[77]

FIRST DIVISION

I.
The Unconditioned in Nature

The subject which is to be the object of philosophy in a given instance must be viewed, in a word, as *unconditioned*. The question arises as to what extent *unconditionedness* might be ascribed to Nature.

1) First of all, we must try to secure the concept of the unconditioned. To this end, however, we are in need of a few principles that are assumed as well known from transcendental philosophy.

FIRST PRINCIPLE. *The unconditioned cannot be sought in any individual "thing" nor in anything of which one can say that it "is." For what "is" only partakes of being, and is only an individual form or kind of being.—Conversely, one can never say of the unconditioned that it "is." For it is* BEING ITSELF, *and as such, it does not exhibit itself entirely in any finite product, and every individual is, as it were, a particular expression of it.*

ELUCIDATION. What is asserted by this principle obtains universally overall and for the unconditioned in every science. For although only transcendental philosophy raises itself to the Absolute Unconditioned in human knowledge, it must nevertheless demonstrate that every science that is *science* at all has its unconditioned. The above principle thus obtains also for the philosophy of nature: "the unconditioned of Nature *as such* cannot be sought in any individual natural object;" rather a *principle*[1] of being, that itself "is" not, manifests itself in each natural object.—Now, since the unconditioned cannot be thought under the predicate of being, it obviously follows that as principle of all being, it can participate in no higher being. For if everything that "is" is only, as it were, the color of the unconditioned, then the unconditioned itself must everywhere become manifest through itself—like light that requires no higher light in order to be visible.

[78] Now, what is this *being itself* for transcendental philosophy, of which every individual being is only a particular form? If, according to these very principles, everything that exists is a construction of the spirit, then *being itself* is nothing other than *the constructing itself*, or since construction is thinkable at all

only as activity, *being itself* is nothing other than the *highest constructing activity*, which, although never itself an object, is the principle of everything objective.

Accordingly, transcendental philosophy knows of no originary being.* For if *being itself* is only *activity*, then the individual being can only be viewed as a determinate form or limitation of the originary activity.—Now *being* ought to be something just as little primary in the *philosophy of nature*; "*the concept of being as an originary substratum should be absolutely eliminated from the philosophy of nature*, just as it has been from transcendental philosophy." The above proposition says this and nothing else: "Nature should be viewed as unconditioned."†

Now Nature itself is, according to general consensus, nothing other than the *sum total of existence*;‡ it would therefore be impossible to view Nature as an unconditioned, if the concealed trace of freedom could not be discovered in the concept of being itself.§ *Therefore* we assert: every individual (in Nature) is only a form of being itself; *being itself* however = absolute activity. For, if being itself is = to activity, then the individual being cannot be an absolute *negation* of activity. Nevertheless, we must think the natural product itself under the predicate of being. However, viewed from a higher standpoint, this being itself is nothing other than a *continually operative*|| *natural activity* that is extinguished in its product.—Originally, no *individual being* at all (as an accomplished fact) is present for us in Nature, for otherwise our project is not philosophy, but empirical investigation.—We must observe what an *object* is in its *first origin*. First of all, everything that is in Nature, and Nature considered as sum total of *existence*, is not even present for us. To philosophize about Nature means *to create* Nature. Every [79] activity perishes in its product, because it reaches only to this product. Thus we do not know *nature as product*. We know Nature only as *active*—for it is impossible to philosophize about any subject which cannot be engaged in activity. To philosophize about nature means to heave it out of the dead mechanism to which it seems predisposed, to quicken it with freedom and to set it into its own free development—to philosophize about nature means, in other words, to tear *yourself* away from the common view which discerns in nature only what

*of no being *in itself*.

†The philosopher of nature treats nature as the transcendental philosopher treats the self. Thus Nature itself is an unconditioned to him. This is not possible, however, if we proceed from objective being in Nature. In philosophy of nature objective being is as little something originary as in transcendental philosophy.

‡and to that extent Nature would be understood as *object*.

§if the trace of a loftier concept, the concept of activity, did not lie in the concept of being itself.

||uniformly operative

"happens"—and which, at most, views the act as a *factum*, *not the action itself* in its acting.*

2) We have answered the first question (how unconditionedness may be ascribed to Nature) through the assertion that Nature has to be viewed as *absolutely active*. This answer itself drives us to the new question: how can Nature be observed as absolutely active, or more clearly expressed: *in what light must the totality of Nature appear to us, if it is absolutely active*?†

The following principle must serve us in answering this question.

SECOND PRINCIPLE. *Absolute activity cannot be exhibited by a finite product, but only by an* INFINITE *one.*

ELUCIDATION. The Philosophy of Nature, so that it does not degrade into an empty play with concepts, must demonstrate a corresponding *intuition* for all of its concepts. Therefore, the question arises how an absolute activity (if there is such a thing in Nature) will present itself empirically, i.e., in the finite.

—Possibility of the exhibition of the infinite in the finite—is the highest problem of all systematic science. The subordinate sciences solve this problem in *particular cases*. Transcendental philosophy has to solve the problem in its greatest *universality*.—This solution will doubtless eventuate in the following result.

The illusion that surrounds the entire investigation concerning the infinite in all sciences issues from an amphiboly in this concept itself.—The *empirically infinite* is only the external intuition [80] of an *absolute* (*intellectual*) *infinity* whose intuition is originally in us, but which could never come to consciousness without external, empirical exhibition. The proof of this is that this intuition comes to the fore precisely when the empirically infinite series lying before the imagination is obliterated ("I blot it out, and you lie fully before me"[2]). If, that is, the finite can be intuited only externally, then the infinite can not even be presented in external intuition otherwise than through a *finitude* which is never complete, i.e., which is *itself infinite*. In other words, it can only be presented by *infinite becoming*,‡ where the intuition of the infinite lies in no individual moment, but is only *to be produced* in an endless progression—in a progression, however, which no power of imagination can sustain. Therefore, reason determines either to obliterate the series,§ or to assume an ideal limit to

*In the usual view, the original productivity of nature disappears behind the product. For us the product must disappear behind the productivity.

