



Nature and Technology

About the spatial movements of nature

Abstract

Based on his knowledge of physics and technology, man extracts movements from the formed substances of nature which he needs to be able to live on earth. In calling up these movements, nature is often put under pressure. In this document, the assumption is made that a broadening of our knowledge of physics is possible and that this assumption will give man access to the real fundamental principles of nature and develop technology with which movements of the spirit in nature can be realised that will contribute to the needs of both man and nature.

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Foreword

I have been asked by the “Humane Technology Work Group” to make a philosophical contribution about the essence of technology and the reflection below is the result. The answer to their question is closely correlated to the task which the work group has assigned itself. This work group provides a forum for interested parties who wish to communicate moral considerations among each other. Their attention focuses on the *ethical* aspects of the technological developments that are created based on physics. The work group’s members are inspired by the philosophy and anthroposophical work of Rudolf Steiner (1861 - 1925). The work group studies Steiner’s idea of presenting anthroposophy as a science of the spirit. In their communication, the members often understand each other fluently by using terminology borrowed from anthroposophy. However, as a global discussion forum, they naturally want to approach the words and concepts that assume prior knowledge of anthroposophy with caution.

In anthroposophy, each human individual is attributed with an eternal *core spirit*. In life, there are forces that pull man in the direction of the spirit or in the direction of matter. That is why we can speak of a balance between the spiritual and material worlds. This balance is partially a natural fact, but it is also the result of personal choices and actions. So, it can be examined whether spiritual *inspiration* plays a part in these choices. Derived from religious traditions, Steiner used two names for the world spirits that created contrasting inspirations in the past and still do according to anthroposophical science. *Lucifer*, the “light bearer”, the angel from the Old Testament, was the name he chose for the spirit that profoundly detached our core spirit. He called the other spirit Ahriman, the spirit of the darkness from the Persian Zarathustra tradition. This spirit unites our core spirit more deeply with the material world.

It is clear that Ahriman is strongly present in the world when we look at how science has developed in Europe starting from the 15th century. Physics that focused on inorganic nature became prominent. Thanks to the incisiveness of the researchers and by attentively working on *unequivocal* conceptions, physics rapidly emancipated itself from the philosophical “mother science”. The conceptualisation that focused on the spirit shifted to the background. These days, spiritually oriented studies, via the “stockroom” of language usage, are often based on feelings that are connected to content from religious and philosophical traditions and are stored as collective memories. The conceptualisations of these traditions are much more flexible and less unequivocal and are not taken seriously as empirical knowledge but are considered at best as *religious content*. Many physicists, however, take it a step further - due to the concepts they have become used to - and consider the acceptance of a non-human creator in nature as a superstition.

In this philosophical inquiry into the essence of technology, we would like to point out that in the development of physics, concepts are used in which an *authentic spiritual factor* is present. We examine the deliberations and choices the physicist had to make in advance to be able to exclusively focus on matter. A focus on matter that is the result of a deliberation ensures that the original thought can be *forgotten*. Materialistic

conceptions are indeed transferable as subject matter and for this, they do not need to be traced back to their origin. The name Ahriman as an inspirer does not come up in the discourse and we are certainly not referring to the renewed religious meaning. Just like with a too-dark charcoal drawing, we are trying to remove or sweep away some of the charcoal so that we can make the contours of the immanent Ahriman spirit visible. This way, everyone can decide for themselves how modern technology influences our culture when it comes to finding the balance between spirit and matter.

Introduction

We use our knowledge of physics when designing a device. For devices with moving parts we can calculate what happens between the parts with the formulas of mechanics. This is how we determine the strength of the active forces so that we can then calculate the necessary solidity of the construction. Because many machines are set in motion with the help of external energy sources, the science of mechanics with its basic principles established by Isaac Newton (1643 - 1727) in particular, is ideally suited to make the movements of the machine visible. Newton sees the force as an agent that causes a change in movement and body shape by way of a spatial agitation from outside. For the solidity of a material, it then concerns the temporary consequence of the resilient deformation or a permanent consequence, the plastic deformation whereby the construction can wear out or break.

Where one can speak of activities based on gravitation, magnetism, or electricity whereby, - in the strictest sense of the word, no contact can be established between the body under force and another body - the application of Newton's next concept of an "act at distance" was successful. Although the bodies do not touch with these forces, a force is present and their mutual positions in space influence the size of that force. That is why, with changes in movement that correlate with gravitation, magnetism, and electricity, one speaks of gravitational force, magnetic force, and electrical force. To present a diagram of the influence of these non-bordering bodies a field was later introduced in which force lines are envisioned in the "empty space" which give direction to the forces acting on the body.¹ This is how not the external contact but the proximity of the other activating bodies (with a spacing between the points of gravity of both bodies) became the basis of the analysis.

The analysis of nature in which a number of active units can be reduced to a small number of separate factors by way of abstraction seemed extraordinarily successful, but according to some scientists falls short when it comes to studying life in nature. The poet Goethe wrote the famous lines in Faust pointing out the limits of this method. Here, Goethe is criticising chemistry.

Because the analytical work methods of chemistry and physics, as we shall soon see, have many similarities, I will provide my own rough translation of his lines here:

*"He who life longs to know and describe
Will drive the spirit out in first try
In his hand he then has all the parts
But misses alas, the spiritual heart
Encheiresin naturae, it is called in chemistry.
Mocks itself unknowingly"ⁱ*

If, in his search for knowledge, one does not want to be misled by a research method that is only successful in a partial field, it is good to stop and consider the questions we have in

¹ The immediate retroactive concept (action = reaction) is a basic concept of force in physics. With the introduction of the *field concept* by Michael Faraday (1791 - 1867) a superficial, merely formal distinction is made between an "active" and a "passive" body. The passive body in which the change is observed, finds itself *in* the field of the active body, which is assumed. In order to determine the strength of the field, the size with which the "passive" test is present in the relationship is set at 1, meaning a mass of 1 kilogram, a magnetic moment of 1 joule per tesla or an electric charge of 1 coulomb.

regard to the aspect of nature and the general principles that guide our acquisition of knowledge. To acquire knowledge, we connect concepts based on our questions to each other and to perceptions to arrive at the principles of that which is perceived. In making those connections we try to exclude, insofar as possible, every subjective preference; an emotional sympathy or antipathy for a certain connecting method of concepts cannot replace the objective, thoroughly understood connection. This means, according to Goethe, that we - even though we acquire a preference and skills for certain connections - must examine whether the experimental road of dissecting pure chemical substances may also be the way that will lead to gaining insight into living nature. That is why two aspects are invoked in Goethe's lines of poetry:

1) The consequence of using chemical analysis whereby the pure chemical substances can appear but where the prior analysis does not consider the given entirety (the spiritual connection).

2) The other aspect that scientists blindly accept in their quest and longing for insight into the laws of life is that they believe they can keep using the same method; as if the secret of life can still be present as a whole in the specific inorganic substances.

The main objective of this reflection is to examine whether the critique that Goethe has of chemistry also applies to how physics today approaches nature. In this reflection, we will tackle several questions:

A: Is the grasp (analogous to the loss of matter in the chemical approach) of a spiritual connection lost due to the way physics studies the spatial movement in nature?

B: How would we be able to find the spiritual connection again? (Presuming that we are overlooking a spiritual connection and the answer to question A is affirmative.)

C: How does the commonly accepted method of physics obstruct the perspective of and insight into the objectively active spirit in nature?

The triumphant success of the mechanical method of approaching nature has led to a technology that is almost omnipresent. This has resulted in us living in an environment that feeds the manner of conception in which we largely feel to be standing opposite nature, and no longer included in it. This conception is lopsided; however, we know better now. In his essay "Die Natur" Goethe wanted to point this out and here he describes nature, almost exaggeratedly, in a totally different way: as an all-encompassing living being.² I only need to cite the first and last lines of this essay to convey its message:

*"Nature!
We are surrounded and suffocated by her
- cannot tread outside of her,
and cannot, enter inside her more deeply.
Uninvited and without warning, she encompasses us
in the tour of her dance
and drifts away with us,
until we become tired and fall from her arm."ⁱⁱ*

² That Goethe approaches nature as a poet, is not remarkable of course, but in the following essay we will see that he also wants to be read *as a scientist*.

Besides the fact that we feel subject to the omnipotence of nature, Goethe describes - despite the emergence of physics, which he certainly did not disapprove of - our helplessness in delving deeper into the origins: he writes "and cannot enter inside her more deeply".

In the closing lines of this essay, he even goes so far as to also circumvent the spiritual power that we tend to relate to our acquisition of knowledge:

*"She has put me here; she will also lead me out.
I trust her. She enjoys my company.
She does not hate her work.
I did not discuss her.
No, what is true and what is false,
she explained all that. All is her fault,
all is her favour."ⁱⁱⁱ*

Here, Goethe expresses the idea that it is nature who judges within us. With the words: "I did not discuss her... No, ..." he turns against the accepted opinion of our self-reflection: that we, in our knowledge of nature, can independently and autonomously make judgements. Compared to a "dead" nature, this autonomy may well be a natural pose, but if nature is the expression of an all-encompassing living being, we will need to reconsider our knowledge acquisition. Whether the reader can go along with Goethe with this, is the core question in this contemplation on technology.³

Regarding accepted opinions, we will first focus our questions on the conceptions that are responsible for making us feel like an outsider. We will examine whether our routine thought process must be augmented with thoughts which reveal that nature also controls our spirit. So:

D: How can we consciously access nature's information and find laws that indicate a mutual spiritual dependence between us and nature?

And lastly, we ask the question:

E: Based on such information about our spiritual interaction with nature, can we give new meaning to our moral responsibility in our conscious contact with nature?

These five questions form the basis of the reflection below. To answer questions A, B and C, we must focus on the observations of nature outside of ourselves. To answer question D, we will largely also focus on observations of ourselves that indicate spiritual fields in which our active role in nature cannot be denied. For question E, we examine morality, but then considered from the perspective of nature. Here, we actually ask the question what does man mean to nature?

For the overall reflection, it is important that we thoroughly rethink the terminology and imbue it with a sense of experience so that it does not remain abstract. In Rudolf Steiner's (1861-1925) book "The Philosophy of Spiritual Activity", this relationship with the input of own consciousness is described, philosophically and empirically. The following citation from the fifth chapter concerns how we choose the approach of this reflection:

³ Goethe was a representative of Romanticism, a powerful cultural impulse of the 18th and 19th century. We know that this school of thought finds art history especially important. Here, however, we are interested in what it means for science.

“The precise understanding of the conception will also make it possible for us to acquire a liberating insight into the relationship of the conception and the subject. This will also bring us past the limit where the relationship of the human subject and the object that belongs to the world is guided away from the conceptual field of knowing to the concrete individual life. Only once we know what we can expect of the world will it be easy for us to prepare for this. We can only be fully active when we know the object that belongs to the world and to which we dedicate our activity.” (Chapter 5, paragraph 31)

A: Is the grasp of a spiritual connection lost due to the way physics studies the spatial movement in nature?

A ready-made physical outer world

Even before Newton made his contribution to physics, the dualistic school of thought as propounded by René Descartes (1596 - 1650), was for many physicists a basis for their scientific research. But also, many of us, as children of our time, have been strongly influenced in our daily mind-set by this school of thought. Let us consider the highly prevalent conception of “extension” that we employ daily and which we almost immediately relate to our experience of things in space. What are we doing here with our (trained) intellect?⁴ We learned to think about recurring ratios of size of (flat) presented figures. This is how we developed several geometric insights⁵. With the dualistic breakdown of the world as expressed by Descartes in *res cogitans* and *res extensa*, a basis of being is allocated to abstract geometrical knowledge. This occurs in two steps:

Step 1: We first intend to preside over a number of realistic thoughts (*res cogitans*) in regard to the outside world, because when we (crudely) come across these geometrical shapes in the outside world, we will recognise a sufficient number of them and will augment that which we recognise with the mathematical laws (scales) we devised from our inner being.

Step 2: Everything that we formally can conceive (and comes from within) in the proposed plane of geometric distinctions and relationships is translated into an extensively filled three dimensional space (*res extensa*) in which our own body and other bodies border one another via varying degrees of material density and often varying material nature. The abstract proposed plane which, strictly speaking, only concerns the formally proven geometric assertions about the figures, is related to those fillings of the conceived space as a movable cross-section in which they are

⁴ The point is that we realise that we have already conceived of something *before* we proceed to the thought processing of information of the details. If we do not realise this, we will remain “naive rationalists”. We are then failing to see the basis of the first spiritually active factor with which we consciously place ourselves in the world. Descartes, known as the father of modern philosophy, urged us to examine this.

