cretaceous period, the argument went, a similar event could have created the Permian-Triassic boundary. To date there is no evidence to support this theory. One of the best indicators of a meteorite impact is an unusually high level of iridium, an element that is otherwise very rare in the earth’s crust. But no extra iridium has been found in the Permian-Triassic boundary sediments. For a while, geologists ran out of ideas for the cause of the mass extinction.”

Naturics explanation of the problem 6:

The Chinese are completely right. The periods of the vehement collisions of the members of the Solar System with other cosmic objects repeat cyclic since ever. However, whether or not a certain planet or moon actually collides during such a period, and how often, is a statistical problem and not a rule. Our theoretical cosmic timescale shows for example that the Cretaceous period was finished with at least one collision of the level 7.

Permian was finished with at least one collision of the much more dangerous level 8 however. The hotspot Jan Mayen in Greenland Sea and the huge North-Siberian basalt-province has originated exactly in this time, after an impact of the level 8, 259.462 million years ago. One has not yet discovered the corresponding impact crater because it is hidden until today in the Ross Sea, under the fat ice shield of the Antarctica. The documented effects of the collision on the terrestrial life were very dramatic. The evolution was then almost stopped.

The iridium-problem seems to be secondary in this aspect. There is no physical reason why each cosmic collision should leave a trace of iridium on the target-object. What is however even more important, the impacting objects of all levels discussed here come from outside the Solar System. It is therefore much more likely that they have the body of a comet rather than of an asteroid. The comets however hardly possess metals in theirs core. Also the biggest of them bring therefore hardly iridium to the Earth.

Problem 7:
Why the oscillations of the sea level?

Quotation 7, Wignall (p.55):

> ”After the rapid fall in sea level at the end of Permian times, there was an even more spectacular rise - calculations suggest that this happened phenomenally quickly, as fast as several tens of centimetres per year. Tony Hallam, of the University of Birmingham, and I have focused research on the first sediments to be deposited in the Triassic seas. We found that the waters at the sea floor were anoxic or at best very poorly oxygenated. Anoxia and rising sea levels tend to occur together in the geological record, but no one is sure why.
>
> ...
>
> So the Permian-Triassic mass extinction appears to be a story of death by suffocation for both terrestrial and marine life. This explanation best fits the available evidence but we are still left with many questions unanswered. For instance, why was there such a dramatic fall in the sea level and then a rise across the Permian-Triassic boundary?”

Naturics explanation of the problem 7:

At first, a remark concerning the right order of the problem. Permian-Triassic boundary is not the right expression of the importance of the corresponding cosmic event. It is much more important that this boundary is characterized as the true event of the level 8. It is thus the boundary between the Paleozoic era and the Mesozoic era. It is comparable to the boundary between Precambrian era and the Paleozoic era, which gives the proper perspective to the expected consequences of the event. Therefore the term Permian-Triassic boundary should be renamed to the Paleozoic-Mesozoic boundary. Only then we can understand the proper extent of the contemporary environmental changes and the resulting evolutionary splitting.

Every period of the intensive collisions (compare explanation 6) heats of course not only the Earth's surface. In the same time, also the Sun is activated; it is hit at the most of all. Both the Sun and the Earth relax after the collisions. The average temperature falls, the freezing of the water on the Earth becomes more intensive and the sea level falls too. The most strongly it sinks at the end of the relaxation phase, shortly before the next period of the cosmic collisions. During this new collision-phase, the large masses of ice are melted in a short time again. This causes the sudden increase of the sea level.

Because however the Permian-Triassic boundary is actually the boundary between Paleozoic and Mesozoic, it means that the corresponding cosmic impacts had to be very dramatic indeed. The global volcanism and the global fires around the Earth had to exhaust the atmospheric oxygen in an extremely high percentage. The oceanic as well as the land animals had had not enough oxygen to breath, many years long. A slow and painful agony was the consequence for most of them.

Problem 8:
Are the mass extinctions predictable?

Quotation 8a, Raup (p.48):

> ”This suggests several things about the extinctions we see in the fossil record. First, killing a successful species is not „easy”, even though it is common on geological time scales. Secondly, the stresses causing extinction must be outside the normal experience of the species - the stresses must be so rare as to be beyond the reach of the adaptive power of

natural selection. And lastly, at least some of the stresses causing extinction must simultaneously affect many habitats and modes of life.

...

At present, the leading candidate for the first strike is impact by large comets and asteroids. Comet and asteroid impacts have the required energy levels and frequencies in geologic time."

Quotation 8b, Gehrels (p.36):

"Events such as the Tunguska explosion may occur once a century, and it is most likely that they would occur over the oceans or remote land areas. But they would be devastating if they happened near a populated area. If one exploded over London, for instance, not only the city but also its suburbs would be laid waste.