†productive

‡by *letting-become*

§When the series is obliterated, nothing remains except the feeling of an infinite tendency in ourselves—this tendency now emerges in intuition, and the above expression of the poet should be considered in this regard. From this it becomes clear that originally all infinity lies *in ourselves.*

the series which is so far removed that in practical employment one can never be compelled to go beyond it (as the mathematician does when he assumes an infinitely large or small magnitude).

But now, how must one represent an infinite series if it is only the external exhibition of an *original* infinity? Are we to believe that the infinite is produced in the series through *aggregation*, or rather ought we to represent any such series in *continuity*, as one function running to infinity?—The fact that in mathematics, infinite series are composed of magnitudes, proves nothing on behalf of that assumption. The *originally infinite* series, of which every individual series in mathematics is an imitation, does not arise through *aggregation*, but through *evolution*, through evolution of a magnitude already *infinite in its point of origination* which runs through the entire series. The whole infinity is originally concentrated in this one magnitude. The succession in the series signifies only, as it were, the individual *inhibitions** which continually set bounds to the expansion of that magnitude into an infinite series (an infinite space), and which moreover happens with an infinite velocity and would permit no real intuition.

[81] The genuine concept of an *empirical infinity* is the concept of an *activity*† that *is infinitely inhibited*. But how could it be inhibited to infinity if it did not flow into infinity and if it did not deposit its whole infinity in every individual point of the line that it describes?

CONSEQUENCES FOR THE PHILOSOPHY OF NATURE
(which are at once to be seen as the response to our second question above).

FIRST CONSEQUENCE. *If Nature is absolute activity, then this activity must appear as inhibited ad infinitum.*‡ *(The original cause of this inhibition must again only be sought* IN ITSELF, *since Nature is* ABSOLUTELY *active).*

SECOND CONSEQUENCE. *Nature* EXISTS *nowhere as product; all individual productions in Nature are merely apparent products, not the absolute product that always* BECOMES *and never* IS, *and in which the absolute activity exhausts itself.*§

According to the first principle, an *original duality* must simply be presupposed in Nature. For it permits of no further derivation, because it is the only

*through reflection

†tendency

‡otherwise no empirical presentation of it is possible.

§Productivity is originally infinite; thus even when a product comes to be, this product is only an apparent product. Each product is a point of inhibition, but the infinite still "is" in each point of inhibition.

condition under which an infinite is finitely presentable at all, i.e., the condition under which a Nature is at all possible. Through this original antithesis in itself, Nature will now be for the first time truly whole and complete in itself.*

Since Nature gives itself its sphere of activity, no foreign power can interfere with it; all of its laws are immanent, or *Nature is its own legislator* (autonomy of Nature).

Whatever happens in Nature must also be explained from the active and motive principles which lie in it, or *Nature suffices for itself* (autarchy of Nature).

They are both contained in the proposition: *Nature has unconditioned reality*,† a proposition which is precisely the principle of a philosophy of nature.

[82] The absolute activity of Nature should appear as inhibited to infinity. This inhibition of the universal activity of Nature (without which "apparent products" would never once come to be) may be represented, at any rate, as the work of opposed tendencies in Nature. (Let one force be thought, originally infinite in itself, streaming out in all directions from one central point; then this force will not linger in any point of space for a moment (thus leaving space empty), unless an energetic activity opposing (retarding) its expansion did not give it a finite velocity.‡) However, as soon as one undertakes to carry out the construction of a finite product from these opposed tendencies, one encounters an irresolvable difficulty. For if we let both coincide at one and the same point, then their effects toward one another will reciprocally be canceled, and the product will be = to 0. Precisely for this reason, it must be assumed that no product in nature can be the product in which those opposed activities absolutely coincide, i.e., in which Nature itself attained rest. One must, in a word, simply *deny* all *permanence* in Nature itself. One has to assume that all *permanence* only occurs in Nature as *object*, while the activity of Nature as subject continues irresistably, and while it continually labors in opposition to all permanence. The chief problem of the philosophy of nature is not to explain the *active* in Nature (for, because it is its first supposition, this is quite conceivable to it), but the *resting, permanent*. Nature philosophy arrives at this explanation simply by virtue of the presupposition that for Nature the permanent is a limitation of its own activity.§ So, if this is the case, then impetuous Nature will struggle against every limitation; thereby the points of inhibition of its activity

*and so it should be.

†= Nature has its reality by virtue of itself—it is its own product—a whole, self-organizing, and organized by itself.

‡= Kant's repulsive and attractive forces—which is merely the mechanical expression for something higher.

§Or rather, it becomes permanent only in that it is a limit for the productivity of Nature.

in nature as object will attain *permanence*.* For the philosopher, the points of inhibition will be signified by products; every product of this kind will represent a determinate sphere which Nature always fills anew, and into which the stream of its force incessantly gushes.

[83] However, when one asks (and this is the principal question), "how is it at all possible to view all of these individual products in nature as only apparent products?" we find the following answer. Evidently every (finite) product is only a *seeming* product, *if again infinity lies in it*, i.e., if it is itself again capable of an infinite development. If it engages in this development, then it would have no permanent existence at all; every product that now appears *fixed* in Nature would exist only for a moment, gripped in continuous evolution, always changeable, appearing only to fade away again. The answer given above to the question, "how could Nature be viewed as absolutely active?", is now reduced to the following PRINCIPLE:

Nature is absolutely active if the drive to an infinite development lies in each of its products.

With this the course of our further investigations is marked out. That is, to begin with, the question arises, "How must a product that is capable of an infinite development be constituted, and is such a product really found in Nature?"—Let it be noted that with this question we respond at the same time to another which must definitely be answered, namely: Why is the tendency to infinite development in such a product just maintained, and why, as fixed, does it seem oblivious to this tendency and not lose itself in the infinite?