⁵ Of course we have conceptions of objects with three dimensions but insofar as we examine these with our *thoughts*, we notice that we as *elements*, must utilise 2 dimensional figures: a triangle, a square, a circle etc. with which we first establish in combination the experienced distances in two directions. The sphere, for example, is for us first a circle on a flat plane to which we add the thought of a turning on that plane. The way we do whether it is tactile or visually, will often vary.

present as real connecting borders of those figures.⁶

With the help of this marriage between the formal geometry of step 1 and the metaphysical way of thinking of step 2, the outside world is seen as a compilation of ready-made malleable bodies⁷ and the road to a far-reaching analysis in which we can establish increasingly smaller “building blocks” is opened. It may be a good idea to reconsider the shelf-life of this kind of “realism”. It is fruitful for the current practical knowledge of nature - that no longer needs to be proven considering all of the results - but as soon as we have seen that we ourselves are in control in step 2, we will also know that this may be a big abstract bias. And for a critical consideration of nature, the question arises if it is justified that other means to approaching nature are excluded if we leave it as is.⁸

The abstract organised movement of the physics experiments

In the introduction, we discussed the direct correlation to the outer agitation of bodies and strength. In empirical research, strength sizes are determined based on flexible and plastic deformation of bodies. To measure the deformations, the bodies must be brought into controlled motion by us. Common measuring equipment utilises resilience (steelyards⁹) by realising a muted movement. The Cartesian concept of the extension of bodies in this way embodies the tool to measure the strengths as based on the length of the resilient body that remains intact. But we also carry out measurements by way of collisions of controlled moving bodies in which the connection of bodies is lost. Such as with a traffic safety test with dummies or as in Geneva in which the smallest particles are accelerated. This concerns the plastic deformations and the strength (and energy) that is necessary for the destruction of the existing connection to identify the resulting pieces. To measure in such practices, the movement of nature is moulded to suit us. The objects must first obey the movements which we organised. That is why besides our intellectual approach (by way of step 1), the practical approach (by way of step 2) is also highly abstract - despite the intensity of some experiments. The movable element of nature with which we move in such experiments, is present in our consciousness as a general diffuse conception, an internal power with which a given body maintains itself and is moving through space; but with our inquiring attention we still ignore this fact and remain at a distance. With our abstract calculating intellect, we attribute movements to nature and remain intellectually outside the (increasingly smaller chosen) bodies, while the

⁶ Because many of us are familiar with the *classical* conception of atoms in which other attracted particles swirl around a nucleus in a fixed trajectory, the thought can arise that the *metaphysically conceived* comprehensiveness (*res extensa*) becomes less fundamental for the forming of a conception than is believed. Still, these rapidly swirling small particles must repel similarly swirling small particles from another nucleus. It certainly then still concerns the conception of make compiled circle-like figures with an existing interior into which the other nucleus of another particle cannot penetrate.

⁷ Only by pressing to be body into a smaller volume can more matter be squeezed into a certain space.

⁸ This realisation that our statements about reality are only possible on the basis of an inquisitive preparation in which we ourselves play a part, resulted in the need to develop a *knowledge theory* with which the objectivity of such statements can be guaranteed (in advance). But this turned out to be a complicated problem. We will tackle this by examining what kinds of conceptions of reality are described in physics. In the description of this creative design process of conceptions, we hope to establish a *development*.

⁹ That we immediately perceive and interpret that body in “analogue” via a digital screen is not important, of course.

increasingly smaller bodies are used repeatedly as based on their resilience and inner consistency for the exterior strength measurements.

Conclusion

The physicality and spatial movement of natural objects are in the described dualistic method of approach connected to another in a superficial (coincidental) manner. For the benefit of the repeatedly used reality of the already formed physicality of nature, it is obvious that we should ask the question of how nature itself creates boundaries from which the bodies come. What are the laws governing that process and with which spatial movements found in nature are we immediate witnesses to their creation via various forms of perception? Biology may very well focus on living organic nature, but insofar as the science of biology describes laws, these are very often only the laws analytically acquired as stated above that occur in the organism. In addition, all the movements in meteorology, geology and astronomy are also studied. But here, too, the understood natural processes are often also approached “mechanically”. That there are correlations that systematically fall outside the attention of scientists is known instinctively by many people who live with animals, plants, weather/land phenomena and the heavens. But this knowledge falls outside of science.

We can only presume then, that question A has been answered. We showed that the question with which we wish to penetrate through to the growth processes of nature is justified and that we are missing something which can be perceived and intellectually examined. The way in which we connect our conceptions in inorganic physics with the natural phenomena indicates that several aspects of the immediately given movements of natural objects are missed if we only define them “mechanically”.

B: How can we find the spiritual connection?

Unclear connections in physics

Regarding the successfully established mechanical connections, we first examine whether they directly correlate to the empirical data and whether they clarify the correlations. To put it simply, when I ask for an explanation of the wet coat on the coat rack, then in all details that follow that coat is wet due the rainstorm in which the coat was worn. The detectable water on the coat and the rainwater physically connect the two possible perceptions with each other¹⁰. But how do you explain the law of Gay Lussac? Gas stored in a closed vessel provides increasing pressure on the walls when it is heated. Whereas in the case of the wet coat, the perceived characteristics of water provide a satisfactory explanation, we are uncertain when it comes to the characteristics of this pressure effect of heat. With the increase in pressure, we focus on a whole other area of perception than the area of heat¹¹. We can grasp for the conceived image of movable gas particles but will

¹⁰ With such a rational connection, water can here be referred to as the “middle term”.

¹¹ Pascal’s principle $P_1 V_1 = P_2 V_2$, is conversely quite clear and characterises what makes a gas a gas: namely, that a gas fills the space (V) *on its own accord* if nothing prevents it from doing so. The resistance manifests itself in a force field on the wall, $P = F/A$. The greats clarify one another. The law of Gay Lussac $P_1/T_1 = P_2/T_2$ (T in kelvin) is of another order. Empirical evidence does quantitatively indicate this connection but the state of heat of the gas (expressed in temperature T) clarifies nothing in regard to the pressure P.

thereby bury our unknowingness and will only reveal our penchant for ready-made bodies which we discussed. The perfect dependability of the quantitative relationships of this “model” does not give us qualitative insight. Neither will we encounter any problems in technology if we allow this unknowingness to continue to exist. In the introduction, the system of forces developed by Newton could be adequately explained by what we call mechanics. We also discussed this possibility by illustrating that such mechanics could be powered by an isolated energy source. Combustion engines, for example, generate a sudden heat from chemical energy which results in an explosive expansion of gas in the cylinders of the engine. And even though the correlation between heat, temperature and gas expansion is still a mystery, physics proves with its fairly clear concepts, the practical use of a law such as the law of Gay Lussac. Later in time, using the same method and without understanding what electricity is, we were able to control magnetism and thereby use electro-engines as a source of power. In principle, this practical and technical use can still not be considered, however, as the answer to the knowledge questions that a physicist can continue to ask regarding the unclarified correlations.

But also, in the field of mechanics itself, not all the qualitative questions are answered. Here too, they are often left for what they are because the calculations make such good sense. Which physicist will still seriously delve into the intellectual assumption regarding the space required for such calculations? In relation to his ideas, Newton was forced to consider this.¹² It was necessary because at that time in England, the ideas and way of thinking of the Frenchman Descartes were being followed. Descartes, who contributed to giving new zest to philosophy, still tried in physics to follow the vision of Aristotle from ancient times. In this vision, space was a characteristic of things and was not considered as something that already existed and in which things were given their perceived place and characteristics through natural spatial processes. Newton had to breakthrough these habits. In their first classes on mechanics, students of physics are often referred to Newton’s fundamental deliberations and that is why they are confronted with the “bucket problem”. Imagine you are in an “empty space” and you come upon a bucket of water. How is the water behaving? This depends on whether the bucket is spinning around, will be the answer. But then comes the question: how can you establish that the bucket is spinning around if the space is empty? Don’t you need a point of reference? A visible “fixed” star in space could be such a point of reference. But then the question can be asked again. How can you determine that the star has a fixed position? Establishing this can only be relative.

Descartes was unable to grasp the differentiation of the spinning movements as anything more than relative. In comparing the movements, he could not infer anything that was not relative. Newton wanted to demonstrate that this was possible. He achieved this by rigorously applying his first law. A difference is applied, in principle, between rotation and no rotation. The moving water should be thrown aside and must be forced to spin around due to the sides of the bucket. With still-standing water, the force of the bucket sides is not necessary. This is how Newton was able to give his conception of the rotations an absolute character. The relative measured speeds of empirical rotations were sufficient to differentiate relative movements from “real” movements by examining whether changes occurred in the force ratios in the configuration. This formally opened the road for velocity calculations and energy precepts. This is how Newton wrested free from the

¹² Einstein also had to delve deeper into these assumptions again for his innovations.

principles used by Descartes¹³. Newton thereby consciously and formally introduced a substantiated, generally conceived still-standing space in which his principles could be showcased. With it, he fundamentally deviated from Aristotle's approach to the cosmos which up until then was a given fact and experienced as realistic, and whereby the spatial aspect was derived from things.

To understand that the mechanics of Newton were most definitely based on an unrealistic, formal foundation, we must study it more precisely. Newton's way of thinking is by now so embedded that we often miss seeing that it must be propped up by inadmissible projections. In the bucket discussion presented earlier, we deliberately chose not to mention the factor of gravity. To assess whether the bucket is being rotated, we consider a visible fixed star in space as reference point¹⁴. The relativity is then demonstrated with the idea that this star could also be spinning around. In juxtaposition with a star that is circling with the same angular velocity, the bucket would then seem to be standing still. This is actually considered to be a misleading option because the star would then - because it is bound to the same law of inertia - be attracted by way of an enormous gravitational pull towards the bucket¹⁵. That is why many physicists will find the above-stated relativity question of whether the star was really fixed as "unfair". Highly preoccupied with Newton's way of thinking, many physicists by now take it a step further and see the rotations that they do come across in space as the direct "proof" that there must be gravitation in the centre of the rotations. This proof, however, fails to convince when one realises that the entire justification begins with a dogmatic universal application of the inertia principle¹⁶.

This law argues that without a force being exerted, a mass stands still or moves through space in linear fashion. The historic fact that Einstein corrected Newton on this very point speaks volumes. This does not mean, however, that we will follow Einstein; the point is that we become more flexible when it comes to the concepts of physics that have been drilled into us at school and are now starting to rust.

We can attempt to resolve such ingrained concepts by differentiating between the Newtonian concepts of space and for example, the concept that is more in line with the realism of Aristotle. Space, as seen by a mathematician, is the product of an abstract open conception, he does not worry about the fact that in actual space, only finite line segments can be measured. The physicist, however, must focus on what can be established¹⁷. What Newton is indicating with the concept of "general gravity" is indisputably connected to the size of the given mass. There can be no doubt about this and the above-named physicists, who also project this gravity, are exponents of this indisputable conviction. These physicists and astronomers, due to their inadmissible

¹³ Newton thoroughly ponders this problem in the "scholium" of the introduction to his Principia.

¹⁴ Here, an imaginary line is drawn from the point of the possible axis of the bucket to a fixed point on the side of the bucket and it is examined whether this line moves in regard to the line that connects the same point on the axel with the star. Just like the two hands of a clock in which the mutual angle does or does not change.

¹⁵ Just like the water of the revolving earth is not flung away.

¹⁶ That the inertia principle, as Newton saw it, is not a natural phenomenon, becomes immediately clear when one re-reads the description of this law in the Principia and compares it to the general definition of "external force" that Newton provides just a few pages earlier. It is a *tautology*!

¹⁷ Newton considered himself to be a mathematician and wanted his contribution to physics to also be evaluated as such; when he introduces gravity, he himself says that physicists must start looking for and discover the *cause*.

projections, fail however, to complete an essential task which is their duty as scientists. The fact that the size of a mass can only be empirically determined when a defined volume is considered indicates the possibility of real finite measurements of something in an enclosed space. That this idea presented itself as necessary for the understood reality of matter is at odds with the thought content that Newton focuses on with his law of inertia. It after all, speaks of an infinite linear course as the natural movement pattern of a mass. Because this tautological rule which he implemented offers nothing more than Newton's own definition of a force, we are not renouncing any natural content if we question its grounds objectively. The physicist only comes close to doing his investigative task when he can empirically demonstrate the ideal necessary wholeness of mass and spatial enclosing. That which now abstractly acts as a "deus ex machina" in physics as gravitation, is only then understood in physics¹⁸.

Dynamic geometry

By way of philosophical dualism, as encompassed by two terms from Descartes, *res cogitans* and *res extensa*, we pointed out the abstractness of the often-used research method. The experimenter first relies on purports from geometry and algebra which he is intellectually accustomed to. The relationships of the proposed geometric figures provide a cognitive certainty and unmistakable basis in the world. Let us reconsider these cognitive purports and their applicable certainty. How do they relate to our cognitive activity if we set our conceptions in motion? With moving conceptions, we can prepare a new and at least as certain cognitive experience in this area of "*res cogitans*" and examine how we can create a bridge to the world with this experience. After all, we can allow the triangle, the rhombus, conic section etc. to move freely in our imagination while still upholding their laws. Which prerequisites determine for example, whether a conic section becomes a hyperbole, parabola, circle, or an ellipse? The geometric content that we prematurely connected, as it were, as a separate "picture" to the outside world, give us overarching laws because these are much more clearly expressed when moving. In the first instance, such an approach seems just as abstract as Cartesian geometry. But it is fundamentally different for not anymore the formally given ("indifferent") rigid axis - which indicates the location of the moving cross-section - forms the starting point¹⁹, but the geometric shapes themselves "come to life" in our conception. To, which we described in part A as the self-willed organised movement of bodies in an experiment, we develop another relationship with this spiritual provision. Before we structure nature so that nature will objectively allow us movement, we first design an expanded inner picture of the possible lawful movements.