Of the smaller asteroids, the few metallic ones are tough enough to penetrate the atmosphere and carve out a crater. The 1.2-kilometer-wide Meteor Crater in northern Arizona is an example; it came from a metallic asteroid about 30 meters in diameter that fell some 50,000 years ago.

An even greater peril is posed by the 1,000 or 2,000 medium near-earth asteroids that are roughly one kilometer and larger in size. One of these asteroids is thought to collide with the earth once in about 300,000 years. Note that this estimate is only a statistical average. Such a collision can happen at any time - a year from now, in 20 years or not in a million years."

Naturics explanation of the problem 8:

The periods of the intensive cosmic collisions are exactly calculable, like the date of a shooting-stars-shower. Whether however a certain place on the Earth's surface (as London, for example) will be hit during the next period or no, cannot be practically told. The problem turns however to be insignificant for the impacts of the level 6 and higher. The consequences of a single impact of this type are namely always global. They cover whole continents (for the level 6) or the whole Earth (for the level 8). Accordingly global dimension has been also reached by the resulting mass extinction.

Problem 9:
Where the most dangerous impacting bodies come from?

Quotation 9, Gehrels (p.37):

> ”So - are we going to be hit? To begin with, the answer lies in the domain of planetary astronomy. The dangerous objects have to be located, as soon as possible, to diminish the chances of an unexpected demise.
> ...
>
> Spacewatch has discovered an abundance of small asteroids, those in the range of tens of meters. The numbers of these objects exceed predictions by a factor of 40, but we do not as yet understand their origins.”

Naturics explanation of the problem 9:

Do we have any escape-chance at all, if the most dangerous objects come from outside the Solar System? No, we have not. By the way, our model shows that the collisions proceed quite vice-versa. It is our blue planet, together with the whole Solar System, that rams these other cosmic bodies, somewhere in the neighboring Universe. We have no possibility at the time to observe them, so far there outdoors. Our single rescue lies in the reconnaissance of the exact periodicity of the deathly but also the evolution-promoting collisions. It is the inner periodicity of our Cosmic Hierarchy of the Solar System. That maybe, in a distant future, could enable our species a timely escape from the Earth, before the next deathly impact will happen. In any case, without this regularity of the cosmic events, our chance to survive would be anyway like zero.

Andrew H. Knoll closes his article with an important thought that I would simply like to forward to you:

> ”Whether or not my particular view of the late Proterozoic will withstand such testing remains unclear. The rate at which my colleagues and I are surprised by new findings about the Proterozoic world suggests that the fun is not yet over. What is important is that we have begun to ask new questions about evolution on a dynamic earth.”

6. 3. What is being played here then?

6. 3. 1. The full program

The carousel of life already rotates with full speed. Most of its passengers have a splendidly good time for a short period. Their time is very short in comparison to the age of the carousel itself. Then they make place free for the next generation of the guests. The heady festival of hominids continues already since several millions of years. One has the impression that most of the passengers are quite content with their dummies-role in the game of life. They take exactly so little care of the outside of the party, like the other mute players, namely the plants and animals, who take their part rather unconsciously in it. Most important thing for them is to have a funny life. I am far from assessing such a behavior negatively or positively. I would like in no way to be a „spoilsport".

On the other side, I think that everyone has also the right to become a little thoughtful now and then. We could wonder for example: „What is played here at all? Who provides the supplies at human being and material? Should we take part in this play? Or maybe, we have to play?"

That is important questions, to which no general answers have yet been found. There were numerous attempts in the history to answer these questions. There are also today many clever heads, which try to find out these answers. Renowned philosophers, sociologists, theologians, artists, and other specialists can be found under them. I personally have also not found a generally valid answer on these questions. As natural scientists, I can only help the clever heads in their search. I can clarify the natural connections and translate these as simply as possible into our daily language. This is also one of the reasons for the publication of this book. I cannot say what should be the most important in the book for each individual reader. I introduce here only my original ideas illuminating the scientific background of the most important questions about the deep sense of the carousel of life.

In this book, we devote our time mainly to the problem of evolution of our cosmic home and the evolution of life on the Earth. In order to give you an impression of the other possible applications of the new, unified physics however, we list below the topics, which were already processed by means of Naturics, are being

processed currently, or should be processed in the next future. *(In supplement to each displayed problem we summarize our solution of this problem.)*

Direct applications of Naturics

(already realized or planed for the next future)

The actual status of the list at the beginning 2002 is grouped in the following three categories:

d – already realized in details;
g - already realized in a general form;
p – planned to be realized in the next future.