REMARK. The proposition that the *whole*—the infinite—mirrors itself in each individual being in Nature, has been heard in transcendental philosophy more than in the philosophy of nature. The former science also has exactly the

*Example: a stream flows in a straight line forward as long as it encounters no resistance. Where there is resistance—a whirlpool forms. Every original product of nature is such a whirlpool, every organism. The whirlpool is not something immobilized, it is rather something constantly transforming—but reproduced anew at each moment. Thus no product in nature is *fixed*, but it is reproduced at each instant through the force of nature entire. (We do not really see the subsistence of Nature's products, just their continual being-reproduced.) Nature as a whole co-operates in every product. Certain points of inhibition in Nature are originally set up—consequently, perhaps there is only *one* point of inhibition from which the whole of Nature develops itself—first of all, however, we can think infinitely many points of inhibition—at each such point, the stream of Nature's activity will be broken, as it were, its productivity annihilated. But at each moment comes a new impulse, as it were, a new wave, which fills this sphere afresh. In short, Nature is originally pure identity—nothing to be distinguished in it. Now, points of inhibition appear, against which, as limitations to its productivity, Nature constantly struggles. While it struggles against them, however, it fills this sphere again with its productivity.

same difficulty to explain: How opposed activities coincide in the intuition of the finite without reciprocally canceling each other. It will have to be denied that they coincide in any product absolutely; one will assume that spirit does not have an intuition of itself in any individual product—that it has no intuition of itself in unity, but rather in the infinite *keeping apart* of its opposed activities *from one another* (which are only unified at all by virtue of this holding apart). It must be assumed that just for this reason each *individual* intuition is only *apparently individual*, and that actually the intuition of the whole universe is contained in every individual. The originary strife of self-consciousness—which is for transcendental creation [84] precisely what the strife of the elements is for physical creation—must, like self-consciousness itself, be infinite; therefore, it cannot end in any individual product, but only in a product that always becomes and never is, and is created anew in each moment of self-consciousness.—In order to unify absolute opposites, the productive imagination enlarges their reciprocal cancellation into an infinite series; the finite is brought into being only through this infinite extension—this infinite nudging back of absolute negation.

II.
The Original Qualities and Actants in Nature

A product is only an *apparent* product if infinity lies in it once more, i.e., if it bears the capacity for an infinite development. This capacity cannot occur in it, however, without there originally being an infinite multiplicity of unified tendencies in it.

A. The question arises, by what means do these tendencies manifest themselves in Nature at all?

THEOREM. *The most originary points of inhibition of Nature's activity are to be found in the* ORIGINAL QUALITIES.

PROOF.—Our science has an ineluctable demand to fulfill: that it accompany its *a priori* constructions with corresponding external intuitions, since otherwise these constructions would not have meaning for us anymore; no more than the theory of color for those born sightless. Now, it has been asserted in the preceding that an absolute activity can appear empirically only under infinite negations. Infinite negations of one and the same original activity must be discovered in Nature through analysis.

An *unconditioned* would have to reveal itself in these negations. No *positive* external intuition of the unconditioned is possible, however. Thus, at least a *negative* presentation of it has to be sought in external experience.

Now, we have determined the unconditioned as that which, although it is principle of all being, yet itself *never "is."* Every external being is a being in

space. Therefore, something has to come to the fore in experience [85] which, although itself not in space, is yet principle of all occupation of space.*

1) *It should not itself be in space.*—What is in space can also be affected by physical force; it is mechanically† or chemically destructible. Thus a principle that is not itself in space must, admittedly, not be liable to being overpowered either mechanically or chemically. Nothing of the kind is discovered in experience except for the *original* elements (principles) of all *quality*.

2) *It should be principle of all occupation of space.*—Accordingly, it must be that which, if the (mechanical) division of matter proceeds to infinity, preserves every little piece of matter, no matter how small, for further division; in short, it must be that which *makes* the infinite divisibility of matter *possible*.‡

Now, if the infinite divisibility of matter were impossible, then one would, finally, have to reach a part in the division of any material which one could not recognize any more as a *part* of that material, i.e., no longer as *homogeneous* with the material itself. Since, therefore, the divisibility of matter proceeds to infinity, then every material must remain infinitely *homogeneous* as far as it is divided. Infinite homogeneity, however, is recognized solely in the permanence of qualities, thus the permanence of qualities is the condition of the possibility of mechanical division to infinity; accordingly, the principles of the qualities are also the principles of the occupation of space itself.

The originary qualities are thus the most originary negative presentations of the unconditioned in Nature. Now, since the unconditioned is everywhere = to absolute activity, but absolute activity can only appear empirically as an infinitely inhibited activity, then the most original points of inhibition of the activity of Nature are determined for us by the original *qualities*.

CONCLUSIONS. 1. *The divisibility of matter must be finite in one respect, simply due to the fact that it is infinite in the other.*

The atomist is mistaken only in that he assumes *mechanical* atoms, i.e., the finitude of *mechanical* divisibility. [86] In every concrete space no part must be the absolute smallest, just as in mathematical space. What IS *in space* is in space by means of a continually *active* filling-up of space; therefore, in every part of space there is moving force, so also *mobility*, and thus infinite *divisibility* of each part of matter, no matter how small, from all the remaining ones. The original actants, however, ARE not themselves *in space*; they cannot be

*Is, nevertheless, principle of all being in space or of all occupation of space.

†mechanically infinitely divisible.