We can then examine how this renewed moving "*res cogitans*" can be meaningfully

¹⁸ This research can, for example, focus on the origin of the gravitational constant in the general law of gravity. The writer of this essay is working on a study in which the size of the gravitational constant is derived from the actual dimensions of the universe.

¹⁹ With this method, that Cartesian axis seems to be only one variation of many other possibilities. In addition, with this method, detailed geometric descriptions of *non-spatial* distances of, for example, *imaginary* elements are also possible. These elements are distinguished by being present in a figure in such a way that they are *vitally* dynamic and cannot "come to rest". The representation of a complex number by $a + bi$, whereby the number pair (a, b) is Cartesian proposed, ignores this dynamic aspect and unnecessarily connects rigid concepts to our conception. Only with dynamic geometry can we begin to mine the natural phenomena of the *metamorphosis* of the figures.

connected by way of recognition to the concrete immediately available stream of perceptions stemming from our environment and nature. This drastically changes the second step we discussed earlier. The metaphysical, somewhat clumsy assumption of a “res extensa” is then no longer necessary. The line that we once drew between our inner and out world regarding moving objects that we customarily treat as indisputable, becomes less obvious. The extra effort which we must undoubtedly devote to this moving area of geometry, may pay off one day when we gain a deeper insight into nature. We already asked the question how nature itself creates the shapes of physicality from its movements.

The capacity to remember, the integrity of the knowledge transfer, space, and time as subjective categories

With this alternative method of approach, we become more critical regarding the naive use of only the subjective static memory image of the ready-made conceived spatial figures present within us. We discovered that the static elements of the outside world largely occurred because of a projection from that (rigid) capacity for memory. With the dynamic method of approach, we can examine precisely how we turn on and involve our capacity for memory in what is consciously happening during perception. We then do more justice to our immediate experience of nature. We experience that nature appears to us immediately in its given perceived shape (and must do so) as a living agglomerate of organised moving qualitative distinctions. We analytically connect these conscious movements to categories with which we recognise the immediately active differences. But in doing so, we also automatically categorise them in the (higher) concepts that elucidate the general correlation between those categories. Every spontaneous analysis is therefore immediately “followed” by an associated synthesising activity²⁰. Only with this intellectual labour that everyone personally carries out, can we consciously incorporate the subsequent similar perception into our memory. Ultimately, naming occurs based on the meaningful concepts filled with perceptions and we can unlock the personally established order of things for each other.

At the same time, the danger exists here that due to our need to share knowledge and transfer it to others, we will create a dogmatic belief. We then fail to consider the “hidden preparatory work” of the personal operations of individual thought that is required to make something recognisable and share-able from the offered chaotic perceptions. It is not an imaginary danger that based on authority relationships, we ignore the presence of the inner suitability and preparedness of the other to be open to receive that knowledge. The ill-conceived and abstract reference to the ever-rigid capacity for memory in communication is in this regard a phenomenon of decadence and is here, in the abstract research method, the result of routine geometrical and algebraic cognitive reason. In it, the search for truth is not always the guiding factor, but power and convenience can become the leading principles. If such spread of knowledge is not prevented, nature will continue to be treated as “nominalist” despite the possibility of other methods of approach.

The practice of this dynamic (synthetic) geometry in which we internalise movements,

²⁰ In Goethe’s research method, which we will discuss later, these perceptions are the ingredients of what he referred to as the *primal phenomena*.

strengthens our critical consciousness regarding our own abstractly determined physical movements with which we guide our paths on earth by choosing directions and time span. To do this guiding, we as the subject must be one with each separate cognitive abstraction of time and space. Based on this insight into ourselves, we can then distinguish the conception with which we abstractly establish the numerical value of a velocity from other velocities insofar as a fundamental fact of nature is expressed. To be able to contemplate the reality of velocities in nature, we must be able to conceive this independent (transcending) reality separately from the abstractly imagined space and time only needed in our earthly orientation. This objective reality is partially connected to our practically routine conception of space and time so that we can use it as a calculation tool for the subjectively chosen physical movements over the earth. But, the velocity of a location-change also consists of an objective aspect in which physicists should also be interested in²¹.

Instinctive knowledge

We can make two observations regarding those decadent conceptions because of which nature's primary given dynamic factor is not included in science.

- 1) Nature is only admitted into our knowledge system after we have forced it to "stand still" (with the metaphysical dogma of ready-made physicality).
- 2) By ignoring this factor, science fails to address the instinctive knowledge of people who are "close" to nature in their personal lives.

Its attention for the methods with which these people acquire their knowledge is often very superficial. An adequate assessment of their knowledge is difficult because the scientist does not speak their "language". Only once science learns how to be sufficiently critical of its own abstract method will it come to realise where the problem lies; they would benefit from opening up a dialogue with these people or by studying their recorded works.

How difficult this seems to be for scientists is revealed by the selective way they treat the work of the German astronomer Johannes Kepler (1571 - 1630). Even though Kepler is regarded as a great scientist, a substantial part of his work is completely ignored. How Newton, after Kepler, described the movement of planets seemed to obscure what Kepler intended with his research. We will delve more deeply into this here.

It is easy to see that the concept of "still-standing nature" also forms the basis for Newton's idea of comparing the movement of heavenly bodies with a "sling" (the primitive weapon that was used to throw a stone with great velocity). In his system, Newton regarded the initial speed of movement of the moon around the earth as merely a coincidental condition. But without this notion, the gravitational pull from the centre of the earth would have long since caused the moon to plummet down if it were not for the side-ways velocity which allows it to continuously fall next to the earth, as it were.

²¹ With Einstein's unique relativity theory, modern physics began to realise that the scale of space and time was highly coincidental due to their immediate dependence on perception and that only the *quotient* that was used for the determination of speed has significant meaning. In the transformation formulas of Lorentz it is highly remarkable that the manner in which space contraction and time dilation are used in the quotient $v=s/t$ only becomes independent of the mutual paired movement of the reference systems required for observation registration.

Newton gives no explanation for this velocity that determines the orbital cycle and radius of the orbit of the moon. This construction with a central gravity point was then associated with the orbit of all planets by also assuming a mass for the sun that also has a gravitational pull keeping all planets aligned. Precisely on this point was where the controversy with Johannes Kepler started. Kepler believed the harmonious alignment of the movement of the planets around the sun was the most fascinating aspect of the cosmos and focused his research on that. He saw a huge similarity with acoustic laws in those relationships. This part of his work, *Harmonice Mundi* (1619) was not, however, taken very seriously by many scientists. The third law of Kepler was mathematically converted into the general law of gravity that was introduced by Newton. This updated mathematical form no longer, however, immediately expresses the miraculous harmony of the cosmos. The original form of the third law established the identity of the relationships of the size of the planet spherical orbit and their orbit times²². An instinctive, traditional certainty determined the direction of Kepler's research. The research of this genius astronomer that encompassed harmony of spheres of Pythagoras is certainly worth further investigation.

Critical self-reflection points the way

From this example in astronomy, Newton's method of approach, no matter how convincing it may be as a mechanical image, is a limited manner of proposition. And above all, it is not empirical. Because how does one verify in his gravity formula whether the moon or sun actually have mass?²³ The danger of "tunnel vision" is present here: the factors that could contradict the assumption have not been considered. When seen from this perspective, we can also speak of instinctive motivation when it comes to Newton's thought process.

The system that Newton has described, appears to be ideal when applied to the cosmos. After all, it is the place in nature where there are hardly any frictional forces. The rigorously accepted first law of his system, seems to reveal itself without the artificial interventions that are needed on earth because of the frictional forces. On earth, a body must be isolated so that the influences of nearby bodies remain absent. Once the first law is accepted it remains valid even when there are forces from other bodies. With his system, it is possible to imagine how a mutual movement of objects based on the slowing and dampening factors of the environment can be brought to a relative stand-still according to its laws. On the grounds of Newton's second law concerning acceleration and deceleration, the possibility of a baseline measurement is created. And this is how Newton was able to give an absolute universal premise to his system of velocity calculations. But just as we saw with the cosmic movements, for the baseline

²² The third law: $R_1^3 : R_2^3 = T_1^2 : T_2^2$ says that the ratio of the volumes ($V \propto R^3$) of the planet spheres is equal to the ratio of the reciprocal expressed orbital times. After all: $T_1^2 : T_2^2 = T_1/T_2 : T_2/T_1$. The ratio of the *by rotation* formed finite (enclosed) spatiality is on the left. The double ratio of the rotation times is on the right. When, on the one hand, finite dimensions are implemented as *absolute* measurements and on the other hand, *absolute* time periods are implemented, one "materialises" this law into the earthly preference that is only connected to the subjective earthly physical orientation. The spatially located body or the conception of the duration of time of the *full orbit* of a planet or part thereof is merely random subjective abstractions in regard to the fact that there are various *orbital speeds* of planets around the sun.

²³ In addition to the earlier mentioned law of Gay Lussac (by way of gas particles), the outer integration of gravity with the heavenly body, the necessary used assertion of the middle term devises: stars have mass.

measurement, we must first eliminate the initial movement impulses encountered. We already know from Newton's third law, that with the necessary and makeable mutual standstill, "something" of the original movement must be passed on to the environment. This real factor can by its enormous quantity of movements easily be left outside of consideration. The law of equal impulse reminds us that with the Newtonian experimental approach to nature, we are systematically ignoring a natural factor.

Conclusion

In answering question A we already discovered, due to the focus on rigidly defined bodies, that we are also ignoring another undetermined factor. Now we have come so far that we can see that the abstract method of approach has no scientific foundation. That what is excluded must be taken up and included in research. A factor that in its system can be described as initial movement impulse of matter in nature. A movement impulse that contains an arrangement that, however, does not need to be the result of mutual force fields of the coincidentally nearby bodies²⁴. This is the answer to question B. With it, we have made the next step. The physicist who remains loyal to his systematic principles, knows how to translate everything into Newtonian thinking and has knowledge of what is systematically related to nature but stays outside his research. There is not only a subjective reason for curiosity, but also objective reasons provided by the method of the conscious physicist himself for broadening his view. There is no reason whatsoever to refute the analytical approach of Newton because its shortcomings can be grasped by using the very same analytic method. It begs to be augmented so that a "conversion" of its concepts can be made.

C: How does the commonly followed method of physics obstruct the view of and insight into the objectively active spirit present in nature?

Entropy

Based on great faith in the abstract method and the mechanical vision of nature models were developed around the concept of entropy in which the arrangement and chaos of matter could be expressed in laws by dividing substances in moving particles. With the statistical calculations of Ludwig Boltzmann (1844 - 1906), an atomistic concept of matter became universally applicable. That this formal approach results in an exclusion of certain manners of empirical research, is not immediately apparent²⁵. Strictly speaking, physicists do know that empirical evidence for "the law of conservation of energy" really cannot be provided but can be used as such when combined with the entropy postulate²⁶. In this

²⁴ Here, it concerns a possible non-mechanical "intimate" relationship, that *expresses* itself in mechanically changeable rotations of masses with their own conceived fixed "gravity fields".

²⁵ Ludwig Boltzmann's contribution seems to be the final eradication of the spiritual connection. Our (implicit) contention that this atomistic method of approach with its statistical calculation system is *decadent* must not be confused with a personal, ethical qualification.

²⁶ Due to the assumption of the existence of atoms (with established masses), to which Boltzmann also contributed, the concept of energy is supported and braced but at the same time, it is also qualitatively *depleted*. Due to the energy relationships of qualitatively-approached natural processes, we experience that these processes are *aligned* with one another: what happens in one part of space is dependent on another part of space and this consequently will affect another part of space and so on. If we take a spiritual view, we can

concept the laws of moving bodies are, strictly adhering to Newton's system, established a priori. That is why, for this concept, which is not critical of the Newtonian system, it may be useful to ask if a research method is possible with which we can empirically present and not neglect the primary fact of carelessly cast-away movement impulses. To achieve this, we must first clean up the dogmatically created unit of light with electromagnetism.

Electricity and light

A phenomenon that because of the Cartesian-Newtonian formal school of thought is summarised as a fundamental force in nature, is called electricity. A great number of relationships are therefore described and thoroughly explained according to laws of electricity. To turn electricity into a useable tool, several natural elements must be combined into special compositions. Static electricity and piezo electricity are the immediate result of the moving contact of two bodies. Galvanic electricity (of batteries) and pyro electricity (local heating) can more or less be regarded as liquid variants of this form of physical contact between two or more substances. Only with the help of isolated conductors in an ingenious combination with these bodies can the short-lived acting electricity be stored and embellished. Also, electricity generated with the help of a movement of magnetism near a metal in, for example, a dynamo, is not quite different from the mentioned means of generating electricity. Without these measures, electricity in nature would just be a fleeting phenomenon. An electrical "charge" must first always be protected against the resistance of nature and it will immediately disappear again if no preventative measures are taken in which all the isolated conductors are protected²⁷.