The list comprises following scientific and technological domains:

1. Theoretical physics
2. Biophysics
3. Medical physics
4. Chemical physics
5. Environmental physics
6. Geophysics
7. Astrophysics
8. Superconductivity
9. Optoelectronics
10. Nanoelectronics
11. Nanotechnologies
12. Material research

1. Theoretical physics

1.1.(d) An alternative solution of the Maxwell's theory allowing the new beginning of our scientific description of nature

(a simple plus-minus-reversal in one of these equations allows a quite new composition of the scientific „puzzle")

1.2.(d) Axiomatics of the relativistic quanta of matter

(relativity, quantization, and universality are combined in a common idea)

1.3.(d) Energy transfer - the single dynamical interaction

(four traditional fundamental interactions, including gravitation, are replaced with the energy-transfer)

1.4.(d) Unified family of all physical quantities
(unambiguously ordered basic and equivalent physical quantities)
1.5.(d) An automatic derivation of an arbitrary physical equation
(together with the corresponding units and universal values)
1.6.(d) Quantum spectrum of the whole observable matter
(a unified treatment of the animated and inanimate matter)
1.7.(d) A realistic version of the cosmologic Planck's Scale
(universal length, time, and mass of the field of light)
1.8.(d) Single-parameter foundation of physics
(leading to a dimensionless velocity of light)
1.9.(p) Parameter-less foundation of physics
(primordial Solar-System mass completely defining our whole physics)

2. Biophysics

2.1.(d) Quantum biophysics
(quantized spectrum of the living matter)
2.2.(d) Universality of the preconditions of life in the whole Universe
(the viral level of life is very popular, the bacterial level is also popular in our Universe)
2.3.(d) Cosmic origin of the forcing power of the terrestrial evolution of life
(the main biological consequence of the Mars-Earth collision 3507 My ago)
2.4.(d) Periodic mass extinctions of the living organisms
(the causal chain of events: a cosmic body impact on the Earth, the then intensified volcanism, the extremely strong environmental changes, the extinction)
2.5.(g) Cosmic Origin of the Darwinian Hierarchy in the kingdom a*nimalia*
(a direct application of the Cosmic Hierarchy idea to evolutionary research)
2.6.(d) Explosion of life at the end of the Cryogenian Period
(a direct biological consequence of this period from 850 to 550 My ago)
2.7.(d) The next and the following crises of life and mass extinctions
(the cosmic clock is still working with the same precision as ever)
2.8.(d) Our proper genealogical relation to Neanderthal man
(he was our genealogical „great grandfather" rather than our „cousin")
2.9.(d) The 7-years-and-7-months cycle is a biological period of everyone's life

(the ancient popular wisdom about the fatalistic seven-year periods obtains a scientific founding now)

2.10.(p) The role of the stem cells in a living organism
(they are a connecting link to the evolutionary proto-conditions of the organism)

3. Medical physics

3.1.(d) Separate biological class of levels for the nerve cells
(conditions for the nerve cells growth and repair)
3.2.(d) Separate biological class of levels for the brain cells
(conditions for the brain cells growth and repair)
3.3.(d) Increasing drugs resistance of bacteria and viruses
(environmental conditions inside a sick organism)
3.4.(g) Enzymes of the nerve system and of the brain
(theirs role as the energy-transfer controllers)
3.5.(g) Cancer and ill energy-transfer through a sick organism
(conditions for a possible cure)
3.6.(g) Allergy and ill energy-transfer through the organism
(conditions for a possible cure)
3.7.(p) Biological risks for the manned flights to Mars and other planets
(the physical changes in the animated matter during the flight)

4. Chemical physics

4.1.(g) Fundamental difference between the molecular and atomic reactions
(free atoms are hundred times smaller than the free molecules)
4.2.(g) Catalysts and their role as the energy-transfer controllers
(very large molecules, small and large material particles)
4.3.(p) Limits, risks, and challenges in chemical research
(most of the chemical „catastrophes" are avoidable with a better understanding of the running processes)

5. Environmental physics

5.1.(d) Global climate changes and their short- and long-term forecasting
(periodic cosmic influences, ice times, optimal conditions, future development)
5.2.(g) Alternative resources of energy
(solar energy, wind energy, new materials, etc.)
5.3.(p) Our necessary precaution for the coming cold centuries
(the next four centuries will be a hard time for the northern hemisphere)
5.4.(p) Physics of the oceans
(the oceanic energy reservoir influences the Earth's climate and life)