‡The concept of infinite divisibility is necessarily contained in the concept of matter or the concept of the occupation of space.—How does it happen that matter, although divided to infinity, does not disappear for us but still remains a substrate? What is the substrate of matter supported by, and through what does divisibility become possible?

viewed as *parts* of matter.* Accordingly, our claim can be called the principle of *dynamic atomism*. For us, every original actant is just like the atom for the corpuscular philosopher; truly *singular*, each is in itself whole and sealed-off, and represents, as it were, a *natural monad*.†

2. *Each quality is an actant of determinate degree, for which there is no other measure than its product.*

a. It is *action* in general, thus not *itself* matter. If it were itself matter—*stuff*, as the popular chemistry expresses it, then it would even have to be

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*They are the constituent factors of matter. So, if "atomism" designates a theory which assumes something simple as constituent *of* matter, then the true philosophy is nonetheless atomism. However, since it only asserts a *dynamic* simple constituent of matter, it is dynamic atomism. Each original quality is for us an actant of a determinate degree, and every such actant is—truly singular.—No individuality is to be attributed to matter without such original *unities*, which are not the unities of a product, but of *productivity*.

†In brief, our opinion is this: If the evolution of Nature were ever complete (which is impossible), then after the general decomposition of each product into its factors nothing would be left other than *simple* factors, i.e. factors which are no longer themselves products. Therefore, these simple factors can only be thought as *originary* actants, or—if it is permissible to express it this way—as originary productivities.

Our opinion is thus not that *there are* such simple actants in Nature, but only that they are the *ideal* grounds of the explanation of quality. These simple actants do not really allow of demonstration—they do not *exist*; they are what one must posit in Nature, what one must think in Nature, in order to explain the originary qualities. Then we need only prove as much as we assert, namely, that such simple actions must be *thought* as ideal grounds of explanation of all quality, and we have provided this proof.

"What is *indivisible* cannot be material, and conversely; it must lie beyond matter. But beyond matter is pure *intensity*—and this concept of pure intensity is expressed through the concept of action.—It is not the *product* of this action that is simple, but the *actant itself* abstracted from the product, and it must be simple in order that the product may be divisible." (Cf., the "Introduction to the Outline" [below p. 208; SW III 292—Trans.])

The philosophy of nature assumes, 1) with *atomism* that there is an original multiplicity of individual principles in Nature—it brings multiplicity and individuality into Nature with it.— Each quality in Nature is a fixed point for it, a seed around which Nature can begin to form itself. However, our atomism does not assume these principles as actual material parts, but as original and simple activities. 2) The philosophy of nature is in *agreement* with *dynamic* physics in that the ground of qualities does not itself consist again in material bits—every actant is pure activity, not itself matter once again; it is *not in agreement* with dynamism in that it does not allow all diversity of matter merely to consist in a variable relation of attractive and repulsive force (through which mere difference of density originates).

The philosophy of nature is therefore neither dynamic in the accepted sense of the word, nor atomistic, but is a *dynamic atomism*.

(We have posited *simple actants* of indeterminate, i.e., of infinite multiplicity in matter, as *ideal* ground of explanation. This basis of explanation is *ideal* because it presupposes something ideal, namely, that Nature has unfolded itself into simple factors.—If we proceed further down this path we shall arrive at an *atomistic* system. However, this system, on account of its insufficiency, will finally just drive us back to the *dynamic* system).

presentable in space. However, only its effect is presentable in space, the action itself is prior to space (*extensionē prior*).—(Why has chemistry not presented any of its *substrates* purely—isolated from all material?)—Action is just as little something merely inhering in original matter (the atoms, as the atomist teaches) as is figure, nor is it something that results from the collective action of atoms. For, if they do not have any qualities themselves, how is such a thing produced through their collective action?

b. *Quality is action, for which one has no measure other than its own product.* This means that the actant itself, abstracted from its product, is nothing. Indeed, it is nothing other than the product itself viewed from a higher perspective. One cannot expect to be able to take a look into the interior of that actant itself and determine the magnitude (the degree) of the action, as if by means of mathematical formulas. All attempts to do this have until now led to nothing real. Our knowledge does not reach *beyond* the product, and no other expression [87] for the magnitude of the action can be given than the *product itself*. The philosophy of nature has nothing further to do than recognize the unconditionally empirical in these actants. Empiricism extended to include unconditionedness is precisely philosophy of nature.*

**Quality* is originally absolutely *inconstructible*, and it must be, because it is the *limit* of all construction by virtue of which every construction is a determinate one. All previous attempts to construct qualities have been incapable of leading to anything real for this reason. The atomist believed himself able to express qualities through figures, and assumed, therefore, an actual shape in Nature for each quality.—We have moved beyond this mode of construction.—With so-called dynamic philosophy the attempt is made to reduce qualities to analytical formulas, and to express them by means of the variable relations of repulsive and attractive force. Indeed, Kant has nowhere genuinely ventured to construct the specific (qualitative) diversity of matter out of his two basic forces. A few who wished to apply his dynamic principles have gone further. I will name only *Eschenmayer* here, rather than all of them. (One ill-conceived attempt to construct the qualities and series of degrees of qualities according to Kantian principles is to be found in his "Principles from the Metaphysics of Nature" and his "Investigation," which try to derive the magnetic phenomena *a priori*. In any case, it is to be recommended for the sake of understanding the first principles of Kant's dynamics).

Very diverse—and in part strange—manners of thinking concerning the concept of dynamical philosophy still generally prevail, and I think it necessary, therefore, to say something in general here regarding the concept of dynamical philosophy.

Many believe that dynamical philosophy consists in the fact that one assumes no particular materials for the explanation of natural appearances; e.g. who denies the materiality of light, or the existence of a galvanic fluid?—a dynamical philosopher. Only there is a bit more to it than that—one cannot get off the hook so easily. Others believe that dynamical philosophy consists in tracing everything back to the basic forces (repulsive and attractive force). The latter are, at any rate, closer to the matter at hand. All original, i.e. all dynamic natural phenomena, must be explained from forces which reside in *matter* also at rest (for Nature is movement while also at rest; this is the foremost fundamental principle of dynamic philosophy)—therefore, those appearances, e.g. the electrical, are not *appearances* or effects of determinate individual materials, but rather alterations of the *subsistence* of matter itself; and, if one lets matter consist in repulsive and attractive force—(as one

NOTE. With the preceding we have brought the construction of matter *in general* to completion. Since the identity of a material is ascertained only by the permanence of its qualities, its identity in no way differs from the latter; every material is thus nothing other than a *determinate degree of action*, no material is originally *mechanically aggregated*; for were it so, then—presupposing infinite divisibility—it would have to be dissoluble into *nothing* and originally constructed from *nothing*. *Therefore*—(*ne res ad nihilum redigantur funditus omnes* [3])—if matter should, for anyone, arise mechanically, it must aggregate out of *atoms* (an assumption which envelops one in a slew of other troublesome consequences).