Dedicated to a method of "making nature standstill", man searched for an "own" physical carrier and ultimately arrived at very tiny bodies which were known to have an elementary charge as a permanent property²⁸. Because an explanation has to be given for the permanent presence of electricity, when electrical forces are dissolved everywhere under natural conditions, there is good reason why the first atom models were partial mirror images of Newton's planetary system in classical physics with the central gravitation of the sun and the oscillating movements of the planets²⁹. The sideways movement impulse of the moving elementary charges, the "electrons", ensures that they cannot be reunited with the positively charged nucleus despite the electrical attraction. The counter argument with electricity laws (Maxwell) - that, in order to make a full orbit, a centripetal acceleration must be attributed to the electrons whereby a form of radiation (light) must be derived from the movement energy of electrons - clarifies that a radical departure from this mechanical manner of conception was necessary. Niels Bohr (1885 -

say: nothing goes unnoticed. This realisation can be found in quantum mechanics in abstract fashion in the form of *Pauli's Exclusion Principle*. In explaining this principle, the opposing spin of an electron pair is often explained with a curious "what if image": how else can God distinguish between two electrons?

²⁷ Now consider Goethe's criticism of Spielmann (the terms "encheiresin naturae", used in the verses of Faust I, he heard from him in a lecture) just as pure substances appeared with the intervention of physicist, so does electricity *appear* here. Many chemical substances must be stored in suitable packaging to prevent spontaneous reactions. The isolation of conductors is analogue.

²⁸ Here, we must stop to consider Robert Millikan's (1868 - 1953) oil drop experiment of 1909. Tiny electrically charged floating oil drops in parallel electric and gravitational fields were brought to a *standstill*. The elementary charge could only be calculated using the discrete values of the electric field strength.

²⁹ Instead of gravity, it now concerns a nucleus that harnesses the electron via *electrical* force, which is what Newton first law applies to.

1962) introduced a new model, albeit with many question marks, which takes the many incongruities into account. The idea that electricity is only a derivative effect, appeared to Bohr and many physicists with him, insufficiently crystallised and electricity is still considered, despite the many incongruities, as a fundamental force with imagined centralised subatomic carriers with an opposing charge³⁰. All of this is the consequence of the abstract manner of thinking that people employ just out of habit. By using such nominal, distant ideas, we create this natural force in the world in a much more fundamental way than we would like to admit³¹. What we are dealing with here is one of the most grievous forms of “tunnel vision” ever.

In regard to experiments and technology with which we try to approach nature as moving nature, the presence of the artificially created and stored electricity can be just as intrusive as the controlled movements after nature has been forced to standstill discussed earlier. Because we are going against nature, we are creating and storing a counterpart to a normal heat process here. With this artificially generated and stored electricity (for which constellations offering magnetic resistance are often made) we make a form of

³⁰ Only if an electron switches to another *course*, the radiation is absorbed or released according to the laws of Maxwell. The special status that the course (“electron shell”) of an electron in an atom is given with this conclusion, makes way for a method of approach in which electricity does not need to play a role at all. The electron shell as surface element is causally related to the general global periphery. Conceptions in which a centre is the basis are *conceptually* incomplete if the peripheral aspect is not also considered. In the method of approach in which electricity is maintained and an incomplete concept is employed, a *second* centralised conception with an own localised particle is unnecessarily implemented into the conceived “course” of the electron. Attention would only supposedly need to be paid to the interrupted “orientation” of the given mass regarding the general periphery which is only present in the event of electricity. This would also make the various force fields of static electricity and flowing electricity (magnetism) qualitatively transparent. In nature, an immediate removal of that interruption is sought, that what can be seen in the rejection and attraction of static electricity. If immediate recovery is obstructed, the relatively much larger *magnetic* forces can arise which we see with electrical “flows”. These can be understood as the discharges delayed by *electrical induction* whereby the periphery interruption continues more deeply via conduction and *influences* a forced connection (in a shared gravity) of several material centres. This can be seen in the *image* of the behaviour of iron fillings in a magnetic field.

³¹ This idea coincides with Goethe’s idea that also *false* assessments by the nature in us are “expressed”. Here, it concerns the human manifestation of intuitions that result from human thought and in which we can take on the *form* of an abstract concept. What is first perceived in our consciousness as an *illuminating* part of the world content, leaves a *trace* in our mirrored thinking that we can study with logic. This concept form, when it first appears to the unknowing subject, is just as unimportant as the crystal glass of wine, because for those with thirst, it is all about taking a sip of the wine. But after thinking about it, the concept can still be seen as important. When a concept is conceived as a postulate (a *formally* preserved open space for the possibility of intuition, a mode of thinking which, for now, has lost its lustre but which makes us thirsty for possible knowledge, we create *logical* images that are important for our (prospective systematic) expansion of knowledge. But if we do not know how to deal with it, they can start *deforming* our knowledge. The postulate then, for example, becomes a rigid, overly general prescribed assumption and is actually a premature “aberration”. The usual definition that an aberration only subjectively creates chaos in our souls must be overcome when it comes to the creation of electricity. That which is imprinted along with this concept in our minds has physiological properties that resemble those of electricity. In electricity, we see the objective result of this “aberration” of nature. That we do not realise this immediately is the logical result of the aberration. Only once we recognise the *immediate* living intuitive concept as the more appropriate knowledge of the object, can we come to grasp the objective result of the aberration. It is not for nothing that the *unnecessary* abstractions of a theoretic lead observers to feel that the theoretic has a “cold” attitude towards the object which was supposed to be familiar. We are then dealing with “chimeras”.

coldness in regard to nature in its earlier form³². The heat that is stored in a conductor (from a stored or supplied electrical voltage) as an electrical current is the result of the disappearance of that coldness. This is a distortion because in proposed experiments it concerns the question of how nature itself takes shape in space and it does not concern the delayed, forced reaction of nature to the electrical forces that we have supplied in advance - blind to the existing dynamic configuration³³. The areas of forming and deforming bodies seem to lie close to one another. Still, this must concern a material distinction because only by an outer, manipulated deformation, electricity spontaneously occurs in nature. With just a registered measurement with electronic equipment, we have already a kind of artifice that can negatively affect the delicate natural process that we liked to initiate by our new experiment and must, therefore, be carried with the necessary caution.

In connection to the careful use of electronic measuring equipment, we must also be aware of the subtle distinctions in our basic principles and we must constantly verify conceptions (that steer the measurements). To what extent are certain conceptually advanced ideas, body forming and body deforming prematurely grouped together due to familiarisation? The deforming of a body surely suggests the outer movement potential of two bodies. When forming one body, the other bodies only have a modifying impact.

Because the boundaries of the body are not formed yet, the fundamental “forces” here must be assessed differently. We are now treading into the area of the ignored differentiation between electricity and light. A radiation effect that is registered via electrical measurement in relation with formed physicality can undoubtedly be seen as an “electromagnetic” side-effect. But this effect is not identical to the light that comes to exist as the first shape of the body and has an original non-spatial part³⁴. In this regard,

³² Now that we are focusing on the heat that occurs in correlation with electricity, it is important to consider the coldness as an *objective factor*. When we make stronger usable electricity, we create resistant constellations based on electricity made earlier, which was stored every time and we *stack* the delayed effect of the electrical charge. Where otherwise heat was released with immediate discharge (due to the energy investments borrowed from nature), the natural counterpart of that heat was an *active* natural object that undergoes a change and as a changed object still has a place in nature and in its new capacity, alters the course of nature. In the process of an ever-increasing electrical tension we only release the heat with the *use* of electricity at a considerably later stage. The change that the (other) objects undergo as a natural imperative is placed also outside the original *arrangement of time* and relates to the changed objects differently. There is, however, heat extracted from nature in generating the electricity without this necessarily resulting in the appearance of a changed natural object. The production of electricity can therefore be considered as a *creation of coldness*. A few centuries ago, physicists carried out a similar procedure - they created the concept of *airless* space. A vat in which a vacuum is created against the resistance of the air pressure. Even then we were already preparing for this unnatural constellation by the possible removal of the vacuum to cause an urgent *reaction* from the environment. Instinctively, you could easily associate heat with a “life activity”. We recognise heat as the life of a being that participates in existence by way of heat processes. But now something has been created that does not really exist (or exists in a negative way) but still provokes heat processes in nature as soon as it *disappears*. An electric charge can therefore be compared to nature, which is moved to make the first supply of heat, as a cold object that is placed in a warmer environment and influences the active natural processes.

³³ We can only distinguish a dynamic configuration from intuition on a spiritual basis, “*what something is*” is always the first question. If the original changes can still be approached as we *actually* want, then this earlier active will is crippled by the electricity and condition of a later occurring forced activity. As if not the being itself is active but the shadow of the being.

³⁴ In the philosophy of Aristotle, *fire* is seen as a *fourth* aggregate state of matter. Fire is according to this philosophy, “warm and “dry” because it gives matter, insofar as it is present in the three other aggregate states, *form* and allows it to appear in *life on earth*. This relates to the other classical elements *air*, *water*, and

we should also critically examine the field concept that in our conceptions is strongly tied to the Cartesian extension of an object discussed earlier and the Newtonian concept of force³⁵. Here, we want to study processes at a macroscopic scale that by thinking in particles according to Boltzmann, could only be examined within atoms. We suspect that many highly abstract concepts of quantum mechanics (that correlate to forms of non-locality) can also be approached differently³⁶.

earth as a non-spatial origin of the forms of nature. When light is discussed as the original shaper, it also concerns what borders are included in the visible spectrum of *infrared* and *ultraviolet* etc. These “borders” of the light require new qualitative contemplation. *Connecting* new physicality to old physicality in growth processes requires the heat aspect of infrared light. When heated, material borders are more flexible and eliminates the “dry” aspect of nature of the earth element (making it “moist”). The *division* in the present physicality (Aristotle: “drying”) to implement new physicality as a separate body occurs in the ultraviolet part. (In modern physics, the *ionising* effect of ultraviolet on atoms is known.) Einstein’s brilliant idea ($E=mc^2$), in regard to the relationship between the moment of *impulse* of radiation and the mass of matter is a modern elaboration of the Aristotelian concept making the universal limiting *two dimensionality* of the periphery of the cosmos possible so that we can better understand what energy is. The ideas that Aristotle summarised with the words “unmoved mover” (Physics, Book VIII), can then be seamlessly combined with modern insights. (The author is currently working on a study of this topic.)

³⁵ Accustomed to the abstract conception of a *vacuum*, the two logical Cartesian steps discussed earlier are used to explain empty space as a form of reality and is included as a field concept. This causes confusion when it comes to the derivatives with which the *creation of space* must be examined. The concept of time is here falsely related to the concept of space in a subordinate fashion and this results in the aspect of “being” going lost whereas otherwise it could still be independently expressed in time. Because also that which we can measure as the duration of time, *comes, and goes* insofar as we do not rely on abstractions.

³⁶ As discussed earlier, we carry out an analysis and a synthesis to recognise a body. In the analysis, we establish the 2 dimensional measured figured and for the concept of 3 dimensionality we must synthesise; this can only occur based on intuition. In intuition, the delineation of the prevalent concept is no longer all-determinative, but our spirit is open to receive the “higher” unifying entity of the juxtaposed content in those concepts. The outer cause in the *deformation* of an existing body and the cause of the *formation* of the physical body qualitatively differ. In this “field” where the physical still must be formed, but one can speak of a real process, we, on the basis of phenomena discovered by physics, are pointed towards the reverse connection between the measured accuracy of time and the amount of energy involved which was expressed via the *constant of Planck* (Heisenberg). With the smaller period of oscillation of a photon (colour), a larger amount of energy is connected via this same constant of Planck as based on this law. These conceptions, in which, according to the reminiscent idea of Christian Huygens, light is also introduced as a *wave*, the mistake is easily made of including within the *time span* of that materialisation process the abstract concept of “empty space” as a real factor and this unjustly turns time, as noted earlier, into a subordinate factor of space. The naive (visual) concept of space and time (the image of a wave) thereby obstructs the adequate concept and in our imagination a photon is then *mistakenly* considered as a spatially moving entity travelling at the speed of light c . If we had developed a richer conceptual world that correlated to the stated *space-transcending* aspect of time, this mistake would not have been made. This also touches on the area in which we as musical beings also have immediate sensory access via hearing. The realisation that in the phenomena of sound, it concerns the pure arrangement in time and therefore we must systematically speak of the *removal of an earlier-present* spatiality (Chronos devours his own offspring), has not been developed enough. If man wants to create a spiritual “space” in his perceptions (which is what we do when we listen), such a removal will be necessary. Juxtaposed to this realisation is the concept of sound or light as a “wave” distracting and bothersome. The inner ear is so designed that we see this removal of space expressed. In the ever-shrinking coils of the cochlea we are reminded of the diminishing of extension. In sound, the essence is made immediately known. Take for example, the miraculous capacity of older and younger penguins being able to find one another amidst a cacophony of noise. In their design, ears and eyes are, as senses of time and space, each other’s opposite. In the functioning eye on the retina the real image is present of what we see with it and this can also be demonstrated. For the physical ear, the perceived object of sound is completely absent in the spatial environment and *something extra* must be imagined understanding something about the forms.

