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COSMOGONY

BY

CHRISTIAN EHRENFELS

PROFESSOR OF PHILOSOPHY IN THE GERMAN UNIVERSITY OF PRAGUE

1899 – 1929

TRANSLATED FROM THE GERMAN

BY

MILDRED FOCHT, PH.D.

NEW YORK

1948

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PRINTED IN THE UNITED STATES OF AMERICA

THE COMET PRESS, INC.

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TRANSLATOR'S PREFACE

Those for whom the name of Christian Ehrenfels has any significance at all usually associate with it his thirty years (1899-1929) as professor of philosophy in the German University of Prague[1], or his two-volume work on theory of value, *System der Werttheorie* (1897-'98), or more probably, his early essay on Gestalt-qualities, important to all students of psychology, *Ueber Gestaltqualitäten* (1890). But of his many other writings, and especially of what he considered his best and most valuable work, his *Cosmogony,* few have ever even heard.

The existence of this book first became known to me through a correspondence with Ehrenfels's widow, Emma Ehrenfels, which began in 1934 while I was working on my doctoral dissertation, *What is Gestalt Theory?*, and continued for several years. In April 1937 she wrote me, in part:

"In the works he left behind there are treasures not yet brought to light. Chief of these, it would seem to me, is *the* work, the complete world-view struggled for and attained by this mind whose nature was thoroughness . . . his *Cosmogony*. The book appeared in 1916; and was swallowed up by the war. Some individuals, it is true, wrote that it had helped them, in the midst of cannon-thunder, to find a way of escape from chaos; but the mission of the book is to make possible an affirmative attitude for thousands who, because they have been trained to think logically, cannot find satisfaction for their religious needs in the dogmas of Christianity. From it there might grow a movement for human betterment and uplift . . . I am seventy-four years old, and in all probability shall not tarry here much longer. It troubles me to think that, if the *Cosmogony* continues to go unnoticed,

[1]For more than five centuries there was but one University of Prague, the oldest of German universities, founded in 1348 by Charles IV. The development of Czech national feeling during the nineteenth century brought about a separation into two universities, the German University of Prague and the Czech University of Prague, each having its own rector, deans and professors, and using in common only certain lecture-halls and the university library.

the publisher (Diedrichs, Jena) may have the whole printing given to the flames, by which the world would suffer an irreparable loss."

After I had, with some difficulty, secured a copy of the *Cosmogony,* and leisure in which to read it carefully, I myself felt so deeply and strongly impressed that, obeying a kind of compulsion which the book exerted on me, I resolved to attempt a translation into English, in the hope that this might open the way for its becoming known in America to the special public for whom it was intended. This task, after many delays and interruptions, I have now completed.

As an aid to understanding the *Cosmogony,* I have prefaced it with a brief sketch of Christian Ehrenfels's life and labors. And since others may wonder, as I did, whether or not the views expressed in the *Cosmogony* underwent any changes in the sixteen years from the book's first publication in 1916 to the author's death in 1932, I have translated and added as an appendix the *Dualistic Confession of Faith,* an article by Ehrenfels which appeared in *Die Wahrheit,* Prague, July 1, 1930.

Since 1938 I have heard nothing from Ehrenfels's widow, who was then in Prague. I do not think it possible that she is still living. This translation of the *Cosmogony* must therefore appear without the sanction which I feel assured she would have been most happy to give, and which I should have wished to have, even though the book was never copyrighted. It has been likewise impossible for me to communicate with the editor of *Die Wahrheit,* publication of which was discontinued in 1938.

The omission of "von" before the name Ehrenfels is intentional. In his later years, after Czechoslovakia became a republic, Ehrenfels discontinued using the aristocratic prefix (many years previously he had renounced in favor of his younger brother the rights and property which appertained to him as the oldest son of a titled Austrian family) and was known simply as Christian Ehrenfels.

New York, January, 1948

CHRISTIAN EHRENFELS: *a brief sketch*[1]

Christian Ehrenfels was born June 20, 1859, in Rodaun, near Vienna; he died September 7, 1932, at Lichtenau in Lower Austria. He completed the course at the Realschule in Krems in 1876, spent a year at a school of agriculture, and then returned to Krems as a special student, receiving the classical certificate in 1879. He began the study of philosophy and law in Vienna, there coming under the influence of Franz Brentano, and also of the composer Anton Bruckner, who made him a lifelong devotee of Wagner. After completing his year of military service in a regiment of dragoons, he traveled in Germany, Switzerland, and Italy, continuing his studies in Berlin, Zürich and Graz, and taking his doctorate at Graz in 1885. From 1888 to 1896 he lectured on philosophy in the University of Vienna; and then went to the German University of Prague, where he was appointed to full professorship in 1899. In 1929 he retired.

Ehrenfels was a prolific writer, with extremely wide and varied interests, and great independence and originality of thought. In addition to his six early dramas, which followed the Wagnerian pattern, he wrote a seventh in his later years, and at the time of his death was projecting another. He had a passion for music: "In the course of my life," he once wrote, "I have devoted a much greater measure of psychical energy to a thorough assimilation of German music than to the absorption of philosophical literature. And standing now in the second half of the sixth decade of my life, I do not regret this, but rather look upon it as one of the sources of my productivity." From this deep feeling for music developed the essay on Gestalt-qualities which has so profoundly affected modern psychology, based on an inquiry into the nature of melody. Ehrenfels had also a gift for mathematics, which led to his work (the *Primzahlengesetz*) in which he sets forth the "law of prime numbers," vainly sought for two thousand years, which he believed it had fallen to him to discover. In his two-

[1]Chief sources of information: *Deutsche Universität Bericht,* Prague, 1934, p. 94 ff.; *Kantstudien,* Vol. 37, p. 313 ff.

volume work on theory of value (*System der Werttheorie*), he points out analogies between economics and ethics: "as demand regulates supply, so the development of human traits is essentially influenced by ethical values." The highest ethical value attaches to general love of mankind: as in the case of commodities, because of its rarity as well as because of its great usefulness for the common good.

In the second half of his life, Ehrenfels's mind turned to reform movements, particularly in sex-relations and in religion. From 1901 to 1916 he strongly, even vehemently, advocated change in marriage customs. He was convinced that the nations of Western Europe were doomed to slow decay and ultimate destruction unless eugenically superior men were given preference in the begetting of each succeeding generation: a proposal obviously in the direction of legalized polygamy for the superior few, which brought down upon Ehrenfels a storm of adverse criticism. In later years, Ehrenfels himself commented: "Belief in such an arrangement rests on utter failure to understand human nature: it is (and I apply this to my own tentative, far too bold proposals) a childlike—not to say childish—Utopianism." In his *Cosmogony* he sought not only to explain the evolution of the world, but also to lay the foundation of a new religion, based on a dualistic conception of the universe as the product of two coordinate principles, one chaotic, the other form-giving, Chaos and God—engaged in an eternal struggle in which God himself works out his own evolution. Ehrenfels had hoped to see the beginnings of this new religion established in Czechoslovakia; but in this hope he was disappointed.

"Ehrenfels," wrote Dr. Max Brod in a memorial tribute[1], "was one of the best known features of Prague, and at the same time one of the least known. Unknown in the depths of his nature, intimate only with a small group of true followers and devoted admirers; known by his striking appearance, his figure slender and erect even at an advanced age, often seen in the narrow streets of Prague or in the Belvedere Park; known by his lectures, in which, undaunted, he attacked the most concrete problems and did not shrink from attempts at solu-

[1]*Kantstudien*, Vol. 37, p. 313.

tion that could not but seem decidedly odd, indeed fantastic, unless at the same time the totality of Ehrenfels's system were taken into consideration. For *all* his ideas were connected with one another, and justice could not be done to his separate proposals, which in the latter part of his life dealt chiefly with sexual-political and religious matters, without knowing this intellectual interdependence. Ehrenfels's fundamental ideas were those of evolution and Gestalt-quality."[1]

In another memorial tribute,[2] Dr. Maria Hoop-Czermak said of Ehrenfels: "He saw the good everywhere. Great men all have in them a tragic potentiality, with which they struggle all their lives, without themselves suspecting it. His tragic potentiality was child-like faith in the good which he saw in every human being, and even planted by his own imagination where no soil was furnished but pebbles and trash. He brought to men a gospel of love, friendship, and conciliation; for the betterment of the race was willing to sacrifice all, disregarding nationality; he reaped ingratitude and hate, because he was not understood, and because, believing in the good in man, he ventured to come forth at a time when the call could not but die away unechoed. It was a hard blow to him—when, perhaps for the only time, he became aware of this tragic potentiality. But then he trudged again through the streets of Prague, with his stout walking stick and heavy shoes, the personification of strength and honesty which, come what may, permit nothing to divert them from their search for goodness—and promised a new work."