6. Geophysics

6.1.(d) Cosmic origin of the quantum scale of the geologic time
(overlapped periodicity on various levels; the Mediterranean-flood, the Black-Sea-flood and the Tunguska explosion are already included)
6.2.(d) Moon's origin and Moon's birthday 3506.7 My ago
(the most probable date of the Proto-Mars collision with Proto-Earth)
6.3.(d) Geophysical consequences of the Mars-Earth collision
(localization of the main cratons, the cause and mechanism of the plate tectonics and the magnetic-poles reversal)
6.4.(d) The origin, timing and consequences of the Cryogenian Period
(as defined by the International Commission on Stratigraphy: 850-550 My ago)
6.5.(d) The everlasting cosmic bombardment of the Earth-Moon system
(periodic scale of the impacts, the differentiated sizes and impact velocities of the terrestrial impactors, the hotspots as direct consequences of these impacts)
6.6.(d) The antipodal geological correlation
(the correlated localization of the impact craters and the hotspots on all solid cosmic bodies)
6.7.(d) A discovery of many old impact craters on the Earth's surface
(on the territory of Germany alone, there are found 21 old impact craters, with diameter between 14 km and 320 km; they are thousand world-wide)
6.8.(d) Recurring glaciations of the Earth's surface
(their origin, periodicity, and differentiated extension)

6.9.(g) Future development of the Earth's surface
(vanishing vibrations of the Earth's body; the entire Earth's material is slowly returning to its equilibrium-state)

7. Astrophysics

7.1.(d) The Sun's Cosmic Hierarchy
(the hierarchical structure of the observed Universe)
7.2.(d) The origin, development and the present structure of the Solar System
(the center of mass, heliosphere, Kuiper Belt, Pluto orbit, Sun's Dark Companion)
7.3.(d) Astrophysical consequences of the Mars-Earth collision
(the slowly lowering Earth-Sun distance, the rising average temperature of the Earth's surface)
7.4.(d) The periodically changing solar activity
(an extremely long-term forecasting of the sunspot-cycles development and the solar „weather")
7.5.(g) Spiral arrangement of the brightest stars on the sky
(a common hierarchical distribution of these stars)
7.6.(g) Future development of the Earth-Moon system and of the Solar System
(the next global destruction of the present structure will occur in 78 My)
7.7.(g) Technical risks for the manned flights to Mars and other planets
(physical changes in the inanimate matter during the flight)
7.8.(g) The problems to be expected during the Pluto-Express Mission
(the mass of the Sun's Dark Companion centered just behind Pluto)

8. Superconductivity

8.1.(d) Natural conditions and limits of superconductivity
(limited temperature, conductivity, and current density, the advantages of the layered structures)
8.2.(g) Biological superconducting materials
(chloroplast cells, nerve cells, brain substance)
8.3.(g) Superfluidity
(another highly effective form of the energy transfer)

9. Optoelectronics

9.1.(d) Universal quantum effects in optoelectronics
(quantum properties of the transferring medium and the transferred light)
9.2.(g) Optical computing and video systems
(physical conditions for the best light conductivity and energy transfer)
9.3.(g) Practical limits of optoelectronics
(quantum structure of the proper materials)

10. Nanoelectronics

10.1.(d) Universal quantum effects in nanoelectronical elements
(quantum properties of the transferred current, single-quantum computers)
10.2.(d) Practical limits of nanoelectronics
(quantum structure of the proper materials)
10.3.(g) Thermal effects in nanoelectronical elements
(avoidance of overheating; cold supercomputers)
10.4.(g) Superlattices
(of semiconductors, laser materials, etc.)

11. Nanotechnologies

11.1.(d) Influence of the quantum effects in nanotechnology
(quantum properties of the nanomaterials)
11.2.(d) Practical limits of nanotechnologies
(miniaturization limit under the terrestrial conditions)
11.3.(g) Low-dimensional nanoelements
(quantum dots, quantum wires, etc.)
11.4.(p) Composite materials
(advanced ceramics, conducting polymers, hierarchical composites, silicon composites, etc.)
11.5.(p) Nanomachines
(organelles in biological cells, etc.)

12. Material research

12.1.(d) Membranes
(surfaces of technical and biological materials)

12.2.(d) Small particles
(colloids, enzymes, catalysts)
12.3.(d) Limits, risks, and challenges in material research
(quantum properties of any new material)
12.4.(g) Light conducting materials
(transparency conditions)
12.5.(g) Sensoring materials
(technical sensors and biosensors)
12.6.(p) Carbon materials
(carbon fibres, fullerenes)
12.7.(p) Surface treatment technologies
(coating, etc.)
12.8.(p) Useful biological materials
(useful viruses, bacteria, DNA engineering, gene technology, genetic engineering, stem-cell applications)

The upper list is actually only a report from the last twenty years of my activity in Naturics and a timetable for the next years. It will surely have to accept some new points within one or two years, others will be cancelled maybe. Dozens of further practical applications in the modern technologies are also possible. So many important and time-consuming topics are however already contained in this list that its expansion doesn't appear to be necessary. It is simply regulated after demand. You are invited to expand the list according to your own interest.

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