Conclusion

In the way physics handles the natural phenomenon of electricity, it becomes clear that how man thinks and experiments about nature is mirrored in nature. Light and electricity are combined into the electromagnetic category. This results in a skewed conception of what light is and what electricity is on its own. Both in thought and in experimentation, science dismisses the obvious method of research which, among others, focuses more closely on categories we are familiar with. It is also important to realise that where something disappears in nature, nature offers the spiritual possibility of “concept forming”. The forces made to appear due to electricity can impede the successful execution of the experiment. Due to electricity, nature is forced to undertake alien forms of activities that impede its own initiatives. We also see that because of the intervention of electrical processes, our spiritual (conceptual) focus is not on things that matter, and it feels like we alienate ourselves from nature³⁷. This is the answer to question C.

D: How can we focus on finding natural facts and laws that indicate a mutual spiritual dependency between us and nature?

Goethe's idea of polarity

With experiments focused on the movements of nature, it could concern processes that are unseen within the natural environment (just like electricity). To find and grasp these for experimentation, we will have to set up our tests to enable nature to show and intensify such processes to us in their purest form. In doing so, we are letting the opposite happen when we “make nature standstill”. Goethe had also already considered this. In 1828, in a letter he wrote to Chancellor von Müller he mentioned the essay about nature named above - that he considered as a better (“comparative”) insight in regard to the conscious attitude towards nature - and declared that he had discovered a “superlative”:

*“The fulfilment, however, that is lacking in it
is the perspective of the two biggest drivers in nature,
the understanding of polarity and escalation³⁸,
first into matter, insofar as we imagine it materially,
its last form, insofar as we imagine it spiritually,
belonging to it;
the first is an always permanent attraction and rejection,
the last is always permanent aspiring escalation.
Because matter never exist without spirit and spirit never
exists or can function without matter, matter can also ascend
and just like the spirit, also attracts and rejects;
just like someone can only think once they
have sufficiently separated, to connect,*

³⁷ I would like to add a personal example here. It was once the custom of bus drivers to call out the stops via an intercom (not a recording) to keep the passengers informed. On one occasion the intercom was defect and the driver continued with this service anyway. My moral gratitude as a passenger was much more intense and genuine and this could almost tangibly be felt *throughout the whole bus*. A voice from the loudspeaker of an intercom cannot call up such a *moral* response.

³⁸ Finding a satisfying translation of the German word “Steigerung”, is tricky.

*and has sufficiently connected in order
to be able to separate again.”³⁹ iv*

These words reveal that Goethe saw man and nature as inseparable carriers of the spirit. There is a distinction between matter and spirit, but they are two thoroughly interwoven aspects. Because we also have self-perception, the experience of our own spirit is so strong that we can easily miss seeing the active spirit in nature. The same way we do not see the stars during the blue skies of daytime. This is how we too easily duplicate the distinction between body and spirit without demonstrating the grounds. We, as subjects, experience an inner contradiction in body and spirit. Nature is physical and also has a spirit but as a result of that subjective blinding it remains hidden and consequently, in the eyes of many scientists, unrecognisable because they believe we can only project the spiritual aspect, and therefore are only able to produce a subjective image of nature. In this superlative essay, Goethe asks his reader to look at it differently. The duplication is not permitted, it is just an illusion that we are opposed to nature; this is what he had already introduced in his first essay. He now establishes that in our perceptions, everything with two inherent movements of attraction and rejection falls apart in polarities. We must remember to keep the constituent and connecting law in mind. To start, we have objective reasons to begin with the immediately given contrasts in our pursuit of knowledge: our body, carrier of our senses, is itself the product of nature. The causal entirety reveals itself in our spirit as an augmentation to the sensory content and is therefore also not subjective. It is our task to constantly keep looking for the distinctions between body and spirit and to assess these properly. Because we can think in abstract conceptions in our self-experience, the deception of seeing the acquired conceptual content as our own thought is constantly present⁴⁰. But we also pay far too little attention to the undeniable “objective aspect” of the sensory quality experienced by the subject.

Let us consider a simple example. The sun warms a stone. In abstract physics, this is explained with the help of the sun’s electromagnetic radiation. This radiation has many frequencies and by way of the correlating vibrations in matter, energy is transferred to the molecules of the stone. The energies intensify the vibration of the atoms of the stone. When the stone encounters other material objects, the molecules of the stone can again release the absorbed energy. In addition, the stone will also lose the energy in the form of infrared radiation. In this example, heating and cooling are considered as movement processes of particles that react to forces at a distance due to their electrical charge. These charges regulate the “volume” of the vibrations. In this explanation, a paradigm is used in which the human heat experience is not a constituent element. The fundamental principle of labour: $W = F \cdot x$, has taken on this role. For many physicists, such paradigms are by now second nature and they are inconvenienced if they must do without. For them, the tangible heat and cold stand apart from the objectively conceived vibrating particles that play a constitutive role in the mechanical processes associated with nature. The feeling of heat and cold is a sensation experienced by one’s own body of which the living status cannot be clearly indicated. It is just slightly too objective to consider it as a solely subjective “dream image” in which the conceived content is not explained by the

³⁹ When Goethe wrote this in his citation from “die Natur”, it can be said that the earlier works of Goethe should not only be considered as a poetic approach to nature.

⁴⁰ In examining this, we must therefore absolutely avoid conceptions that include *a conceived aspect of perception* (non-verifiable hypotheses).

content of the sensory outer world.

If we go in the other direction, the perception of heat is treated as a constituent factor of and in nature. The sensory experience that a stone becomes warm in the sun is augmented based on the causality assessment with the belief that the stone becomes warm due to the sun. For this, the necessary concepts had already been prepared. Heat (as the opposite of coldness) takes many sensory forms: namely, conductive heat and radiation heat. The first concept was based on the observation that the stone is brought into contact with a warm or cold material environment and gradually absorbs or releases heat until the temperature is equal to that of the environment. However, we are also familiar with the experience of heat and coldness with fire or in the sun whereby cold and heat are close to one another, both in space and in time. Think, for example, of the scorching heat you feel on your face when you sit next to a campfire and the cold chill you may feel in your back. Here, heat and coldness are closely defined in space. If a cloud suddenly blocks the sun, a sudden cooling will occur. Now the demarcation occurs in time. We associate this experience conceptually with the broader experiences such as those which generally occur with light. This way of thinking (of separating and binding, see the last lines of Goethe's "superlative") also explains the temperature change of the stone due to the sun even though there no paradigms present. All known details investigated in physics about the specific heat capacity of matter can also be associated with it. We will need to look at those differences in heat capacity with a new perspective because these, in the rejected model, could only be deduced via the atomic structure of molecules and the degrees of freedom of their paired movements⁴¹.

Because not enough attention is paid to the details that correlate to the concrete perception of heat in the outer world, we also miss the indications for the spiritual qualities contained in heat. It provides the basis of the movement of our feelings that are be led by our sympathy or antipathy and spiritually connects us in our own self-experience with nature.

Raised and accustomed to a practice of physics in which the "standstill of nature" is the universal norm, it is really difficult to appreciate the full "knowledge ideal" of Goethe. The objectivity of nature is approached in abstract modern physics at a distance. In collision tests with "protons" physicists started looking for the so-called "God particle" that was supposed to solve the riddle of solid mass distribution in the smallest active particles. Here, the lines from Goethe's Faust provided earlier and which he used to teach chemistry, can be rhymed with another line to show where physicists got stuck:

"Particula dei!", they named the trial carried out by Peter Higgs;

*Please explain, what God?, is presented in the smallest particles mix.*⁴²

According to Goethe's sentiment, a study of the divine creation element of nature can be achieved based on a methodical strived inner harmony with nature.

⁴¹ Their unwillingness to allow the experienced phenomena themselves be the guiding principle of their realities and their preference for constructing some underlying aspect correlates with the earlier discussed confusion about speed as *reality* and speed as the abstract quotient of space and time. On the grounds of Einstein's contribution, this tendency, which Goethe had already overcome, should certainly have been overcome.

⁴² This study attempts to demonstrate that an elementary particle called "Higgs boson" exists and in interaction with other elementary particles may explain the permanent size of masses (rest energies) of those particles.

Up until now, we have only referred to trusted accomplishments in physics and asked questions to suggest the possibility of another direction of thought. From here on, we will work in the reverse direction. Let us begin with Goethe's research results. A scientist who is seasoned and familiar with Newton's paradigms, will consider parts of what follows as "woolly" assertions and will struggle with it. And that is, in all honesty, very understandable and correct initially. Much of what follows can only be touched upon. And much is incomplete. Trusted images must be relinquished in this paragraph and can always still be replaced by questions. This may sometimes feel like a step backwards.

Goethe's investigative instinct was derived from his inner spiritual wealth. He had to rebel against Newton; he had no choice. With this little visit to Goethe, the scientist, we hope by way of contrast to Newton's way of thinking and that of all modern physics, to make the special character of this way of thinking more tangible. The broad preconception that Newton's abstract thinking method is the most genuine, scientifically correct method, disguises its lob-sidedness and ensures that it is seen as the only proven approach that is prescribed to thoroughly understand nature. We will discover that the other method of approach gives much more meaning to the immediate experience of the sensory qualities than modern physics would ever allow. The abolition of our natural vivid approach was the result of an evaluation according to the standards of knowledge that we now consciously choose to set aside. The prescribed approach taken in its place distanced itself from the quality experience which means only the abstract registered verification possibility of subjective consciousness remained in science (see the example of the experience of heat)⁴³.

Goethe's colour theory as example of method

Described in detail in his publications, Goethe searched for the generative conditions of colour phenomena in the contrast between light and darkness. Each assumption is empirically tested. The idea that colours must be subjective does not need to be addressed. The colours blue and yellow arise from the first mutual disruption of darkness and light. Between blue and yellow, many variations of green are possible by an external mixing. The subtle movement of yellow appearing to us is muted in the movement deviating away from us made by blue. That is why we experience green as a calming neutral balance. At a certain "distance", green allows itself to standstill. If the proportion of darkness expands in the interaction with light, the colours blue and yellow will change to violet and red, respectively. Because of the red nuance created on both sides, the "flat" unification, such as with green, becomes impossible. The red (that is created from yellow with the same but only intensified generative conditions) is with its massively filling motion very prominent and the violet, that is created out of the condition of the receding blue, wants to dissolve and vanish into the distance. These motions⁴⁴ appear to exclude the negotiation of a new colour. But a unification is possible. Goethe sees that between red and violet, just like with green between blue and yellow, a colour is possible that can be approached from both sides of those colours. That is why he calls red and violet a

⁴³ This is often supported with the overly superficial assumption from knowledge theory that sensory qualities are only psychic projections.

⁴⁴ Such motions are direct experience possibilities that popular science regards as insufficiently objective to be considered in serious scientific study.

“Steigerung” of yellow and blue. The purplish colour made possible from red and violet⁴⁵ is seen by Goethe as the highest possible outcome of this process. While green exudes calm by being the balance between green and blue, this balance is also experienced in this enlightening colour, but the colour remains energetic on its own. When green is bordered by an exterior plane in the sensory experience, no conflict results. Nature is active in the array of foliage of plants. Purple, on the other hand, must always dissolve and densify from inside out and this colour only comes to fruition when it is offered without sharply contrasting bordering planes as an indication of atmosphere. This colour naturally occurs in the rarefied atmosphere of just prior to sunrise or just after sunset.

It must be clear that for Goethe, it not only concerned the subjective experience of colours. Although his colour theory can be fun for painters, theatre light designers and interior architects, there is more to it than that. In his colour theory, Goethe included a chapter on the ethical dimension of colours, therein pointing us in the direction of feelings and motives insofar as these are kindled out of strictly personal preferences. With the concepts of polarity and “Steigerung”, Goethe also touched on the natural meaning of those sensory experienced qualities. In this context, the experience of colour is evidence of the objective structuring principles of nature. With it, he attempted to connect the individual creative urge of humans, as practiced in art, to the creative processes of nature itself. We will get back to this in more detail in part E.

Mirrored principles of inquiry

In the known spectrum of white, green is visible as the middle colour and purple is missing. In the spectrum of black, that can be duplicated precisely with a prism, purple is visible. It is the middle colour of the spectrum while no green is visible. This configuration is rare in nature. For Goethe, the personal discovery of the possibility of the spectrum of black marked the moment in his life that he could no longer ignore colour theory. Finally, he was able to introduce something with fervour that opposed Newton’s research method and he wrote his polemics.

With several phenomena found in the rainbow as a guide, we will try to present the essence of his view of nature.

The rainbow is an objective natural phenomenon that occurs when the sun directly shines through raindrops. To fully understand this phenomenon, we first focus on the individual raindrops (even though we cannot see them individually when we look at a rainbow). In each raindrop, the environment of the raindrop is mirrored. If the sun appears in this mirroring, the light-dark contrast of the sun in the sky is so large the specific rainbow colours can appear. Depending on the angle with which the observer looks with his back to the sun, in the mirroring of the raindrops the sun will appear as different colours. The middle raindrops right in front of the observer only show a white mirroring of the sun. If the angle of observation enlarges, the environmental image of the raindrops shifts so that, at a certain moment, mirror images are formed in which sequentially, violet, indigo, blue, green, yellow, orange and red will appear until the angle is so large that the sun has

⁴⁵ The colour purple has been briefly touched on here. A colour that comes close is the delicate colour called “peach blossom” by Goethe. This colour is generally summarised as a mixture, not monochromatic, and therefore subjectively defined. But, as mentioned earlier, we have temporarily set aside this “knowledge”.

disappeared from the mirrored environmental image of the raindrops⁴⁶. The sky around the outside of the rainbow is therefore always darker than the inside where the sun is mirrored white with the least deformation of the image⁴⁷.