[1]Gestalt-quality, according to Ehrenfels, is that perceived something which is more and other than the mere sum of its constituent parts, although these are essential to its existence. A melody is not merely a group of notes; a sentence is not merely a collection of words. Gestalt-qualities, said Ehrenfels, predominate in all our perceiving and thinking. (See *Psychological Review,* 1937, Vol. 44, p. 521: "On Gestalt-qualities," a translation of a short article dictated by Ehrenfels to his wife, at her request, not long before his death.)

[2]*Die Wahrheit,* Prague, September 15, 1932.

COSMOGONY

INTRODUCTION

The *Cosmogony* undertakes to substantiate, before the forum of reason, the claims of a hypothesis about the origin of the world. Against the belief, at present widespread, in the scientific invalidity of all metaphysics, it maintains that even the first metaphysical ideas of man which are known to us possess a certain degree of approximation to the absolute truth, and that it may perfectly well be possible to increase this degree, little by little, so that, although we shall never completely arrive at the truth, yet in the course of hundreds and thousands of years we shall keep drawing closer and closer to it.

I am well aware of the opposition which I am calling forth by this view. To the philosophical reader trained in the school of Kant and his disciples—in spite of the direct adoption of Kantian ideas in Section VI of this work—the object of the following discussion, as well as the method of thinking which it displays, will seem antiquated and discarded "dogmatism." Nevertheless I could not consider the plan of a preliminary critical bout with Kantians old and new, with positivists, pragmatists, and phenomenalists of all descriptions. The reading of the introduction to the book would then have required greater expenditure of time and effort than the reading of the book itself. Besides, to all the initiated who have grown gray in the service of philosophy, it is well known that decision between fundamentally divergent lines of thought does not come through formally correct discussion of the disputed points, but through the victory of the most powerful directive forces within the womb of time, in a kind of struggle for existence, in a competition of doctrines for the approval of the yet unspoiled minds, unprejudiced in their attitude, of the rising generation. For them, the best credentials with which a philosopher is able to equip his theory consist not in censuring his predecessors, but in "himself doing better." Therefore, as a matter of principle, I have avoided all polemics—except the immediately fruitful—and have confined myself solely to presenting the positive results of my researches; and only after that had been done, have I met the chief arguments of the

contemporary way of thinking opposed to mine—without naming names and absolutely without personal animus.

There is much between heaven and earth whose possibility can be shown conclusively and convincingly only by the roundabout method of its reality. The inventors of most technical apparatus and implements, from the weaver's loom to the telephone, from the sailing ship to the airplane, would have had a hard time of it, had they undertaken the task of first persuading their fellow-men that what they were planning was possible, before they set about making the object itself and exhibiting it to the doubters as a real, functioning thing.

To exhibit a philosophical theory as a real, functioning thing means to express it, to awaken an understanding of it in the mind of the hearer or reader, and thus to enable him to verify for himself the inferences drawn from it. To exhibit metaphysical knowledge as reality is the object of the following exposition.

I. COSMIC PHYSIOGNOMY

1. *"Reversal," a Paradox of our Knowledge*

Can the world, taken all together as a whole, display a definite and definable *habitus*, a character, a physiognomy? The whole world—that immeasurable, all-embracing world, which enfolds us, inescapable and eternal—out of which we can never pass into something else, since everything which professes to be something else turns out again to be only a part of that whole, the world? Does not every characteristic which we have sought to ascribe to the world present after all merely a contrast to, or a distinction from, something which also belongs to the world? Does not he who seeks to characterize the world attempt something as nonsensical as he who, without any fulcrum outside the world, should seek to unhinge it, to disturb its center of gravity? We must needs give the answer of skepticism to these questions, if we are able to measure and determine the real only by the real. But in fact we are also able to measure and determine the real by the possible. And since our mind is able to conceive the possible, the not-real, we cannot deny to our mind the power to characterize the world as a whole—we cannot as a matter of course reject the attempt at a "cosmic physiognomy."

When I now undertake to make this attempt, I employ as guide, in the thicket of problems difficult of penetration, a certain asymmetry in our intellectual performances which conceivably could also be entirely reversed, and which therefore seems adapted for distinguishing the real from the possible. I refer to the striking disparity of our judgments when it is a matter of inferring on the one hand the past, on the other the future, from the immediately given. Only the present is immediately given with full certainty to each of us, and with decreasing certainty the past, so far as his memory reaches. The knowledge of all the past that we do not recall immediately we must obtain by judgments of causality from the immediately given to us (present or past)—

and likewise the knowledge of all the future. Now here there is an enormous disparity in what our thinking can do. There is no individual among those now living whose memory reaches back much more than 100 years; and yet we have inferred with great precision the most important events of man's history in the millenniums just past. In the future, on the other hand? What would not a practical politician give, in stirring times, to be able to foresee the events of the coming weeks, or even days, as well as we, looking backward, have ascertained (let us say) the changes of fortune in the Punic Wars or the projects of Alexander the Great! Fruitless endeavor! The future of human history remains a closed book to us. And it is the same with our knowledge of the organic world, on the whole. Geological discoveries permit many judgments *a posteriori* about the fauna and flora of past ages. What kind of creatures will inhabit our earth through like periods of time in the future remains obscure. Even in our knowledge of inorganic process this asymmetry appears, less marked though it may be. The past history of the earth's inorganic crust is considerably better known to us than the future (by means of residual traces, such as sedimentary rocks, volcanic craters, glacial furrows and pot-holes, and the like). Even the astronomer can determine with greater certainty that 1000 years ago, at a specified time, an eclipse of the sun occurred, than that one will occur after the lapse of a similar period; for, even though it is not probable, a cosmic catastrophe might nevertheless intervene before that time in the future—which for the past is out of the question.

In all realms, therefore, of that which is pronounced real, the aforesaid asymmetry exists, even though varying in degree and obviousness, and calls for explanation. Usually the first thought is that the reason of the phenomenon must be sought in the peculiar function of our memory. But such an attempt has to be abandoned at once, because the asymmetry also appears (as in the interpretation of geological discoveries) where that which it is sought to ascertain was never perceived by any man, and hence cannot be inferred by patching together

mmediate memory-data of successive generations. The reason for the ısymmetry is not in a peculiar property of our faculty of knowing, ɔut rather in a peculiar property of that which is known by us. And ɜince it is conceivable that the asymmetry could be reversed, we may hope that by finding its explanation in the material of our knowledge we may arrive at a definition of this material, hence of all the real to which we have any access, as contrasted with the possible.

Here it is necessary, before we can grapple with the task itself, to reject two natural but nevertheless misleading attempts at a solution.

Often it is believed that the reason for this asymmetry has been found in the nature of causality or time as such. But this is improbable at the outset, since it would then be expected that all causal or temporal events would be affected by asymmetry in like manner, whereas it is true that it appears everywhere, but in very unlike degree in the different realms of nature: least in inorganic nature, more in organic nature as a whole, chiefly and particularly in human events. Further, we can easily imagine a course of events in the world which might be formed from the actual one by temporal reversal, in such a way that the past and future should exchange places, all the past becoming future, all the future becoming past. This course of events (though with different specific natural laws, to be sure) would still as a whole display causality and temporality, in the same way as the course of events in our world. But in it the asymmetry would be exactly reversed. Thus, for example, from every organic fossil, from every now-existing bone of beast or man, future life could be conclusively inferred, while all life of the past would have resolved itself, leaving no trace, into present organic and inorganic process. For the future the world would then be an open book, for the past a closed one, in just the same degree as in actuality, reversed. On this ground alone, we are justified in deciding conclusively that time and causality cannot furnish the reason for this asymmetry.