However, let no one believe, on this account, that we have already deduced the *specific difference* of matter, or that we wanted to deduce it. Although every material is a determinate degree of action, this action can nevertheless be *highly composite*, as, according to Newton, white light is composed of seven simple ones, and these seven perhaps of other simpler actants. It is, in fact, truly nonsense to want to explain the infinite multiplicity of material in the world through various degrees of one and the same—simple—action. Does it follow from this that the original qualities are to be viewed as simple actants, that even every—also derived—quality is likewise a simple actant? If this were to be demonstrated, how is it that in experience not one original quality is found nor can be found?—Yet what are philosophical reasons for, where experience speaks

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does at the standpoint where Nature is viewed only as *product* and not as *productivity*, i.e. as I call it, at the standpoint of mechanism, which must let matter so originate)—if one generally lets matter consist in repulsive and attractive force, then those appearances are, at any rate, only alterations in the relation of these basic forces.

All these effects also appear at the lowest level of their appearance (in the chemical process) as, at any rate, alterations—of cohesive force, of density, of specific gravity, i.e. as alterations of those basic forces. However, this is only the farthest, lowest level of their appearance—and those alterations in the relation of the basic forces cannot again be explained *from* such alterations. For appearance, every dynamic process is to its farthest extent an alteration in the relation of the basic forces—but the question is by what means these alterations have been produced, and this has not been answered by any previous research; and that question lies far higher—and yet deeper, and ultimately in the construction of matter. I want to make another remark regarding the impossibility of constructing qualities mathematically, or of submitting them to calculus.

One has transferred the familiar laws of mechanics to the dynamic appearances and wished to give them a higher, dynamical meaning. For example, it is a well-known law of mechanics that the single force *does equal work* in doubled time as with doubled force in a single unit of time. However, this law, applied dynamically, does not hold true. Let us take, e.g., two completely equal pieces of iron, the one in the focal point of a concave mirror, the other in unconcentrated sunlight. Let us say the force of light in the focal point is = to a thousandfold of that outside of the focal point, and that the time in which the metal melts in the focal point = one minute. Then, according to that law, the single force will do equal work in 1000fold time to 1000fold force in a single unit of time, i.e., if the iron in the focal point will melt in one minute, *outside* the focal point it will melt in 1000 minutes, which is absurd.

loudly against them? If that opinion were grounded in truth, then the difference of qualities would have to run completely parallel to the difference of specific gravities and densities; the inspection of a table of the latter will convince one of the contrary. And how does one ultimately wish to explain those entirely peculiar—not by virtue of specific gravity and density, but peculiar through their most intimate mixture [88]—products of nature in their organic operations? Or do we believe that here too Nature does nothing other than decrease and increase density and specific gravity?

Finally, it must be remarked here that since our science takes off from an unconditioned empiricism as principle, one can by no means speak of a transcendental construction, but solely of an *empirical construction of matter*. *How is matter in general originally produced*? Precisely this will become clear through our following investigations.

B. Qualities = Actants, this proposition is demonstrated. *In all of these individual actants one and the same* original activity of Nature *is* inhibited. This is not thinkable unless these actions, presented collectively, *strive toward one and the same product*; for all natural activity aims toward an absolute product. For this to happen, it is required that various actants are able to combine themselves in one and the same collective product; in short, that there should be composite actants. They cannot combine themselves, however, without having reciprocal *receptivity* for one another. One actant must be able to *prehend* the other. For two different actants, there must be one common point in which they unite—(this point will be named—at a much lower level to be sure—the chemical product).

Since an infinite multiplicity of actants together ought to exhibit one absolute product, the PROBLEM is presented: *find the point in which this infinite multiplicity of diverse actants can be unified in Nature*.*

The qualification must necessarily be added that in this circumstance the *individuality* of no actant would cease to exist. Otherwise, the multiplicity would be annihilated. The unity should not be achieved at the cost of the multiplicity. *The multiplicity should remain, and yet a collective product result*, which holds that infinite multiplicity together.

(It may be noted that if *one* such product actually arises in Nature,† in this respect matter is also *dynamically* [89]—although not *divisible—actually divided*

*The dynamical philosophy cannot even arrive at this problem, and we can discern here the difference between dynamical and atomistic philosophy quite clearly. Nature is given as product to the atomist only through its *constituents*; to the dynamical philosophy, in contrast, the constituents are given through the product. The dynamist, therefore, does not ask how the product originates from these constituents; for the product *precedes* the constituents; the atomist on the contrary asks how the product emerges from these constituents (because *to him* the constituents precede the product).

†i.e. if nature is such a product

to infinity, since no individuality is to be extinguished in that whole. The importance of presupposing the endurance of *each* individuality in this product will be shown below.)

SOLUTION. The two actions restrict themselves reciprocally, through interaction, to the *mutual effect.* (Only this mutual effect is the *tertium* in which they are able to rest.* There is, again, no other expression for the interaction of the two *than* this effect.)