The rainbow itself (the sum of all mirrored images) displays the colour green in the middle and towards the inside we see the transitions to blue, indigo, and violet and heading outward, we see transitions to yellow, orange and red. The transitions are gradual, and yet we still experience the division of the colours as several zones. Rainbows appear most vividly in the morning after sunrise or at night just before sunset because they are then high in the sky and a larger part of its circular form is visible. Rainbows appear at a certain, undeterminable distance from the observer, but you cannot walk to it because it recedes as you walk. The rainbow therefore appears to be separate from any fixed place and only holds your position on earth and the position of the sun as reference points. The daily setting of the sun determines the East-West orientation. The position of the observer is therefore not a coincidental position from which you can see this natural phenomenon and is a constituent part of the whole. The viewing angles are fixed, and to see the entire rainbow, the observer will look towards the direction of night.

For Newton, the rainbow was the basis for his optics with the formal assumption of seven different coloured material lights orbs swooshing through space. Goethe challenged the idea of ready-made colours popular at that time. But the rainbow was also given special treatment in his colour theories. Considering its properties, the rainbow can be seen as a large, combined entity of indications in which aspects of the relationship of the spirit to the matter of the world can be explained visually. Here, it concerns a sensed processing of the combinations.

The rainbow shows how the colours yellow and blue mix in the middle to create green⁴⁸. This green connects to the idea of the plane in which we place the rainbow and see from a distance. The yellow comes up and out of that green and blue recedes to the background. Whereas yellow and blue culminate in red and violet, the “Steigerung”, however, is not completed. Red breaks off fairly abruptly at the darkness, while the violet less clearly shows where it breaks off because it culminates in the lighter part. The purplish colour is missing⁴⁹. The rainbow, due to the depth effect of its colours, can be

⁴⁶ The format of a raindrop is so tiny that it is difficult to see what is taking place exactly. That is why an *extra minor* experiment with water in a thin-walled glass ball will help clarify matters. In the glass ball filled with clear water (as a replica of a raindrop), a small pointed misshaped image of the sun becomes visible on the darker edges of the ball at a certain maximum angle with the actual sun which grows as the angle gets smaller and is followed by a splitting which reveals two deformed images. The image that remains closest to the edge travels further out and ultimately disappears over the outer edge of the ball while the other, now purely white image of the sun moves toward the middle of the ball. The first pointed and round image of the sun is red to which orange and then yellow are added as the image turns elliptical. Just prior to the full split, when the edges of the two suns are still touching, green will appear. When the two light images that still have an aura-like encasement disperse, an increasing darkness will permeate between the images; blue, indigo, and violet will now be visible.

⁴⁷ Diametrically opposed to these described images, you will also see two smaller, weaker images of the sun in the water ball, but the order of the deformation is reverse. The “secondary rainbow” that results from these images, is remarkably less vibrant and only visible with optimal weather conditions. Its colour sequence is also reversed.

⁴⁸ That the green in a rainbow is considered monochromatic in physics and therefore cannot be a blend of blue of yellow, is not the point we are making. In the aspects we are about to delve into, as mentioned earlier; it concerns our direct fluently grasped impressions.

⁴⁹ We will get back to this later, because of what this “non-appearance” is telling us, as we shall see.

seen as a small “tunnel”. The rainbow displays itself as a passageway that floats between the darker exterior close-by, where it begins, and ends at the lighter interior of the sky further away. (The overall depth experience required to envision the tunnel is, by the way, a feeling which can easily be overlooked if you pay no attention to it.) The perfect circle segment of the rainbow can instinctively only be experienced as un-earthly symbol⁵⁰.

In the rainbow, intellectual clues can be found that correlate to the formation of matter. The generative conditions of the rainbow are connected to the day and night rhythm, the rotation of the earth on its axis and the position of the sun. Because of that rotation, nature, with its heat processes, is constantly subject to a rhythm of permanent body forming (crystallization) and the dissolution thereof. It also contains a link to the rainwater that in the form of drops, supplies the membranes that corresponds to the (for the naked eye) invisible cells of a biological body, just as the raindrops are invisible as long as one sees the rainbow. Also remarkable is that the angle at which the green light occurs, the characteristic angle of the pentagram, is the golden section. A graduation scale that can frequently be found in the rhythmically arranged (inner) boundaries of equal parts in organisms.

Scientists will be sceptical of derivations coming from such images to determine the direction of an inquiry. Images can too-easily arouse our prejudices. Still, we hope we have demonstrated that scientists always work with images to give his knowledge form and to further develop it. The Cartesian-Newtonian methods employ a concept of space that is derived from still-standing images of our visual and tactile abstractions. It is also a very dogged method. The superstition that light beams whizz amidst the source, an object and the target, our eye, by reflection, has only been overcome by a few scientists⁵¹. It is important to realise that our immediate perception of light is ideal⁵², which makes the assumption of moving light particles amidst the source, object and subject irrelevant.

Conclusion

We have touched on Goethe’s colour theory and tried to approach it as purely as possible. This includes the given example of seeing man as an observer and as a thinker while being at one with nature. Experiences that are attributed to the subject as not real objective factors (based on the accepted method of approach and are explained by research as mere reactions) cannot anymore be excluded as being part of the natural phenomena. Darkness and black are not necessarily the subjective answers to the mere absence of

⁵⁰ The symbol that God gave to Noah at the dawn of a new era after the great flood so that he could make himself known. Genesis, H 9: 12-17.

⁵¹ Having worked with Einstein, the Dutch physicist Adriaan Daniël Fokker (1887- 1972), among others, departed from this concept. To counter the determination of the speed of light, he declared as his Holy Grail that: “emitted light does not exist”. (5th assertion of his 1913 dissertation)

⁵² The imprint made in the brain by the content of a concept is similar to how a lens of an eye imprints an image on the retina. Just as how with the intuition of thought we are present inside an objective world, due to the light in the eye, we are *immediately* present in the outer world. The retina is not a channel for sensory input if the brain does not hold the thought content, but it is required to connect the body as a useable instrument for the experience of self to the experience of light. The sensation of light that is electrically stimulated or created by pressure on the retina must be studied much more closely than they did in the 19th century under the influence of Kant’s ideas. It appears from embryonic phenomena that the retina is made of *brain matter* connected to the eye sockets.

light in nature. Darkness is an objective aspect that must be present in colours and should therefore also be used as a factor in an explanation because light must actually also be disturbed by darkness before colours can appear.

We also stopped to consider how spatiality does not manifest itself as a measurable distance between the observer and the object. In the rainbow, it is not necessary to identify the exact location of the colour in relation to the surface of the viewed object. Of all the various colours, green harmonises best with such a location. These phenomena acquire meaning if we can set aside the concept of nature in which nature is already present before the perception in the form of ready-made spatial objects. Modern physics, which since Einstein's contribution has begun to understand the role of perception as constituent factor, should applaud Goethe's method of approach as a prelude to its paradigm shifts.

We have thereby provided one answer to question D. Important to remember here is the role of man as an ongoing observer and this can only be comprehended if the actual qualities of perception introduced by man are seen as spiritual elements in which nature, via our body, is a factor and makes it possible to experience the transient form⁵³. As long as this aspect is not recognised, we fail to understand Goethe's concept of "Steigerung". This insight is only bolstered when we consider that nothing can replace the immediately provided qualitative content of the sensory experience. Abstract physics, first following Newton, did not feel the need to be held accountable for this. And the incomplete knowledge theory of philosophers that allowed itself to be misled by the physical analysis of the status of the sensory content, unfortunately failed to point this out.

E: Can we, based on the facts concerning our spiritual interaction with nature give new meaning to our moral responsibility in our conscious intercourse with nature?

Technology

The kind of technology that dominates our world today, is only possible because nature allows itself to be put to a standstill and this paradigm has a forceful, one-sided impact on nature. When man cognitively creates space for the possibility of another method of approach to nature, this forceful technology shows its true colours.

It is a technology in which matter seems to just have "fallen" from the sky, and which is compiled into a uniform whole to make a device or instrument from it. It further also often incorporates the "intellectual mistake" of ascribing electricity with having a fundamental role in physical derivations. This mistake can be seen in the technological products that harm the environment. Nature is constantly being forced to respond to recover. When electricity is used as energy source, concentrated forms of magnetism occur that hinder the primary spatial movements of nature. That which is present in nature as "dead matter", is kept, despite the latently present movement possibilities, within the domain of that dead matter.

⁵³ The preconception that perception only occurs as based on offering something out of a former absence, must be overcome. It is equally true that something that is former present, can only be taken away by sensation.

With the other form of technology, in which we search for a connection to the (divine) movement impulses of light (and sound⁵⁴) the spiritual aspect of our consciousness is given full attention. Its share that may be isolated due to a too-abstract method of approaching nature, is again connected to nature.

“Only once we know what we can expect of the world, will it be easy for us to prepare for it,”

wrote Rudolf Steiner in his book “The Philosophy of Spiritual Activity”. Opposed to the increasingly more complex technology of forced movements, a technology should be developed that is much more basic, because man now better understands that he can leave many movements to nature itself.

There have always been people who intuitively followed their own path and managed to create a following. This is how in medicine, as a counterpart to today’s technology that works with concentrated chemical substances, the controversial technique of Samuel Hahnemann (1755 -1843) was practiced. The work method involves the rhythmic dilution and division of matter whereby specific reactions in the organism can be expected. Step by step, the inertia in gravity is reduced. Until today, this method of dynamization (used in homeopathy) is still not fully understood enough and results in much resistance from scientists. Perhaps a rational principle can be developed if we focus on the primary movements of nature. Via rhythmically acquired dilution of matter compositions, space for movement is provided to spiritual beings that were forced to come to a temporary end point (saturation point) of their functionality in the manufacture of enclosed purified chemical substances (remember the lines from Goethe’s Faust). The scientists that are accustomed to getting nature to a standstill, believe that the chemical matter, because of its molecular properties, is active and they have forgotten that this purified form of matter is merely storage, whereby its being cannot be active. The huge misunderstanding made by some scientists is witnessed by the rather cheap criticism of homeopathy, which is portrayed as ridiculous, and only the end concentrate of produced solution is considered. Every homeopath also knows that a drop of a mother compound immediately dissolves in the oceans⁵⁵ of the world, no longer functions.

Portents of new possibilities in which a psychic-spiritual effect is stored in nature on the grounds of collectively recalled feelings of man can, for example, be found in the research of Japanese scientist Masaru Emoto ((1943 - 2014). He made the effect of feelings visible in ice crystals of water. When making those ice crystals, it was empirically demonstrated that such a material endpoint as ice can also display a spiritual forming factor.

The English sculptor John Wilkes (1930 - 2011) sought the influence of non-human spiritual beings. With artfully shaped “flow forms”, natural forms of flows in water⁵⁶ are

⁵⁴ In this consideration, we touch on the phenomenon of sound less because we have decided to use the colour theory of Goethe as the counterpoint to the Cartesian-Newtonian method of thinking. If we had focused more on Johannes Kepler, the meaning of music and sound would be handled in depth. As we said earlier, light and sound, as immediate qualities, can be seen as spiritual content in the first instance. Nature is so engrained into physicality that we connect the body to nature via this spiritual content.

⁵⁵ Many critics compare this image to homeopathic dilution. Scientifically, they believe in the “number of Avogadro” with which it can be demonstrated that the chance that the bottle with a homeopathic solution has one molecule of the mother compound is smaller than that of winning the national lottery. With the image of the oceans, they would like to delude a broad audience.

⁵⁶ Water was for Thales van Milete the material beginning of everything. For Aristotle, water was the transient opponent in form to fire. We do not get any further with the dogmatic, misunderstood assumptions of old.

supported that make the water more suitable as carrier of life processes and can enhance spiritual influences. Water can hardly be compressed, has an extremely high surface tension and in certain temperatures, strongly deviating properties and behaviour when compared to substances with a similar chemical composition. It has, for example, between zero and 4 degrees Celsius, a negative expansion coefficient (the best known of many anomalies). We can focus on these properties in flowing water. Due to the missing elasticity and high surface tension, water must form layers that slide alongside each other when going around a corner. We can then focus in on the role of the anomalies of water within those layers⁵⁷. If it can be established that these layers consist of specific heat structures that (just like the rainbow in regard to the falling raindrops) have a certain independence while the water materially flows further, we can see a connection possibility for spiritual beings; the heat organisation of the water layers functions as a “sense”. The flowing water thereby provides perceptions for such intelligent beings with which a form of “self-experience” in water is possible⁵⁸. For a spiritual being, this can be reason to enter into a relationship with the “informed” water. In the old days, for example, rivers were associated with mighty spiritual entities⁵⁹. This instinctive geological knowledge can now seriously be examined.