However, it will be worth while to dwell somewhat longer on the causal idea, as doing this will show that, in view of it, the aforesaid asymmetry seems not only inexplicable but downright paradoxical,

since from the consideration of causality in general we should expect exactly the opposite effect.

From the law of causality it follows that wherever in the course of events in the world a temporal line is drawn between before and after, the after is to be regarded as the necessary consequence of the before. Then wherever the before is repeated, a completely similar after must be the consequence. From this it can be deduced that (in a world of strictly causal process) a mind which knew all the specific natural laws, and in addition the *status quo* of the universe during a time-differential, would necessarily be able to predict the future course of events in the world to all eternity, with unerring certainty and accuracy. Usually the reverse too is asserted of this fictitious mind (Laplace's, so-called), the power of drawing a complete inference *a posteriori.* And perhaps this may hold good for the actual course of events in our world. But in no case can this power of drawing an inference *a posteriori* be deduced from the law of causality alone.

Because every after is the necessary consquence of its before, it does not follow that a certain after must always have been preceded by a certain before. In the course of events in a world, nature could be such that several different befores could produce absolutely similar afters. This can be imagined in the case of the impact of absolutely rigid, inelastic bodies. Nothing prevents us from imagining a system of nature in which two such bodies, colliding centrally with equal masses and velocities, would come to rest without producing any other effect on each other. If in this system of nature two such bodies were found in contact, no conclusion could ever be drawn from them as to whether they had been together from all eternity, or whether and when and with what velocities they had collided. Even a Laplace's mind could, it is true, deduce such a course of events *a priori,* but not *a posteriori.* The example is fictitious. The possibility of conclusion *a posteriori* may exist, in view of the specific kind of natural law in our actual world. But the fiction plainly shows that this possibility does not arise from the law of causality as such.

To this is to be added that, since man has existed, his interest has

been fixed in far greater degree on the foreseeing of the future than on the inferring of the past. All practical needs of life—hunger and all impulses of self and species preservation—call for the predetermining and hence for the foreseeing of the future, while the substantiating of the now unalterable past is in itself of no practical value to us. Further, all men who were skilled in predetermining the future had, because of this, a tremendous advantage in the struggle for existence, so that their corresponding faculties were developed by natural selection —whereas this was not the case as regards the past.

From all this it follows that, in a world governed by a universal law of causality, one would expect to find in rational humanity, as a consequence, precisely the opposite of the actually existing asymmetry in the results of our thinking: which asymmetry, from now on, I will for this reason briefly designate as "reversal" (being topsy-turvy), and will regard as doubly in need of explanation.

The understanding of reversal is first of all to be obtained from the fact that in making causal judgments we never infer the total effects from the total cause or vice versa, but always merely part-effects from part-causes or vice versa. Indeed, never do we fully know the total cause or the total effect of any processes. Rather, we are ever snatching, out of the unsurveyable stream of becoming, only certain chains, strands, or lines of successive part-causes and part-effects, and endeavoring to find in them the laws of the process. Now it is easy to perceive that the actual, positive success of this procedure cannot be derived from the general law of causality as such. For certainly courses of events are conceivable which indeed come completely under the law of causality, but are nevertheless so constituted that for every part-effect all of its part-causes have an importance not to be ignored. The fact that, in singling out these "lines of causation," we succeed only in establishing incomplete conformities to law and corresponding probabilities of *a priori* and *a posteriori* deduction—this fact arises rather from a primordial cosmic state of things different from universal causality. This state of things, not entirely without causality, it is true, but without the universal and unbroken sovereignty of causality, would

be just as readily conceivable as the reverse. Here we come upon a peculiar property of the course of events in our world, which up to now has commonly been confused with universal causality, but which we, after pointing it out, will indicate by the special term "articulation," or "causal articulation," of the world. A vast articulation of the world, a vast possibility of arriving at the laws of its process by the singling out of part-chains or lines of causal becoming, is empirically the best warranted of facts; while the universal law of causality as such can never be demonstrated empirically at all.

The establishment of the "causal articulation" of the world—the knowledge that in our judgments as to cause we depend on this rather than on the universality of the law of causality—is the first step in thought toward understanding "reversal." For if this seemed paradoxical to us, because we tried to derive it from universal causality, we now readily perceive that the principle explaining it must not be sought there, but rather in the peculiar nature of the causal articulation of the world.

We will now take another step, and turn our glance upon those chains or lines of part-causes and effects which we single out from the course of events in the world in order that we may find in them (and indeed we often succeed) more or less comprehensive laws of the process. What guides us in their "conception"?

Here we have come to a point where it becomes necessary to bring into the discussion reference to a phenomenon, from whose express recognition science up to now has shrunk away with a peculiar horror, although science can dispense with it as little as practical life: I am referring to the specific quality, the relationship in type and the difference in type, of "configurations" of external objects. That we may be able to single out some part from the universal becoming for causal contemplation, it must have attracted our attention. And that which, above all, attracts our attention is that which because of its configuration stands out from the environment. We distinguish static configurations, such, for example, as are presented to us by an angled crystal, a round pebble, a conical mountain; a mussel-shell, a skeleton, any

corpse of an organism; a knife, a pen, a ploughshare—and kinetic configurations, such as are exhibited by a stream, the motion of the earth around the sun; the flying of a bird, the breathing of animals with lungs, above all the life processes of every organism; the going of a watch, the functioning of a plough. In static configurations we are dealing with the perceptually grasped form of a duration; in kinetic configurations with the perceptually grasped form of a change, most often of a movement.

But the causal lines, the more or less regular sequences of concrete part-causes and effects, which we succeed in isolating from the general stream of becoming, always stand out by *configuration* from their environment; for if they did not, the idea of considering them by themselves would never occur to us. So we may call them "configuration-sequences"; and hereafter the expressions "causal lines" and "configuration-sequences" shall be used synonymously, as occasion requires. Now, however, our problem may be characterized as follows: "Reversal" shows us that , in the configuration-sequences open to perception, the inference from the temporally later back to the earlier can generally be made with much greater certainty and exactness than vice versa. By what properties of configuration-sequences, by what characteristic peculiarity, that is, of the articulation of the world-course which we know, is this to be explained?

2. *Explanation of Reversal by means of the Fundamental Characteristics of Cosmic Physiognomy.*

For the purpose of a preliminary orientation, the division of the configurations of the visible world into three realms will serve: first, of inanimate nature; second, of living organisms; and third, of organic derivatives, such as corpses or vestiges of living organisms, traces of these such as footprints and the like, together with the great realm of life-products, from the nest of the bird and the dam of the beaver to the palaces, machines, and artistic works of man.

We will first consider the realm of living organisms. Here we find configuration-sequences whose characteristic form long ago forced itself upon attention: the so-called genealogical trees. Every living empirical organism of our empirical world is a part-effect of living organisms of the past—two in the case of sexual reproduction, one in the case of asexual. The causal lines of this sort which stand out (and which, if they have not extended from eternity, must have had a beginning at some time or other) are, for our empirical world, without beginning. And this constitutes their first characteristic property, which at once leads to the second: the life-lines, taken as a whole, are not empirically endless in the future, as they are in the past. They often end "blindly" in the future: that means, although there are no living organisms without ancestors, nevertheless there are many of them without descendants. In abstract formula: the configuration-sequences under consideration often end with a member g, among the total number of whose part-effects not one exists which stands out characteristically from the inorganic environment in the same manner as the member g and his forebears. The "blind endings" of configuration-sequences are always much more numerous, in the realm of our empirical world, than is unlimited (or rather not yet limited) progress up to the present or to a foreseeable future. Try to imagine the fauna or the flora of the earth 1,000 years ago, and ask how many of the genealogical lines derived from them are still in existence today. Not anything like the thousandth part!