Now, the striving of all original tendencies aims generally

a) toward the *filling-up of space*; their prehension of one another is thus a striving toward the filling of a *collective* space, such that in every part of a given material, no matter how small, all tendencies would still be met with. (From this one sees in passing what dynamic divisibility is really like. That is, the *quantity* of material is completely unimportant; in the largest as in the smallest part of the same material the same tendencies must be met with. Therefore, even through a mechnical division carried to infinity, universal homogeneity can never be reached. It can also be seen here that a composite actant does not come into being in Nature originally, but already through particular natural operations, the likes of which we perceive in chemical suffusions.†) Through this striving toward the occupation of a common space, such a space would have to be actually continually filled anew.—Therefore, rest‡ is not an absolute negation of movement, but rather an uniform tendency toward the filling-up of space, and the perseverance of matter itself = to a constant being-reproduced.—Further, the filled space is only the appearance of a striving whose principle is not itself in space. Space is thus filled, as it were, *from inside out*, a very important concept. (The inner in contrast to the outer is always called that which is *principle* of the occupation of space.) If that striving toward the filling-up of a common space were heralded in experience [90] by a resistance to the cancellation of the shared occupation of space, this would give the phenomenon of connection—

*In and for itself each actant, as highly individual, excludes the other from its sphere. They are thus only able to meet in a third.

†But *how* the actants unify themselves—permeate each other, is still unexplained here, and is a special problem. (The dynamical philosopher does not even have to inquire about that, as was said; because he never has to allow the actants to *separate* themselves. He does not need to explain *how* they penetrate each other, but only by what means they are held together, how the absolute separation—the absolute evolution—may be hindered.)

‡of matter

cohesion. The force with which that cancellation would be resisted would be called the *cohesive force*.*

REMARK. The cohesive force is thus a composite force, not a simple one like the attractive force.—There are difficulties to the customary explanation of cohesion through mere attractive force, since, in the majority of the materials we know, the relation of the cohesive force of their smallest parts to the square of their distance would have to be completely different than it should be according to the law of universal attraction. This is not to mention the fact that this hypothesis presupposes atomistic conceptions, and the diversity of cohesive forces under this presupposition would be nearly inexplicable.—Further, in relation to the universal attractive force, all matter spread throughout infinite space, balled-up into planets is = to one material; that universal attraction extends to infinity, and with respect to it no space can be thought of as *empty*.† Conversely, cohesion strives against the universality of the attractive force, for it constantly *individualizes* and leaves the space outside the sphere within which it alone works *empty* (unoccupied by its force). Genuine cohesion occurs only within an *individual body*. Therefore, it must be strictly distinguished from adhesion, and from that special kind of attraction which occurs between *different* materials, e.g., in the contact of water and glass.

b) Further, each tendency is a completely individual and determinate one, i.e., a striving to fill space in a *determinate way*. This is betrayed through determinacy (individuality) of *figure*. In Nature there is a continual determination of figure from the crystal to the leaf, from the leaf to the human form. Therefore, we consider the atomist correct in that he attributes to the elements originary figure (leaving aside the fact that he needs originary figures of atoms for the possible construction of specifically different materials); we assert only that for the original actants it is never a matter of the production of these original [91] figures, nor can it be; we assert that, therefore, these original shapes nowhere exist in Nature, because no simple actant is to be met with in Nature (which, to be sure, we are here not yet able to prove).

Now if, however, every actant is limited through the inifinity of all the remaining ones, then all together they mutually derange each other in their pro-

*With this said, what the *cause* of the force of cohesion would be remains unexplained. It will be *the* force through which the actants in Nature bind themselves.

†Space, emptied of matter, is at least filled by that force.

ductions, and none is allowed by the others to achieve the production of the originary figure, i.e., they reduce themselves reciprocally to *formlessness*.*

The shapeless = the fluid. The fluid (at least of the second order, which owes its fluidity to a higher principle) is—not the absolutely formless (= the μὴ ὄν of the ancient Greek physicists), but rather that which is *receptive to every form*, formless (ἄμορφον) for just this reason. The fluid must generally be defined as a mass wherein *no part is distinguished from another by figure*. From this definition, at least, all others previously sought can be derived, insofar as they are correct. Absolute continuity, the complete absence of friction in all fluids, and the fundamental laws of hydrostatics can be deduced in this way. The major principle is *the equivalence of actions* (accordingly also the attractions) *in the fluid in all directions*.†

Accordingly, the most original and most absolute combination of opposed actions in Nature must generate the *most original fluidity*, which, because that combination constantly runs ahead of itself (the *actus* of organization is constantly underway), presents itself as a universally extended entity that simply works against nonfluidity (solidity), and continually endeavors to *liquefy* everything in Nature.

(This principle is called the *principle of heat*, which is, consequently, no simple substance, no material at all, but always only the phenomenon of constantly diminished capacity (of original actants for one another), and is therefore

*The most original product of Nature is, therefore, the formless or the *fluid*.

†That is, because the original actants in the fluid nullify one another reciprocally.—For the dynamical philosopher the formless is the original, because it is that which comes nearest to pure productivity. In the pure productivity of Nature there is yet no determination, thus also no form. The nearer Nature is to pure productivity the more formless, the nearer to the product, the more formed.

The atomist distinguishes the fluid of the first and the second order, or the absolute and the relative fluid. The fluidic *in general* will be explained *here* as that wherein *no part is distinguished from another by means of figure*. A few of Kant's disciples explain the fluid as that wherein the attractions in all directions are equal. Let's consider that 1) if an individual particle is drawn to direction A, then it will be just as strongly drawn in the opposed direction—these opposing attractions therefore cancel themselves; there is thus *within* this space no attraction to overcome, and each individual particle within this whole can be moved in all directions without resistance. Hence the *relative mobility of parts*.—Further 2) with equal force of attraction in all directions the spherical shape is necessary because this produces the greatest contact of particles among one another and the smallest amount of empty space. 3) If all attractions cancel themselves among one another, no figure can be produced—which is our definition; but if there is no figure, then there is also no rigidity, no friction, which is necessary according to the laws of hydrostatics. If there were friction in a fluid mass, then an impulse could not propagate itself in all directions equally, which is a fundamental law of hydrostatics. Therefore, we understand the equal height of water in both channels of a bent pipe having unequal masses. Enough concerning the concept of the fluid in general. The concept of the *absolutely fluidic*, of the most original product of Nature, primarily concerns us here.

proof of the steadily enduring process of organization in Nature.—New theory of heat according to these basic principles.)