There is also a reference point for brain physiology to be found here. Older philosophies attempted to solve the body-spirit problem in all kinds of ways⁶⁰. Before we continue with this, it is important that the specific physiology of a sense includes the connection to the psychic conditions of the living being. Every sense must possess a physiological independence that disrupts the division of substances of its organisation. The psychic being is then driven to find unity via the spiritual path of separating and connecting (thought or a form of thought)⁶¹.

There is, however, nothing wrong with Greek wisdom, it is the cradle of modern physics, if we treat it with respect and appreciate it whenever justified.

⁵⁷ With the help of quantum theory, French researcher Marc Henry focused on the anomalies of water and discovers that water can *store* information by *earlier* contact with other substances.

⁵⁸ No matter how commendable the diluting solutions of French Nobel prize winner Luc Montagnier are, his research still takes place within a materialistic setting when he speaks of “the memory of water”: In Goethe’s naturalist view, water is merely the *instrumental* fact in regard to the connected *spiritual being* that has the memory.

⁵⁹ The intimacy between water and life generating forces was in ancient times, symbolised by three of the five Platonic bodies. The tetrahedron of fire, which is its own *dual* form, represents the possibility of *self-experience* opposed to the dual forms of the icosahedron and the dodecahedron belonging to *water* and the imperishable “*ether*” respectively and which thereby exemplified the *realisation activity* of the same being. (With the term “*dual*”, the possible change of angle and lateral plane is intended whereby the bodies can merge and the same laws remain intact at a higher level; the term here therefore has nothing to do with the global term “*duality*” used earlier in the essay.) The dual relation of the two other bodies, the cube and the octahedron expresses the completed form in transient bodies, forms that stand stable (as work done by the being) and forms that travel through air (gasses) and must be constantly fed; a part of which we can immediately experience as the sound of a being.

⁶⁰ In the formation of brain coils along which clear brain fluid flows, we create a recording organ based on repeated similar experiences and can abstractly connect bits of concept intuitions with each other via “*free*” thinking. In medieval philosophy, even though knowledge of physiology was still limited, they considered the need for a “*sixth*” sense as a unifying factor of the impressions of the various senses. Here, it concerns very tiny crystallisation processes. In dentistry these days, fillings are hardened with ultra-violet light. An interesting question here is how the *light* of intuition is used for crystallisations in brain tissue.

⁶¹ Brain damage that results from haemorrhages and turbidity of the brain fluids cause great unrest among many patients with their terrible side-effects involving the conceptions related to actions. The

A fuller consciousness

As soon as we see that man, via the specifically human form of consciousness of the self (in his mind), due to his first thoughts of himself, is responsible for the feeling of standing outside nature, the road is opened for the development of another form of consciousness. With this realisation, man can again feel a part of nature. Here too, the image of the rainbow provides a clue. The view of man as he sees the entire rainbow is always in the direction of night. In the morning it looks back on the night that recedes in the West and in the evening, looking ahead towards the night that arrives from the East. Always looking away from the sun that rules over his daytime consciousness. The poetic “visionaries” of the Romantic era started to understand the valuable meaning of the night. But the science based on Newton⁶², with technology in its wake, and changing the earthly environment in no time at all, quickly distracted man’s view from the early Romantic ideal and we hardly had any time at all to contemplate which dimensions were present in the night. Take Novalis (Friedrich von Hardenberg, 1772- 1801), for example, in his Hymns to the Night poems. Novalis referred to the “motherly” side of the darkness. With the generally accepted denial of the darkness we hardly see the potential that is present in the night consciousness to which we surrender when we dream and sleep. Our culture is distinguished by a dualistic stance⁶³ regarding the day and the night. Because of that dualism, we take a much too indifferent attitude towards dreaming and sleeping and dilute its meaning for nature.

And in the daytime, we take the unjustified position that our consciousness merely registers⁶⁴. The registered form of consciousness of the naive rationalism is intensely studied at schools and is focused as daytime consciousness on practical, often professional objectives. Anyone with a little common sense can understand it to a certain degree. The study of night consciousness is generally ignored, even though there is much to be learned from it. It starts, of course, with generating interest for it and formulating questions. Because our communication is strongly aimed at daytime consciousness, it is often difficult to express how we experience our nights and what we experience. There is often no uncertainty about the specific experiences we undergo, but there is much doubt if we will be able to express in words what we experience. This is especially the result of a lack of appropriate concepts. In open, free communication we will have to develop such concepts. It is possible to stay alert while falling asleep as well when you wake and to focus research on these two moments. Everyone is familiar with the experience that the

spirit can no longer come to rest because the concepts insufficiently die off and do not convert to something new.

⁶² Newton’s light studies are typified by his atomistic treatment. The real existence of darkness is denied by merely treating darkness as the *absence of light* as a formal “nothing”

⁶³ The concept synthesis of two opposed facts is what is missing in the *dualist* approach. When a *polar* contrast is discussed, however, the synthesising concept is leading. Because sleep is distinguished by an enormous weakening of consciousness, the conscious access to that unconscious world becomes doubtful with the dualist approach. If there is reason to adopt the polar approach, there is no conflict with consciousness initially if we delve into the unconscious area without damaging the intrinsic value of this area.

⁶⁴ Physics based on Newton’s ideas has by now come so far with its discoveries that it simply *must* accept human consciousness as a co-constituent factor. Quantum mechanics is raising questions that all lead in this direction. Well-known is Erwin Schrödinger’s (1887 -1961) created image of a cat. He summarised this in the image of a cat in a box of which it was uncertain whether it was poisoned or not. Both possibilities could be possible simultaneously until we look inside the box. A more pregnant image of this dualism cannot be imagined. This is also illustrating the imminent need for science to consider a different method of approach.

night brings us insights in the form of incursions. This often occurs after we have “racked our brains” to find a possible answer to a certain issue and have a gnawing feeling of having walked around without finding an answer. What we express as “racked brains” can be taken literally if we consider the contribution the night makes. We take such grappling issues with us into the night, and immediately upon waking up, often feel refreshed and able to arrive at new insights. One can even make a habit of this, which will reveal how such new insights relate to one’s own development perspective and motivate us to incorporate them into the already formed, communicable general knowledge. That the night can bring us insights only really becomes clear when focus on what we can call the “unicity” of our individuality. In the general outside world, the answer is not yet present in our thought process and we cannot search for it there. That is why the rainbow points out the thresholds of day and night.

Via the night, it can be experienced that movements of nature have a hidden interior and can also be considered as movements which we long for to compare. Along this road, a form of technology can be developed that records these desired movements in its design and against which nature shall not resist. After all, it is implicit in this insight that it consists of movements of nature. It can be expected that this is the road to discover what the meaning of music and language is for nature⁶⁵. In western philosophy, it was Arthur Schopenhauer (1788-1860) who was the first to contemplate the relationship of our will and music. Influenced by the philosophy of Kant, he steered away from the conscious pole of man and searched for a liberating world view in the pole of the will which is shrouded in darkness. But, blinded by Kant’s overly general categorical imperative, he failed to stress the individual path consciousness first must undergo.

Friedrich Nietzsche (1844-1900), who owed much to him and Richard Wagner (1813-1883), was forced to reject these early mentors in his later deliberations to establish his philosophy of individual freedom. Such historical developments seem to indicate that the time is ripe for the transformation of physics so that an individual path towards appropriate technology can be possible. Promising liberation, current technology often processes the opposite and standardises man into externally predictable behaviours.

The rainbow and the new “artes liberales”

A key indication also seems to be found in the colour that does not appear in the rainbow: purple (the delicate peach blossom colour). Purple, the opposite colour of green, is often invisible: the sun is not reflected in this colour⁶⁶. Rudolf Steiner’s remark that this colour is indeed present, namely in the skin colour of man as the “incarnate”, seems at first instance to be an artifice in order to arrive at the full “circle of colours” of Goethe. But this indication can certainly be justifiably applied, and it strengthens the eloquence of the rainbow as the guiding principle for physics research named earlier. How and when a rainbow appears, also indicates the secret of the night spectrum and the inner light that is inherent to the functioning of the eye. Man observes with the sun behind him and sees the raindrops in the outer world. This is how the location of the rainbow of familiar

⁶⁵ It is generally known that Goethe found it important how a law of physics was expressed in words. The law of physics should continue to be viable in the “gesture” of language.

⁶⁶ The colour can sometimes be found in the so-called “extra bows”; small overlapping additional rainbows that can appear with weather conditions that feature very tiny raindrops.

colours of the day spectrum is determined. The observer and the sun are perpendicular to the plane that we connect to the arch of the rainbow where especially the colour green harmonises with its own gesture. The point is that we can now come to realise that we encounter colours in the outside world with which we have already forged a unity from within. Precisely because, subjectively considered, we are spiritually connected to light, we are able to surrender to the objective physical world outside our own bodies via the colours. And this thanks to the beaming sun that makes the colours appear in objects. The colour that remains behind in us after seeing the rainbow and with which we as human spirits remain attached in the body, is purple. What appears on our skin, is the colour element in which we (spiritually) recognise ourselves most and which ensures our independence⁶⁷. This process of being true to yourself and going outside is a living event that gives meaning to colours.

Steiner's reference should be placed in a larger context and we will hope to do so with several new thoughts towards the end of this essay. In lectures on the existence of colours⁶⁸, Steiner focuses on this meaning. He distinguishes between "image colours" and "shine colours". The image colours have, in how they appear, a connection to the four "kingdoms" of a world that is both a material and spiritual unit and are interrelated through their movement: he refers to the colours green, purple, white and black. In our emotional world, these colours make it possible to approach this world abstractly. The shine colours, on the other hand, immediately call up a desire and if we follow that desire, we embark on targeted movements that connects or disconnects us as living beings from the environment. Here, he refers to the colours: yellow, blue and red. The colours orange, indigo and violet are not explicitly categorised but can in our perspective, be seen as having more of a shine aspect. These concepts can only really be understood once we have experienced them in various ways and for longer periods until we feel we can "read" what they are saying.

Steiner summarised these concepts in seven "statements". These can be associated with the colours as pregnant expressions and make meditative training possible to delve more deeply into related meaning and emotions. We will examine how these statements relate to the appearance of the rainbow⁶⁹.

1. Green: "the dead image of life". In our perspective of the rainbow, we can experience that what Steiner says about these colours is also expressed. In the "flat" green plane, our spiritual relationship with the coloured bow ends and the abstract independence of the object consciousness is created. The green does not resist the sharp delineations. As one of the three image colours, it represents the character of the image best. The life that appears in the plant world comprised of minerals is mostly green. What appears as a differently coloured flower or fruit from a plant is already the expression of more than just the basic life process.

2. Purple: "the living image of the soul". Here Steiner refers to the human incarnate as a fact of nature. The sun can directly affect the skin and create a painful redness

⁶⁷ The perpendicular direction points toward the green plane on the mathematical *imaginary factor* that is suspected to also be part of the inner mobility of this colour. The movement of yellow and the movement of blue that are each perpendicular to green are not neutralised but remain perceptible in this direction.

⁶⁸ See GA 291a, 3 speeches held on 6, 7 and 8 May 1921 in Dornach, "Das Wesen der Farben".

⁶⁹ Due to the great parallels found in Steiner's and Goethe's methods of approach the reader will surely encounter some repetitions of correlations made earlier.

and darken a lighter skin with pigment. But what makes an incarnate an incarnate is created from within. If there is too little life energy from within, the skin turns pale and green, with much life, it blushes red. Steiner describes how this colour, even though it is an image colour, is difficult to retain by nature. It tends to appear and disappear and represents the life process and is therefore a “living” image that directly follows the movement of the “soul”. According to Steiner, it can be reproduced from unruly waves of black and white illuminated with a red shining light. If we consider the rainbow, we see it displays the reddish aspect in two different places. On the outside of the red zone that is clearly broken off by the dark sky outside the rainbow and on the inside where blue is created by way of indigo violet and a colouring that shades red. The border between the violet zone and the lighter air is more difficult to distinguish than the red zone bordering the darker sky, but it’s there⁷⁰. Both on the violet side and the red side there is no room for purple, considering the generative conditions. Because of the strict division of red and violet, purple red will not appear.

3. White: “the soul image of the spirit” is how Steiner characterises white. The finite distance from me to the rainbow - that can only be perceived by me indicates that it concerns the private domain of the soul. The “white” sun is mirrored before me and is the less deformed image of the sun in the raindrops⁷¹. The lighter part of the sky we see under the rainbow confirms the characteristic of white as the illuminating spirit from which the soul finds truth. With the pure white light, we see, for example, also the established colours of matter of things as they are.

4. Black: the spirit image of death. When I look at the outside of the rainbow, the air is darker there than inside the rainbow. My comparative perspective enables me to notice this. This is how I can experience the image of the dark shell in which the night is mirrored as the counterpart of the sun. We cannot live in complete darkness and we die there. Only our spirit can give death meaning. It is with good reason that we usually write with black on white paper (or with white chalk on a blackboard). In this area of sky between the rainbow and the duplicate rainbow, the raindrops still contain a mirroring of the sun but only on their rounded outside and they are dark on the inside. The life inside the floating illuminating raindrop image is absent.