With such preponderance of "blind endings", all life of the earth would of necessity have been extinguished, if those configuration-sequences which we call genealogical trees did not possess a further characteristic property—quantitative branching out into the future. Every living organism has one parent if asexually propagated, two if sexually, and no more. But on the average, to every living organism may be ascribed a much larger number of descendants. Let us select at random any human being of 10 generations ago, and ask about the number of his own ancestors 10 generations further back. The maximum number comes to $2^{10} = 1024$; because of so-called loss of ancestors through mar-

riages of kin, probably considerably less. His descendants living at present can easily number 4^{10}, that is, over a million, if through 10 generations, without break, four further propagating children were produced. The ancestors must therefore exist in a number which cannot exceed 1024; the descendants are in general much more numerous, but may also be entirely lacking. They vary from zero to millions. The branching out of the genealogical trees into the future finds expression too in their figurative representation. We observe likewise that this branching out, although on the average it predominates, is nevertheless uncertain—it may occur or it may not. The stronger branching out into the future is optional, as compared with the weaker but obligatory branching into the past.

And qualitatively too the genealogical trees branch out more strongly into the future than into the past. The group of an individual's descendants generally shows greater range of variation than the group of his forebears, even regardless of the greater number. This is displayed on the largest scale by the history of descent in the organic world. The earlier the geological strata into which we descend, the more alike are the forms, the smaller the range of variation which they exhibit. From few and relatively slightly differing primitive beginnings, manifoldness of configurations spreads like a fan up to our own time. The tendency to qualitative branching out into the future is an indispensable prerequisite for this result. But on the other hand, from qualitative branching out into the future it cannot be deduced that there will be a constant increase in forms of life. For it would be possible that the lines might branch out into the future, yet nevertheless, because of "blind endings," those that came to nothing might equal or exceed in number those that were added. That is: in spite of the persisting tendency to a stronger qualitative branching out into the future, still the variety of organic forms existing at a given time might remain stationary or even diminish, because of qualitative mortality—"dying out of the species." And the like holds good, too, for quantitative branching out.

Now, if we consider likewise the realm of organic derivatives, the

tendency toward qualitative branching out into the future shows itself in much greater degree. Not only living beings may owe their existence to a living being, but the most varied products, such as tools, weapons, buildings, machines, etc.—and finally, in most forms of death, a static system, a corpse, is derived from him, of which certain parts (for instance the skeleton) will outlast him perhaps thousands of years. Just as (in our empirical world) every living cell of the present points back to a living cell of the past as its parent ("omnis cellula ex cellula")—so from each of the objects named we can infer *a posteriori,* with certainty, one and more than one human beings of the past, and the certainty of this inference shows that we are warranted in singling out the particular configuration-sequences. These are distinguished from the genealogical trees by this: that in them like does not come from like (man from men, carnation from carnations), but what is given comes from something different (a coin, a knife, a pillar from men; a nest from a bird). I call such configuration-sequences, which often end without sequel after a brief span, "heterotropic," in contrast to those which are "autotropic," such as genealogical trees. With man, and especially with "civilized man," heterotropic branching out into the future is vast both in quantity and in quality.

In the relation of the organisms to their derivatives, a further tendency appears, connected with the antithesis of kinetic and static configurations. When any configuration-sequences originate from living organisms and somehow end blindly, almost without exception their last member is an organic derivative with static configuration only. And these static configurations often possess much greater permanence than the kinetic ones to which their origin is due (e.g. fossil mollusks, edifices constructed by man). But often the kinetic life-process brings forth static forms which are not to be regarded as end-members of special configuration-sequences branching out of it, but simply as its by-products or accompanying phenomena: as, for example, trail and excrement of animals. Indeed, closely considered, that which remains at the death of an organism, its body, is nothing but a static product of its kinetic life-process, gradually built up by it in the course of a life-

time. We are therefore justified in mentioning, as an additional characteristic of the organic world, a tendency of its kinetic configurations to leave their mark, or as it were, to precipitate themselves in static forms. For the time being, let us characterize this tendency, which cannot receive the name suited to it except from its relation to "reversal," by calling it the "kineto-static" tendency.

Once again we will sum up as a whole what has been said. The realm of living organisms, together with their derivatives, exhibits first of all the *law of descent*—which may be extended to include organic derivatives. Not only every organism, but every organic derivative as well, originates from a living organism. This last is only apparently tautology or mere matter-of-course: for we are able to recognize organic derivatives qualitatively, even when we know nothing directly about their origin. The Venus of Milo itself, and a worn-out shoe that we find in the gutter, exhibit something in common in their configurational nature which distinguishes them from living organisms on the one hand, and from inorganic nature on the other. And it is by no means a tautological matter-of-course that all objects of such character were produced by living organisms, and mostly by human beings.

Further, the realm of living organisms, with their derivatives, exhibits *tendencies to quantitative and qualitative (autotropic or heterotropic) branching out into the future.*

It exhibits a *tendency to "blind endings" or mortality.* Of the prevalence of this tendency we may form an idea from the consideration that everywhere where a "germ-plasm" can be distinguished from a "soma," the whole soma, and also by far the greater part of the germplasm, is destined to "end blindly". Although the surviving cell-sequences exist in a ratio of one to many millions, organic life, nevertheless, so far as our empirical conclusions go, is virtually immortal. With mortality is connected the kineto-static tendency finally mentioned.

The causal articulation of organic life is further dominated by a characteristic which may be regarded as the antithesis of *causation-rule*

and *causation-right.* Both concepts have reference to the "causal lines" or "configuration-sequences," and to the relation of any member *gm* in them to one member or to a succession of members following—immediately or mediately. A causation-rule is a universality—complete, or it may be only predominating, i.e. approximate—of the succession of *gn* after *gm,* in all cases in which *gm* makes its appearance. I give the name of causation-right to the universality (complete or approximate) with which *gn,* wherever it may appear, is caused by *gm.* In other words: rule is the universality, right the exclusiveness, of the causal succession of *gn* after *gm.* It is a rule (with exceptions) that human beings capable of procreation bring living children into the world. It is a right (without exception) that living children are brought into the world only by living human beings. It is a rule (with exceptions) that adults of our culture-group leave behind some kind of objective traces of their activity (produced or transformed objects of use, written characters, etc.) It is exclusively a human right to produce certain objects of use and to leave behind written characters. If then we scrutinize the realm of living organisms and their derivatives for rules and rights, we find that in it the rights are developed to a far greater degree of universality and exactness than the rules. In this realm we can distinguish countless rights which have strict validity, without exceptions. Every organic species possesses the strictly exclusive right to the propagation of similar living beings. As for the artefacts to whose production man has exclusive right, their name is legion. But of rules having no exception, only one can be established: the mortality of all many-celled individuals. And this rule too establishes only something negative: the ending of the configuration-sequences involved. Even their termination in a static final member is not unconditionally universal (death by fire). But where neither causation-rule nor causation-right attains strict universality, right usually approaches it more nearly than rule.

If the *dominance of causation-right over causation-rule* is grasped in its full significance and scope, it is easy to see that all previously mentioned properties of the configuration-sequences arising in the or-

ganic represent only special cases and developments of this one dominant fundamental tendency.

(For "causes by right" philosophy has long possessed the term "conditio sine qua non." Employing this term and a new one formed by analogy with it, we may designate the aforesaid tendency thus: there doubtless exist in the realm of living organisms and their derivatives countless "conditiones sine quibus non"; but there exists but one "effectus sine quo non"—the death of many-celled living creatures.)