[92] Now, if there were nothing in Nature that preserved the balance with the fluidizing principle, then the whole of Nature would resolve itself into a universal continuity. The *individuality* of the original actants, however, strives against this *universalization*. The individuality of all actants *ought to* be maintained in the absolute product together with the most complete combination.

Since everything in Nature—or rather, here just that absolute product—is conceived continually *in becoming*, then it will neither be able to achieve absolute fluidity nor absolute nonfluidity (solidity). This will furnish the drama of a struggle *between form and the formless*. That product always in becoming will be conceived continually in the leap from the fluid to the solid, and conversely, in the return from solid to fluid.

It will run through all possible forms within the sphere that it comprehends since that struggle (between form and the formless) is endless, and it will transform itself into all forms like an ever-changing Proteus.

This Proteus will draw all qualities into his circle, gradually assimilating them, as infinitely manifold as they may be, and, as it were, throughout infinitely many attempts, seek the proportion in which the universal unification of all individual actants of Nature in one collective product is attainable. However, through this drive to unite everything *individual* in Nature in itself, a certain circle of possible forms will also be determined for it in advance. One will therefore be tempted to believe that with all the various forms through which it metamorphoses, creative Nature has in mind a common ideal operative in it to which the product gradually approximates itself; the various forms to which it commits itself will themselves appear only as *various stages of development of one and the same absolute organism*.

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III.
Actants and Their Combinations

1) The *whole* of Nature, not just a *part* of it, should be equalivalent to an ever-*becoming* product. Nature as a whole must be conceived in constant formation, and everything must engage in that universal process of formation.

Everything that *is* in Nature must be viewed as something having *already become*. *No material in Nature is primitive*, for an infinite multiplicity of original actants is in existence (how these arise will be precisely the ultimate problem of the philosophy of nature).—These actants should together represent only *one* absolute product. In that case, Nature must combine them. Therefore, a *universal compulsion toward combination* must occur throughout the whole of Nature, for one cannot see how and why it should have limits; it

is unconditional. So there is combination in every material, and no substance is *primitive*.

However, since every material differs from the others, *each material is the product of a particular natural operation*. These various natural operations must be deduced *a priori* in order to ascertain the possibility of a specific variety of material.

2) *No material in Nature is simple*. Since a universal compulsion toward the combination of elementary actants prevails in Nature, no actant can produce a form or shape for itself; every material has arisen by means of combination. There can be no objections to this from experience, since we will even deduce necessarily that there are *indecomposable* materials.*

3) *All diversity of natural products can only derive from the various proportions of actants.* All multiplicity of Nature is to be sought in the elementary actants alone; matter is everywhere *one*, only the proportions of the original combination are different. Since the compulsion toward combination occurs throughout the whole of Nature, the whole of Nature must originally suffuse each product. In each material all original actants are contained *originally*. But all original actants can only unite into the *absolutely fluid*, their individuality notwithstanding. However, the *absolutely fluid can reveal its existence in no other way than through decomposition*. It is indecomposable for sensation = 0, for [94] all actants mutually cancel themselves in the fluid, such that none allow the others to come to any sensible effect. But the *absolutely fluid is by its very nature the most decomposable*, for there prevails in it the most complete equilibrium of actants that, consequently, is disturbed by the merest alteration.—It is further evident from this that the absolutely fluid is only *decomposable*, but is not *composable*.

Fire or heat-matter is familiar to us as the original phenomenon of absolute fluidity.† Heat-matter seems to originate or to disappear where a merely

*Thus there is no primal substance in Nature at all out of which everything has become—somewhat like the Ancients thought of the elements. The single genuine primal substance is the individual actant. Thus, there are also no originally indecomposable factors in Nature, i.e. really *simple materials*. No material in Nature is *simple* (the actants are not material). So if there are indecomposable materials, then these materials cannot really be simple *materials*; their indecomposability cannot be explained on the basis of their simplicity. If they are to be indecomposable, then some other reason for their indecomposability ought to be evident. We find this reason when we reflect on the fact that the absolute indecomposable is established as the antithesis of the absolute incomposable. The indecomposable is opposed to the absolute incomposable. This is only possible if it is *itself* the *absolute composable*. Indecomposability and absolute composability must thus always coexist if there is an indecomposable factor without there being a simple one.

†this being inimical to all shape, and for this reason the favorite being for shaping—the universal *liquefying* principle, and therefore the mainspring of all formation and of all productivity in Nature.

quantitative decrease or increase of capacity takes place (enlargement or diminishing of the volume). The heat-matter appears as *simple*, and no duality has yet been perceived in it, or a decomposition into opposed actants, as e.g., with electricity. This is even the proof that in this most original of all fluidities the most complete combination appears yet *unperturbed.*

In contrast, the lightest contact of heterogeneous bodies produces phenomena of *electricity* (in galvanism, and in other recently presented experiments), and since heat as well as electricity is excited through friction (constantly repeated and intensified contact), it appears that in every repulsion of different bodies the absolute fluidity which permeates them all—(because it strives to liquefy everything)—is posited, both mechanically from equilibrium and dynamically from their original combination. The former furnishes the phenomenon of heat diffusion, the latter the phenomenon of excited electricity. Actually there is virtually no chemical process in which heat originates or vanishes that does not show traces of excited electricity; more exact analysis will here teach us much. This is not to speak of the fact that electricity expresses in many cases the same effects as heat, and that bodies are considered the same for both materials with respect to their power of conduction.