Due to the link between “image of” and “shadow of”, the image colours form closed circles between two of the four kingdoms of the world and provide torsional play for the entirety. The spiritual, psychic and the living and the dead are in constant motion and interconnected. The spiritual image of the dead that closes the circle and thereby continues the movement, comes from us, and demands our individual consciousness.

Steiner also discusses colours: he calls yellow, blue, and red the “shine colours”. As a colour they are also images, but they hold the shine, and relate to an immediate activity

⁷⁰ If we again look directly at the mirroring of the sun in the artificial water ball of the experiment, we see that the violet in the light of the sky under the rainbow also dissipates just at the border. The second splitting of the sun image at the edge of the ball also disappears fairly abruptly. The darkness is then no longer bordered by light on two sides and thereby the violet colour disappears. The disappearance of the red colour with the other viewing angle takes place at the outer edge of the water ball, but insofar as the two formed images come together, squeezing out the red that disappears in the end and only darkness remains.

⁷¹ In the water ball of the experiment, the second mirroring of the sun in this (angular) area is absent.

of the observing subject and therefore possess a wilful nature.

5. Yellow: the shine of the spirit. The yellow beams out and to the front from the green bow. At the perceived perspective of the tunnel, it opens out from the middle green. According to Steiner, the experience of yellow dissolving outwardly makes us happy and awakens our spirit. What was first round in the drop (water ball experiment) as the image of the sun, is now an oval that turns yellow and opens up from inside for a white brightly lit core.

6. Blue: the shine of the soul. The blue beams inside and to the back and we associate this with the depth of our inner world. This intensifies near the green zone and gradually releases itself from the rainbow in the lighter inner area. The rainbow above the landscape shields off an inner area. The soul can only develop in an inner world where it encounters the light of thought. We also see that regarding this thought-created illuminated world, the soul must be modest because it is not all-knowing and encompasses the whole world⁷².

7. Red: the shine of life. Red is the most clear and striking colour and borders the entire rainbow. Red shines on its own and does not require a certain radiation impulse from outside as yellow and blue do. Red with the gesture of fullness circles around the border and immediately ends with an abrupt transition to the darker air outside the rainbow and represents the maximum that can be absorbed in life that darkness provided from outside. Red does not ask for a border inside or outside but does allow a border without losing any strength⁷³.

In the three shine colours it concerns the desires that arise in us to unite us with the world. The image colours indicate how we can enter the four kingdoms of the world.

In the Middle Ages, science began to study the seven free arts. The “quadrivium” (mathematics, geometry, music, and astronomy) formed the areas of study which would enable one to stand firmly and with a beta-rationality in the objective world. The “trivium” (rhetoric, dialect, grammar) mostly concerned the development of individual spiritual powers and feelings needed to achieve an alpha-rationality to penetrate that world. The parallel with the stated seven colours is striking.

The historical rise of René Descartes shows that the useful teachings of the Middle Ages, at the start of the 17th century, had become “overripe” intellectual routines. Man at that time no longer related the seven arts via the intellectual striving with nature because this relationship had become commonplace; they now were merely the impetus that led to an entanglement with our own “sense of self”⁷⁴.

With the classification of colours into four image colours and three shine colours, a new modern path of learning has begun. For the time being, the development of technology based on these free arts, is still in its infancy.

⁷² In the water ball, as an example of an enlarged raindrop, we can clearly see that darkness is absorbed by the lighter boundaries that come from the two images of the sun and shroud around it.

⁷³ If we look directly at the mirroring in the water ball and start moving from the yellow and orange image, we see that the red light begins to shrink at the round dark encasement until it becomes just a stipple. If we look in the other direction, red remains visible as the outer “aura” of the two sun images with all its deformations.

⁷⁴ “I think therefore I am,” is the only certainty he arrives at, but despite his efforts, he is unable to apply this certainty into the foundation of science.

Moving between the heart and the head

The developments within physics along with the ensuing technology have resulted in us, the feeling of being very separate from nature. We know we live in a body that is built of natural processes and we notice that via the body, we are also included in nature as a thinking observer; while thinking, we produce concepts about our relationship to nature.

Along the way, we come to believe that along with this vision, we ourselves have been created by complex natural processes which we increasingly yearn to understand scientifically. In this school of thought, the immediate perceptions we gain from nature with our bodies and which are a result of largely unknown processes of these natural bodies cannot be considered as reliable events regarding the character of nature. That is why, the qualitative part, which consists of all kinds of contrasts is scientifically considered as a subjective effect and via analysis, is this empirical knowledge merely the moment necessary for the registration of the actual ever-changing outside world. This means that we see nature itself as a vast given system of time-space (*res extensa*) that only provides quantitatively established “events” via the necessary laws. Within that, we have evolved, according to biology, into natural physical beings. Within this system, we experience (in our “soul”⁷⁵), a world of subjectively defined qualities. And no matter how valuable this qualitative element is for human life it cannot be included as part of the objectively active components of nature. In nature, a monochromatic red nuance is represented by a vibration in an electromagnetic field by a wavelength of approx. 700 nanometres and a nuance of violet has a wavelength of approx. 400 nanometres. Under the 400 nanometres, you will still have active radiation, but then via the invisible ultraviolet and with 800 nanometres, we are dealing with the invisible, but perceived warmth of infrared. These wavelengths are not just randomly established lengths but correspond to the measurements of bodily processes that can be registered in the diameters of atoms and molecules that are equidistant. They influence the molecular and atomic composition and the temperature of the matter. The “peach blossom colour” discussed earlier, is, according to this viewpoint, not monochromatic and has no corresponding wavelength and must be a mixture of many colours. All of the natural laws that have been meticulously and clearly established with this view of nature, ensure that this conception (no matter how abstract) is highly suggestive: Man is a product of nature and that which man experiences directly with his senses, is an incidental “second derivative”⁷⁶.

The concept of nature that is discussed under points D and E, is diametrically opposed to the prominent vision of our time described above. To illustrate this, we can also use the didactic example of the transition colour of red and violet. The clue, as seen in the rainbow where this colour remains behind in man as the complimentary colour of green, should be further examined. Man, as a living being that occurs in nature, is regarding its own nature “an alpha and an omega”. To be experienced, the colours do not need to be transmitted through space as read-made entities of the object to the subject. According to this viewpoint, something quite different is happening when we perceive the world. While observing, we connect our spiritual, non-spatial light in the body to the darkness of the matter and at that moment we experience colours. The body is a product of nature and is incorporated into it, but the spirit is not without our doing, connected to nature. Due to how we as spirits connect with our bodies as carriers of the senses to nature, we

⁷⁵ Because of this inadequate method of conception, the need to distinguish between spirit and soul disappears.

⁷⁶ The English philosopher John Locke (1632-1704) spoke of “secondary qualities”.

are given the opportunity of bringing life into that body on one hand and on the other hand, to develop concepts for the immediate perceptions. These factors give us a “spiritual connection” to nature.

This connection with nature is also reflected in Goethe’s essay “die Natur” with the metaphor of a dance in which the dance partners contact one another. This is precisely the link that Newton left out when he accepted the concept of “distant force”. With his other concept of coloured light orbs he remains true to his method of approaching nature. If one can envisage the darkness that we absorb in our organism, a certain spot in the organism is given special meaning by our spirit. It is the spot where the nourishing “darker” blood comes close to the oxygen-rich “lighter” blood of breathing. This takes place in the heart. The way Rudolf Steiner described the appearance of purple regarding the existence of colours: as interweaving waves of white and black in a red shine, can be seen as what happens in the heart. These qualities can just be found in the processes of arterial and venous blood. As an organ, the heart represents a surface in nature with which each human individually adds life to the life of nature. Why else do you point at your heart as the location of yourself; here rests our deepest sense of self.

The organisation of the senses that are part of the nervous system, also ensure that we can establish our concepts via the physiological processes of the head⁷⁷. These are valid for us as humans and make it possible to connect our self-consciousness to the objective reality of nature. On the grounds of these concepts we adapt our assumptions and nature gives us an “interface” in which we can find ourselves and communicate with other beings as well as undertake actions in a targeted fashion.

The rainbow, in which the colour purple does not objectively appear, indicates with the absence of that colour the area with which every person can make his individual and specific contribution to nature. Via our eyes we search for forms and focus on the space outside us with which we can harmonise our feelings with a world filled with completed material. Form and colour stimulate us to take artful actions. In the eye, the spiritually acquired connection of perception and understanding is intimately present⁷⁸. Our conceptions can be expressed in the outside world with graphic arts and they make it possible for us to share ideas. By being absent from the rainbow, purple indicates the tiny incomplete aspect within the completed.

Regarding the expressiveness of ideas, the ear (and voice) plays a complimentary role. In the experience of sound, music directly affects the depth of the inner being of what is heard. The concept of hearing (and speaking) connects us with the characteristics that can only be expressed over time and in which laws that govern this area can be found. The basic principle here is that it touches on the incompleteness instead of the overall perspective of completeness.

Modern philosophy pays much less attention to this distinction of concepts when compared to the ancient Greeks. It seems like the development of physics, in a departure

⁷⁷ At a certain stage of this evolutionary process, in which we gradually discovered that we artificially turn these concepts into *supplementary permanent forms* for the moving content that we derive from our spiritual intuitive capacity, we design, as a guiding beacon at the sensory pole of our being, the concept of nature in which nature is apparently “brought to a standstill” as mentioned earlier.

⁷⁸ With our countless examples of optical illusion, we can convince ourselves of this. We experience what we experience, that is not the problem. The problem lies in the judgment. It should be called a “judgemental illusion”.

from basic science, was necessary to liberate the wisdom of Plato and Aristotle that carried on in European traditions for so many centuries from the decadence and nominal dogmatic of the late Middle Ages. If the wisdom expressed in the rainbow is embraced, experimental physics can prepare the place of man in nature and show us the way back to “mother”. It will involve offering our heartfelt creations derived from the substance of our sensory qualities in such a way that the natural beings can connect to them and become active in us as the desired movements in nature⁷⁹ This will mean approaching the environmental issues concerning energy use from a completely different perspective that we have in this and the past century.

Conclusion

The ethical position man adopts regarding nature is dependent on how man sees himself. If man can solely see himself as a being that is fully brought forth by nature, he will use his ethical consciousness to live in harmony with nature as best as he can. Insight into the general laws of physics that also apply to man can help him reach this goal. In terms of technology, it must primarily be about finding the right balance between use of nature and the use and recovery and improvement of the living environment of the planet and all its inhabitants. The active forces in technology have the same character as the natural laws.

If man is conscious of the “spiritual connection” as brought up by Goethe in Faust I, then physics tells us that that we as an artistic being can manifest ourselves in nature via that spiritual connection. For its development, nature longs for our spiritual contribution. We thereby simultaneously manifest ourselves on the continuing path of own individual development. The laws we must be aware of are less general but do justice to what we as spirits can give to nature thanks to our specific incarnation. The social development of non-standardising technology will help prepare us for this mission. This is the answer to question E.

Notes

ⁱ “Wer will was Lebendig’s erkennen und beschreiben,
Sucht erst den Geist herauszutreiben,
Dann hat er die Teile in seiner Hand,
Fehlt leider nur das geistige Band.
Encheiresin naturae nennt ’s die Chemie,
Spottet ihrer selbst und weiß nicht wie.”
(Faust, 1^e part Study)

ⁱⁱ “Natur!
Wir sind von ihr umgeben und umschlungen
unvermögend, aus ihr herauszutreten,
und unvermögend, tiefer in sie hineinzukommen.
Ungebeten und ungewarnt nimmt sie
uns in den Kreislauf ihres Tanzes auf
und treibt sich mit uns fort,

⁷⁹ In the Novalis fairy tale “Eros en Fabel”, the downfall and resurrection of wisdom is symbolised by the water in the goblet of Sofia, in which the writer and Fabel baptise their writings. The work of this gruesome writer is largely erased and the work of the cheerful Fabel can be seen in golden letters.

bis wir ermüdet sind und
ihrem Arme entfallen.”

[...]

ⁱⁱⁱ “Sie hat mich hereingestellt,
sie wird mich auch herausführen.
Ich vertraue mich ihr.
Sie mag mit mir schalten.
Sie wird ihr Werk nicht hassen.
Ich sprach nicht von ihr.
Nein, was wahr ist, und was falsch
ist, alles hat sie gesprochen.
Alles ist ihre Schuld,
alles ist ihr Verdienst.”
(1783, Tiefurter Journal)

^{iv} “Die Erfüllung aber, die ihm fehlt, ist die Anschauung der zwei großen Triebräder aller Natur,
der Begriff von Polarität und Steigerung, jene der Materie, insofern wir sie materiell,
diese ihr dagegen, insofern wir sie geistig denken, angehörig;
jene ist in immerwährendem Anziehen und Abstoßen, diese in immer strebenden Aufsteigen.
Weil aber die Materie nie ohne Geist, der Geist nie ohne Materie existiert und wirksam sein kann,
so vermag auch die Materie sich zu steigern, so wie sich der Geist nicht nehmen lässt
anzuziehen und abzustoßen; wie derjenige nur allein zu denken vermag,
der genugsam getrennt hat, um zu verbinden,
genugsam verbunden hat, um wieder trennen zu mögen.”