What has been said does not yet fully characterize the causal articulation of the organic world and its derivatives. From the conception of configurational characteristics, hard to define with precision, additional characteristics follow. The world of organic derivatives, too, especially that of human artefacts, taken by itself, shows in its historic sequence an uncommonly interesting but equally complicated configurational structure. Still, what has been said will suffice for our immediate object—the explanation of "reversal." Every causation-rule, in accordance with its nature, makes it possible to infer effects from causes, hence to draw inferences about the future; every causation-right, in analogous fashion, makes it possible to infer causes from effects, hence to draw inferences about the past. Now if causation-rights approximate universality so much more closely than do causation-rules, then "reversal" is an obvious consequence. Additional proof is given by the "kineto-static tendency," which in this connection calls for further explanation. The dominance of right over rule comes to light with special clearness when static forms arising in the realm of organisms and their derivatives are chosen as the point from which to draw conclusions *a priori* on the one hand, conclusions *a posteriori* on the other. Thus, for example, from surviving remains of buildings, household furniture, tools, and weapons, we can draw abundance of reliable conclusions about human civilization of the past, while the static forms give us no information whatever about the future. The same is true of the static body of an organism, and of many of its characteristics—such as signs of age and scars—from which conclusions regarding the past may be drawn, but not regarding the future. And as in addition,

throughout all nature, static forms (at least where stable bodies are concerned) are wont to possess a greater permanence than the kinetic processes, they particularly often serve us as points of departure for *a posteriori* judgments regarding the past. When they have this function, we designate them *traces* of the past, and the kineto-static tendency appears to us a *tendency to trace-formation* (dominant in the world of organisms and their derivatives, at least). From now on, we will characterize it by that name.

But reversal is of value to us only as a guide to the characterization of the causal articulation of our empirical world. Now, after we have fixed on essential characteristics for the realm of organisms and their derivatives, the further question arises: Can reversal in the inorganic world be explained too by similar characteristics? In particular: does the same fundamental tendency exist here too? Can an equally marked dominance of causation-right over causation-rule be observed in the inorganic world also?

An array of experiences seems to point to the reverse. If sulphuric acid is poured into a soda solution, always and without exception sulphate of soda is formed. Therefore here we have a universal causation-rule. But the process mentioned cannot be said to have the exclusive right to form sulphate of soda. This can originate in other ways, and hence the existence of sulphate of soda cannot be traced to this process. Countless other examples may be adduced. But they would be misleading if regarded in such a way.

Our concern is overwhelmingly with the future. What will happen, is the burning question that goes with us everywhere. Causation-rules are therefore usually of much greater practical value than causation-rights. To obtain causation-rules, we put together as the cause all deciding factors. From the effect we often single out one part which is of interest to us. We ought not to be surprised, then, if we cannot find reciprocal conformity to law in their relations of dependency: that is, this is not a peculiarity of the object considered, but only of our one-sided way of looking at it. In the example adduced, the cause was more fully stated than the effect. If sulphuric acid is

poured into a soda solution, sulphate of soda is formed, and carbonic acid escapes. A conclusion *a posteriori* as to the original mixture of soda and sulphuric acid may be drawn from this total effect with certainty equal to that of the conclusion *a priori* as to the formation of sulphate of soda from this mixture. But if we take into consideration in the effect only the sulphate of soda, and in the cause only an equally small part, say the soda, then here too we find like possibilities of drawing a conclusion: just as little as we can tell from the sulphate of soda whether it actually came from soda, just so little can we tell from the soda whether it will be transformed into sulphate of soda. So here there is no dominance of rule over right, but complete equality between the two; and the same is true in many other instances which can be taken at random from the empirical material of physics and chemistry.

It is also to be considered, that the processes which take place in test tubes and retorts, in apparatus and machines constructed by us human beings, are indeed often especially adapted to bring out in isolation the forces of inorganic nature, but that for the causal articulations and configurational combinations of "dead" nature, uninfluenced by the organic, they furnish anything but typical cases. In these examples we are dealing with processes in and connected with human artefacts, which for the greater part were planned for the express purpose of controlling nature—that is, "regulating" nature—for the building up in nature of regular causation-lines. And in this field, of course, the dominance of right over rule becomes subject to exceptions or even to limitations.

If we exclude this danger of deception, in order to answer the question we have only to look at processes in "free" inorganic nature. Here too reversal offers itself as guide. The inorganic history of the earth is also much better known to us backward into the past than forward into the future. And although organic remains play a great part in the geological classification of strata, still the absence of this source of circumstantial evidence would indeed decrease the one-sidedness, but would not remove it. The reasons for reversal are essentially the same

in the inorganic world as in the organic. Volcanic eruptions, glaciers, streams and seas, dripping water, rain and wind, have exclusive rights to the production of certain forms, from which conclusions *a posteriori* regarding them may be drawn with certainty, while conclusions *a priori* of like scope and like specific definiteness are not possible, for no other reason than because of the lack of similarly outstanding causation-rules. Once more let us be on our guard against confusing with the causation-rules applying to the cosmic physiognomy the laws of action of isolated natural forces which we establish by abstraction and experiment. For example, the coefficients of expansion and contraction of different substances when the temperature rises or falls can be determined with great accuracy. Changes of volume during heating and cooling are among the most powerful factors shaping the future destiny of the various parts of the present solid earth-crust. But here the state of things is so complicated that in specific individual cases it is impossible to establish any even approximate generalities of causal sequence, and almost never can we say whether or not, in the course of the earth's history, a certain bit of ground on which we are standing will ever be covered by volcanic masses, inundated by the sea, furrowed by glaciers. But of course there are exclusivenesses of causal sequence, which usually enable us to determine such things with reference to the past.

The dominance of causation-right over causation-rule gradually diminishes in inorganic nature as compared with organic. Causation-lines and configuration-sequences can be singled out with much less sharpness and distinctness. While the special characteristics of causal articulation correspond on the whole to those of the organic world, still in comparison with the latter they generally undergo significant limitations. We can establish empirically only a tendency to descent, not a law. Various configuration-sequences—for instance, rotatory movements—seem, at least to our apprehension, to arise spontaneously out of the relatively formless. In place of the tendencies to quantitative and qualitative, autotropic and heterotropic branching out into the future, there appears in the inorganic world a tendency to separation,

to the splitting up of unitarily directed streams of energy, as well as to the breaking up of stable bodies into different and differently directed parts. On the other hand, if the prophecy of "extinction of heat" should come true, the tendency to blind endings would be advanced to a law. These differences exist, and should not be disputed nor made light of. Yet nevertheless what is in common has much the preponderance. Inorganic nature too has causal articulation—not only the earth, but also the whole cosmos, so far as we are able to survey it. In it or from it, also, may be singled out numerous causation-lines or configuration-sequences possessing greater or less regularity in the connection of sequences, and in these the exclusivenesses of the succession of *gn* after *gm* approximate law more closely than do the generalities. Many of these currents of world-activity, for instance the rotations of the heavenly bodies, run their course without empirical beginning, like organic genealogical trees. Most of them (perhaps all) seem, however, like the latter, destined to end blindly. During their course they, like organic life-process, show a tendency to form static by-products. Not in jest, but in a moment of insight was it said that streams of lava, of water, of ice, leave behind them on their way trail and excrement, like the beasts of the forest. The tendency to trace-formation reigns in the whole inorganic world, from the rotating nebular shapes in the Milky Way to the rock foundation, viewed geologically, on which we build our observatories. Do you think that by means of your telescope you can see what is happening in the worlds of space? No! You see only what happened hundreds, thousands of years ago, and your confidence in the reality of the "seen" is based on the exactness of causal connection by right. Causal articulation in general, dominance of causation-right over causation-rules, and tendency to trace-formation govern not only the world of organisms and their derivatives, but are rather the characteristic fundamental traits of the physiognomy of the whole cosmos as known to us.