Meanwhile, it should particularly be taken into account that electrical experiments are conducted under highly complex circumstances; [95] therefore, in the electrical phenomena much can come to the fore that is not originally essential to electricity. Thus, for example, the Torricellian Vacuum does not glow, and electrical experiments conducted in a vacuum and in different media will consistently demonstrate different phenomena. Nevertheless, the galvanic experiments succeeded in nearly all media in which they have already been tried, and just as perfectly in a vacuum as in air itself.

Finally, what should be said of *light*?—Whether light is originally already split-up into a bunch of simple actants different from one another, whose total impression is white light (as according to *Newton*)—or whether light is *originally* simple (as according to *Goethe*), in any case the polarity of the colors in every solar image is proof of a duality prevailing in the phenomenon of light, whose cause is yet to be investigated.*

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*What more than anything proves the affinity of light with electricity are the *prismatic* phenomena, such as Goethe has established in his contributions. From this I have concluded, and perhaps soon others will realize, that the Newtonian theory of white *light* as a composite of seven colored rays that become separated in the prism is wrong; that the prismatic phenomena have to do with something far higher than a merely mechanical or chemical decomposition of light.

That is, the colors of the prism do not show themselves in *continuity* when the experiment is precisely conducted; they are shown in continuity only under *particular circumstances*. Where these circumstances are lacking, i.e. as a rule, the colors of the prism are shown as opposed to one another—and distributed in opposite poles. The true structure of color formation is the following. In

4) No material can abandon the state of absolute fluidity unless some *actant* achieves preponderance. But no actant can achieve dominance unless another is subordinated to it, or is completely dissolved. Therefore, the greater the condition of fixity (solidity), the more *apparently simple* the substance (ores, metals, etc.). But no substance is simple. Every apparently simple (i.e., indecomposable) substance is the *residuum* of the universal process of formation, and although we lack the means to set its elements again in mutual independence, and to set free the actants subordinated to them, Nature might still have the means to accomplish this feat, and thus to take up these dead materials once more into the universal process of organization. Nevertheless, it is *a priori* demonstrable that there must be *indecomposable* substances in Nature, because the universal process of formation is only *infinite* to the extent that it continually turns back *into itself*. Even so, we must arrive at *final products* in this process, which Nature cannot further develop in the original direction, and with which, therefore, Nature is constrained to strike out on another path, and to cultivate them in the opposite direction.

[96] Here alone are the genuinely indecomposable substances recognized. They are materials that are only *composable*. It can already be concluded that, e.g., it is impossible for the *soils* to be indecomposable, and that the supposition will be confirmed that they are the debris of the great and universal process of combustion, which even now persists to some extent in the Sun and even on the surface of the Earth.†

No composition of indecomposable materials takes place unless bound actants in them become free. Just as Nature makes the absolutely indecomposable substances composable through decomposition, so the absolutely indecomposable substances, conversely, are inserted once again into the universal circulation of matter through composition. The composition cannot proceed unless the original combination of constituent actants is again altered in such substances; and since all actions originally permeate every individual

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the middle, in the Indifference-point, as it were, the glimmer of white light is shown, and now on the margins of this glimmer—as it were, on the poles—the colors appear, and indeed just those colors that the eye has already distinguished as opposed, which, e.g., the eye of the artist has long since differentiated. Thus, here it seems that something far higher is at work. There is a manifest duality and polarity in the prismatic phenomena; therefore, the prismatic phenomena seem to belong in the class of electrical and autological phenomena.

†This supposition has been confirmed more strikingly since this was written.—There is no reason to consider, e.g. nitrogen, carbon, or phospohorus, to be *absolutely* indecomposable, that is, as actually simple. All of these substances are irreducible only on account of their great composability. Oxygen is doubtless the single really irreducible element—not as if it were *simple*, but for another reason that will be developed below. But even this material is also the most composable that we are aware of.

substance, Nature will possess the means wherewith to generate everything from everything.

Therefore, it is likely that in Nature the same antithesis exists in the great as is noted in the small, that is, that Nature on the one hand makes the indecomposable formative through composition, and the incomposable formative through decomposition. It is possible that on the stars as a whole, for example, the reverse process is underway, in contrast to that which takes place on the planets. If, according to universal experience, the indecomposable substances are those with greatest specific gravity, then it is to be expected that the most indecomposable substance lies at the center of every individual system. The illumination of the Sun betrays a continual process of combination; conversely, the same light that is developed in the solar atmosphere through such a process sustains a persistent process of decombination upon the dark planetary bodies; for neither vegetation nor Life is anything other than the constant awakening of slumbering activities, a continual decombination of bound actants.

[98] 6)[4] We are now aware of two classes of natural products, including on one hand the absolutely incomposable, and on the other the absolutely indecomposable substances. But Nature can tolerate neither the former nor the latter, for Nature does not at all tolerate any *final product*, nothing permanent, fixed once and for all. The direction of all natural activity will aim toward *mean products* (from each of the two opposed classes), toward materials which are absolutely composable and absolutely indecomposable at once, and *permanent processes* will appear in Nature (as object), through which the incomposable is constantly decomposed, and the indecomposable constantly composed. These processes, because they are *permanent*, and also because their *conditions* constantly exist, will have the appearance of *products*. The question arises of what sort these products shall be.

7) These products should lie in the middle between the two extremes, the absolutely decomposable and the absolutely indecomposable. In order to be absolutely *decomposable*, such a product would have to approach the *absolutely fluid*, i.e., unify in itself all constituent actants in the most complete *combination*. In order to be absolutely *composable*, the actants in it would have to be continually pushed out of their combination; a constantly disturbed equilibrium of actants would have to exist, that is, it would have to approach the SOLID. But it cannot achieve *either state*.

There must be the greatest *freedom* (mutual independence) and the greatest *linkage* (reciprocal dependence) of actants to one another in this product. The question arises as to what the result of this will be.

First of all, every actant will inhibit the other from producing its original figure. But only various degrees of intensity of every actant are possible.