The knowledge that we have now obtained at once throws light on that peculiarity of our mental make-up which usually, though wrongly, is adduced as the chief ground for explaining reversal: namely our

faculty of memory, our ability to possess immediate knowledge of the past. At first glance, this ability, biologically considered, seems as paradoxical as reversal itself. Biologically considered, the cognitive faculty is primarily an organ for purposive behavior. Its most important function is the discovery of means adapted to attaining biological ends. It is above all directed toward influencing that which is to come, and not toward ascertaining that which is past. Hence, for rational living creatures, it would be of immeasurable biological utility to have a faculty for immediate apprehension of parts of the world's future course, or of dangers, of that which threatens us, in case we, as possessors of willpower, do not interfere to alter the course of events. In the struggle for existence, why has nature developed, not such a faculty, but instead that of memory, whose utility is much less? for it shows us directly something biologically indifferent, the past, which can no longer be changed. And only by wearisome mental toil can we draw inferences from this past for the future which directly concerns us! Obviously, the situation must be such, the cosmos, in which we as thinking and acting beings are misplaced, must possess such properties that it was much easier for nature to create a faculty for immediately knowing the past than one for immediately knowing the future; otherwise the way our minds are made would be counter to all biological probabilities. These properties of the cosmos—we have become acquainted with them: dominance of right, and based on this, tendency toward trace-formation.

The performances of our memory-faculty depend therefore on trace-formation. The kinetic processes of our experiences leave certain static traces in the brain; and on the basis of these changes, reproduction then ensues, by means of which we directly apprehend the past. In a world dominated by the tendency to trace-formation, biological process was able to construct a trace-forming brain. Immediate apprehension of the future would have required of the appropriate organ a tendency toward form-creation, the direct opposite of trace-formation. And such an organ simply cannot be fitted into our cosmos with its existing fundamental properties, however much this might be to the advantage of living creatures. Reversal is not explained by our memory-faculty, but along

with the latter it too finds its explanation in the fundamental traits of cosmic physiognomy.

In imagination and within the realm of possibility, these fundamental traits are reversible. It is quite possible to create in thought a world in which causation-rules would predominate over causation-rights, and past activities would not leave static traces, but static germs of development would precede future events. We need only turn our actual world temporally upside down, and we shall have a world of that sort, "topsy-turvy," but logically just as possible. Why does not our real world pursue a reverse course? Why is it not dominated by causation-rules and foreshadowings, instead of by causation-rights and trace-formations? Since it is possible that these characteristics of the cosmos as a whole could be reversed, there must be a reason for them. And this reason must be open to discovery.

With this reflection we pass from the field of world-description into that of world-explanation.

II. COSMIC PRINCIPLES

1. *The Dualistic Hypothesis and Its Value as Explanation.*

From the characteristics of cosmic physiognomy which have been demonstrated, it is easy to go on to the formation of a hypothesis regarding cosmic principles. The configuration-sequences which branch out toward the future seem, when followed back into the past, to point to a common root, a unitary source of power and origin of all form. And the frequency of blind endings leads to the conclusion that the emanations of this creative primal force encounter the resistance of a second somehow opposing world-principle, by nature antagonistic to form. Such reflections had weight long before the characteristics of cosmic physiognomy were analyzed and their peculiar nature clearly recognized, and even in the prehistoric ages of myth-making led predominantly to dualistic conceptions of the universe. After it had freed itself from religion, philosophy, it is true, guided by its dominating rationalistic trend, generally inclined toward monistic hypotheses. Still here too, from Anaxagoras down to John Stuart Mill, dualistic movements kept making their appearance. As the intellectually best clarified of such attempts, we find the hypothesis that the universe is shaped by a God unique in nature, who, though he does not possess absolute creative power, is yet the source of all form as against a primal stuff, unfounded and causeless, coexisting with him from eternity. To God's incalculable power of giving form are opposed the incalculable resistances of this primal stuff out of which the world is shaped. And by means of this antithesis are explained death, destruction, and all evil, in spite of the infinite goodness of God.

This hypothesis, which is essentially and fundamentally adapted, as no other is, to explain the existing cosmic physiognomy, nevertheless, as the first step toward attaining this objective, seems to call for two corrections. First, it contains a source of difficulty in its over-definiteness, since, without further proof, it encumbers the unitary primal

source of all form with every conceivable anthropomorphic characteristic, which we have included in the concept "God." Second, it contains a contradiction in the assumption of an unfounded primal stuff out of which the world is formed. Such a primal stuff, however chaotic it may be thought otherwise, must still possess (from eternity and independently of the form-giving principle) that continuity of existence which is requisite in order that, as a reality, it may form the substratum of the universe. But the tendency to exist in a continuous time-sequence is a tendency to order and law, and one which, unfounded and causeless, is infinitely improbable. In this one fundamental tendency of its nature the primal stuff, therefore, would not be opposed, but allied, to the primal source of all order and all law in nature. And in this assumption there is an unallowable inconsistency. As starting-points for a dualistic conception of the world, we can admit only the most sharply opposed cosmic principles, the opposite poles of all conceivable reality. The direct and maximal opposite of the unitary primal source of all form, order and law, can be only that which in every respect is destitute of form, order and law. The unitary principle of form, and opposed to it from eternity, absolute chaos! Only when stated thus does cosmic dualism possess intrinsic credibility.

In criticizing a hypothesis, two things are always to be borne in mind: its antecedent probability, and its ability to contribute toward explaining the facts of the matter under discussion. The combined result of these factors is then to be compared with analogous results for all the other relevant hypotheses. We will begin by criticizing the second factor: what the dualistic hypothesis, in its strict form, is able to offer.

Absolute chaos is that which is absolutely without ground and cause —hence that whose existence does not astonish us in the least, if we take the point of view that the groundless and causeless can exist at all. How are we to imagine anything of such nature? Let this be shown by the example of spatial reality.

That spatial reality may exist, it is necessary that at some point space shall be filled by some quality. Perceptions of qualities which conceivably could fill space are given to us in sensory qualities. Of these, many

are compatible with one another: that is, they could exist simultaneously at one and the same point of space; as, for instance, white, cold, and sweet. How many qualities with space-filling potentiality may exist in addition to our sensory qualities, we do not know. But since, up to now, no one has succeeded in arranging the categories of our sensory qualities into any kind of system, there is every probability that of all possible qualities which might fill space, only a small part is given in perception. For the purpose of this discussion, I will give the name of species to the individual possible qualities; and in contradistinction, the name of genera to the totalities of all qualities incompatible with one another: as for instance all colors, all tastes, all temperatures.

Now, if we take the point of view that the causeless can arise, then the probability is finite, that at a certain moment of time at a certain point in space some representative of a genus, for instance, some color-species, will appear; this probability is therefore to be represented by a fraction $\frac{1}{n}$ (in which n is assumed to be greater than 1). The probability that at the certain moment of time, at the certain point in space, no color-species will appear, is then equal to $\frac{n-1}{n}$. The probability that at a point in space, at two moments of time, no color-species will appear, is equal to $\left(\frac{n-1}{n}\right)^2$; for m moments of time, to $\left(\frac{n-1}{n}\right)^m$; for infinitely many moments of time, to $\left(\frac{n-1}{n}\right)^\infty = 0$. But since every finite period of time contains infinitely many moments of time, the result may also be expressed as follows: if the causeless can arise, then there is infinite probability that during every finite period of time, even the smallest conceivable, at every point in space, some representative of every genus of qualities will make its appearance.[1] If causeless

[1]In this deduction I have employed an orally communicated train of thought of Franz Brentano's.

appearing is possible, so too is causeless disappearing, and a deduction analogous to that for the infinite improbability of no appearing may also be made for the infinite improbability of no disappearing during the shortest conceivable finite period of time. But from this follows, in addition, that where no causation reigns, and provided the infinitely improbable does not come to pass, continuous being simply cannot be attained, but—with particular reference to a point in space—the continuous time-line must be filled up with a discontinuum of unconnected points of becoming and passing away of anything and everything. That at every moment of time the incompatible species exclude one another, and hence only one of them—fortuitously—can attain to even momentary existence, does not alter this result at all, but merely adds a new factor of discontinuity. For here is the place to remember that every portion of space, of finite size, contains an infinity of points in space, and the probability of the appearance of any particular one of the species incompatible with one another is the same for every point in space. Hence, even if only two species are contained in a genus, still the probability that the smallest conceivable finite space will be continuously filled by one of them is also infinitely small. So long then as the infinitely improbable does not come to pass, causation being excluded, and—*scilicet*—absolute chance governing, no spatial form will be able to attain existence for even a moment of time, but space, just like time, will be filled by a discontinuum of the absolutely formless. And what holds good for space holds good for every conceivable analogous category of simultaneous presentation of reality. With this we have arrived at the essential characteristic of absolute chaos.

In view of what has been said, it is obvious that absolute chaos cannot be regarded either as a thing or as a collection of things. Its designation according to the category of things is merely a concession to the limitations of language. Absolute chaos is just as truly unnamable as it is completely discontinuous, unperceivable. That we cannot, and never can, perceive it directly is no argument against its existence.

He who asserts the existence of absolute chaos, by so doing disputes the universal validity of the law of causation, but not the presence of

causality and the caused. To the saying "There is nothing but that which is caused," he opposes the assertion "There is the absolutely fortuitous, as well as that which is caused." And from this arises the further question, whether or not the absolutely chaotic, as that which has become without cause, lacks all power to act. The answer to this calls for recognition of a distinction which is common in popular thinking, but which at present is generally avoided by science in the effort to simplify: the distinction between influencing (active) and offering resistance (passive). Influencing (active) requires continuity of some sort of change. Now, as it is infinitely improbable that any kind of continuity can be arrived at in chaos, it is also just as improbable that an active influence can come from it. Not so with (passive) resistance. It cannot be a matter of indifference whether a body moves in empty or in chaotically filled space. Chaotically filled space must present a finite number of checks to movement, through summation of an infinite number of infinitely small resistances of the momentarily becoming and disappearing. And as with movement in space, so it is with every caused change. The ever-present absolute chaos must offer resistance to every change.

Over against absolute chaos, our hypothesis assumes a unitary primal source of all order, law and form. To this principle must be ascribed (by hypothesis) creative power. The world cannot be shaped out of absolute chaos, but must be created against its opposition, if the fundamental idea of dualism is to be valid. The creative power of the form-giving principle must be presumed to be immeasurable, yet may not be presumed to be infinitely superior, in its finite emanations, to the resistances of chaos.

We will now examine what this hypothesis has to offer, by taking up the question of what results we may be able to derive from assuming the two maximally opposed cosmic principles which have been characterized.

First of all, the problem arises: whether principles so utterly heterogeneous as these could arrive at any kind of cooperation. From the unitary principle of all form we cannot assume that a finite form is

privileged over everything else, that an absolute moment of time is privileged over everything else. In order to bring about action, an external stimulus is required. And absolute chaos may indeed be capable of resisting all continuous influence, but not capable of exerting active influence on that which persists. The difficulty would in fact be insuperable, if that impotence of absolute chaos were itself absolute or logical. But such is not the case. It is not impossible, but only infinitely improbable, that out of absolute chaos should arise the continuing, and with it, an actively efficient impulse. But while the appearing of the infinitely improbable is certainly inconceivable with regard to any finite time, with regard to eternity this is not so. Since the eternal existence of the opposing cosmic principles, a single active impulse might perfectly well have sprung, by pure chance, out of absolute chaos, an impulse which brought about determinate, finite release of the unitary principle's creative power. And with this impetus came the beginning of the world.

From the absence of limitations in the form-giving principle's nature, it follows that, once in action, it would be impelled to ever-repeated emanations; while the quality and rhythm of these emanations seem determined by the special nature of the first fortuitous stimulus.

Every emanation has to overcome chaotic resistances at its appearance and during its course. (Thus, for instance, matter introduced into space would have to destroy, by its very appearing, all the chaotic entities whose place it took. But in its motion it would be checked by absolute chaos in the same manner as a stone is checked in its flight by the resistance of the air.) The form-giving principle, since in its finite creations it is not infinitely superior to these resistances, will send out its emanations to the points of least resistance. These are however to be found there, where an already created form can assist in the genesis of a new one of similar kind. The repeated emanations will therefore present themselves as quantitative branchings, into the future, of configuration-sequences already inaugurated.

Through the unordered resistances of absolutely fortuitous chaos, emanations which were originally similar in their native tendency will

become deformed in various ways. Since the form-giving principle has entered with a part of its being into its creations, it will be affected by these various deformations and incited to the production of new kinds of forms; which, however, not being entirely and in every respect of a new kind, will, like the purely quantitative repetitions, be produced most readily from that which already exists: that is, they will branch off from it.

The individual emanations, freed from the immediate indwelling of the form-giving principle, will become more and more scattered and deformed by the accumulating chaotic resistances, and will finally lose the power of proceeding kinetically. That is: the configuration-sequences in question will display tendencies to split up and to end blindly.

Chaos does indeed possess the ability to check active processes, but not to influence that which merely persists (so long as the infinitely improbable does not come to pass). Therefore, a static nucleus of form, existing when an emanation comes to a blind ending, will continue to exist unchanged.

We see: all the characteristics of cosmic physiognomy previously determined by pure empiricism can be deduced naturally and categorically from the fundamental hypothesis of dualism: the "causal articulation" of the world-process generally in the emanations of a unitary principle, the law of descent, the tendencies to quantitative and qualitative branching into the future, to division and to blind endings; consequent on this, the dominance of causation-right over causation-rule, and in conjunction with a general tendency to rigidity, finally a tendency to trace-formation. Further, it seems clear at once that, where form-giving impulses are sent out from a unitary principle into the unordered infinite manifold of absolute chance, it must very often happen that similar emanations are subject to very different aberrations and new shapings; but that, on the other hand, the chance deformation of two different configuration-sequences with similar results is in the highest degree improbable. In a process of form-building the essence of

whose nature is divergence, causation-right must have precedence over causation-rule.

The ability of the dualistic hypothesis to furnish results would be fully demonstrated by what has been said, were it only a matter of explaining the characteristics (ascertained in the first part of this investigation) of cosmic physiognomy in general, and not also the special conditions under which they appear. But right here, in view of our experienced world, there arise difficulties, indeed apparent contradictions. It is true that everywhere in nature can be discovered unordered deformations of form-giving impulses, which impulses originally and in their native tendency were similar; but they do not seem to be called forth by the resistances of absolutely non-perceptual—which is to say unperceivable and unperceived—chaos, but by the influence of matter, which is unordered only in its collocations, but in its dynamics completely regular and subject to the iron law of causality. The deformation-element of originally similar form-giving impulses seems, compared to their constancy-element, far too unimportant, the divergence in form far too small, to be what we should expect of an emanation into that which is absolutely fortuitous and varied in infinitely many ways. Only slowly, with seeming effort, does the ever-restricted manifold of organic forms work itself free, out of the deadly sameness of the inorganic world. Of absolute chaos it might be expected that it would at once shatter similar germs of organization—here into a tiger, there into a nightingale, here into a sphinx, there into a Pegasus. In the law of entropy, physics has affirmed a universal trend in the direction of rigidity. But, according to this, what will become rigid is only the similarly-directed movement of large masses, not the unordered vibration of atoms. All this seems to point to that earlier view, rejected as inconsistent, which indeed regards the world as proceeding from form-giving emanations, but not from creative emanations into absolute chaos, but from merely organizing intervention in a primal stuff existing since eternity and groundless, in which the uniformity of blindly working natural law is supposed to have made an inexplicable league with the chaotically determined. Further, according to our way of

reasoning, it remains a mystery that the rigid results of earlier kinetic forms (as for example the petrified remains of earlier organisms) do not persist absolutely at rest, but (with the rotation of the earth and other changes of position) themselves go through a multiplicity of movements.

These apparent contradictions between deduction and empiricism vanish, however, when we look more closely at the phenomena to be expected as the result of cooperation of the two principles, which phenomena, up to now, we have considered only as regards the essential fundamental characteristices of a primal emanation.

First of all, it appears that absolute chaos, confronted by a specific form-giving impulse, is utterly unable to function as that principle of immediate divergence in form, which at first, because of a natural illusion, it seemed to be. Configurational emanation as such is necessarily continuous, finite and determinate. Hence, to that which in itself is fixed, chaos opposes all kinds of resistances of every conceivable category, in which inheres tendency to deformation in every conceivable way. But these resistances are infinitely small, and in the temporal as well as in every other dimension, accumulated in infinite numbers absolutely without order or system. Which of the deformation-tendencies, competing among themselves in every conceivable way, can then be supposed to get the upper hand over all the others? To this question no answer can be found. Just because of the immeasurable manifold of its infinitely small deformation-impulses, chaos, as compared with the finitely determined form-emanation, will appear something through and through amorphous, as it were quality-less. The peculiar nature of finitely determined kinetic form must give it the upper hand over all chaotically diffused deformation-tendencies. The resistances of chaos (so long as the infinitely improbable does not come to pass) will make themselves felt only in fluctuating attritions of the original type of form, not in producing new forms. By these attritions, in so far as they affect the form-giving principle (*scilicet*) "feelingly", it can certainly be excited to new emanations. But for us—anyhow at present—it remains impossible

to determine when and under what conditions this will occur. For we must assume that, by the first influence from chaos and the responding first act of creation, there was inaugurated in the form-giving principle, also, a process of change, finitely articulated, but unknown to us. From the relations of this inner process to the chaotic stimuli from without, there then ensued further emanation-acts, in accordance with laws which we have not yet discovered. After how many imprintings of the first type of form a new one will appear remains a matter of indifference as compared with the mere knowledge that it must be some definite number, and that therefore the quality of the form cannot immediately disperse in all conceivable directions. But just as little as we are able to distinguish absolute spaces as large and small, just so little justification have we then for designating the cosmic divergence-process of form-giving as rapid or slow. These determinations can be ascribed to it only in reference to the rhythm of our human life-process and our expectations and wishes derived therefrom.

And a second inference follows from these considerations: if the old dualism, more in accordance with our direct experience than on the basis of rational justification, assumed an eternal primal stuff, out of which the world was made—so too our train of thought leads now to something very similar, though it is something which has come to pass in time: the rigidity resulting from emanations of the first order. The repeated reproductions of the first kinetic type of form—occurring in a number which, for all we know, can be indicated just as well by a figure of one place as by a figure of a million places—must, when freed from the in-dwelling of the form-giving principle, become subject to final rigidity, as a result of chaotic resistances. They do indeed exhibit fluctuating deformations of type, in widely-varying degree, so that no one is absolutely like another; but still these are only modifications of a unitary type. They are also, up to a certain degree, ordered and systematized, since the rhythm of their originating was conditioned by the first form, which arose from chance excitation. Hence they constitute a fit substratum

for further emanations, which emanations can indeed (as the old dualism supposed) result from a merely organizing and moving intervention, and not exclusively from a creative intervention, of the form-giving principle. Thus we arrive at knowledge of the *superposed form-emanation,* or the *form-emanation of higher order,* which is based on the rigidity resulting from a previous emanation. Not every temporally succeeding emanation is of necessity superposed. Temporally, emanations of higher order may be again succeeded by primary creative emanations. Also, one and the same emanation can intervene in the cosmos creatively as well as by superposition.

A further distinction must be kept in mind. Since—by hypothesis—the form-giving principle is not infinitely superior, in its finite emanations, to the chaotic resistances, it cannot produce a static form in one moment of time, but each of its emanations must be due to infinitesimal impulses, and therefore must have a kinetic beginning. For every emanation, therefore, the form-giving principle must be in action for a finite period of time. There are no fixed limits to this first phase. It may last forever. But it is also possible that the form-giving principle, in accordance with the process (unknown to us) within it, sets the emanation—that is, the emanated—free from its own immediate indwelling, and surrenders it to the chaotic resistances which after the lapse of a finite period of time will bring about its rigidity. Correspondingly, the first phase of "actuality," requisite for all emanations, may be followed by the second, of "emission"; and then the third, of "rigidity," must needs follow. But nevertheless it cannot be asserted that all the branches of an emanation must simultaneously pass into the next phase. In fact it is obvious, from the rigidity's occurring as a result of the unordered chaotic resistances, that derivatives of an emanation, originally just alike and "emitted" strictly simultaneously, will be affected by rigidity at different moments of time.

The tendencies to quantitative and qualitative branching into the future are probable only in the phase of actuality, since they pre-

suppose a direct impulse on the part of the form-giving principle. We must then assume that through such impulses mechanisms have been produced, which continue to function in the phase of emission—which is entirely possible.

When an emanation of higher order (B) has set in motion or in any other way has produced continuous change in the rigidity, or "deposit," resulting from a previous emanation (A), then before B itself passes into rigidity, it can, together with its substratum (the deposit of A) serve as the basis for a still higher emanation (C).

The deposit of an emanation of lower order, in contrast to the superposed emanations of a new type of form, contains chaotic elements which, like absolute chaos, offer unordered resistances to these emanations. Consequently, the kinetic forms of higher order have to struggle against the resistances of the emanation-deposit which serves as their substratum, as well as against the resistances of ever-present absolute chaos. In both kinds of resistance, for similar reasons, there is the tendency to produce rigidity of the kinetic. The resistance of the substratum may stand in any finite relation of more or less to the resistance of absolute chaos.

When the deposit of an emanation A serves as the substratum of a higher emanation B, and on the latter, before it has come to a stop, is superposed a third emanation C, kinetic forms derived from C may very well arrive at rigidity, as a result of the resistances of their substratum, before the kinetic impulses of B have died out; that is, so long as the deposit of A is kept in motion, or change, by B. Kinetic forms derived from C will then be subject, in their substratum, to a *relative rigidity,* and in this will share in all movements or changes of their substratum.

When two different emanations B and C are superposed on a common substratum (the deposit of A), their kinetic form-giving impulses will come into collision, and will produce hybrid forms, kinetic and static, of a peculiar type: we will call them *friction-forms.* For obvious reasons, static friction-forms will always be more likely to persist than kinetic ones.

Friction-forms will also appear when only part of a homogeneous emanation-deposit is seized upon by the kinetic form-giving impulses of a higher emanation, as also when the constituent parts, produced by "decomposition" of an originally unitary emanation, come into collision with one another.

Whether primary emanations too, as the correlate of chaotic resistances, send forth friction-forms, is a question difficult to answer.

Our closer investigation of the phenomena to be expected as results of cooperation between form-giving principle and absolute chaos has afforded in less measure definite conclusions, in greater measure a glimpse of a series of eventualities to whose significance we should not be doing justice if we were merely to subsume them under the vague concept of "possibilities." The obvious and apodictic assertion, "It is possible that the diagonals of a quadrilateral may be equal," differs essentially in logical validity from the problematical one, though expressed in similar language, "It is possible that rational winged beings may inhabit Mars." We are dealing with the deductions of *apodictic* possibilities from the fundamental proposition of dualism, except where—as in the case of friction-forms of primary emanations—the deduction itself has been expressly stated to be problematical. And now, if we compare our apodictic conclusions—partly certain, partly probable, partly possible—with the experienced world, all apparent contradictions vanish.

We know our experienced world as a series of superposed emanations, of which the uppermost, the organic world (which alone displays in pronounced fashion tendencies to quantitative and qualitative branching into the future) apparently exists in actuality, while the lower ones are ascribable to emission. The deduction, made for the primary emanation, of all characteristics of cosmic physiognomy from dualistic principles, remains completely valid for emanations of higher order as well. For the tendency to trace-formation, new grounds of explanation have appeared. First and foremost, rigidity,

not in absolute chaos, but in the substratum of superposed emanations (the deposit of previous ones). Further, the shaping of friction-forms (such as, for example, river-beds and water-worn pebbles, trail and excrement of animals). Finally the fact that every static form must have developed by infinitesmal degrees, and hence to our backward-glancing mind can function as trace of a past process.

What a hypothesis is able to furnish is decided by its value for deduction. The fuller and more exact the conclusions regarding the experienced world which may be drawn from a hypothesis, the greater is the possibility of refuting or of verifying it. A hypothesis with no value for deduction can never come into conflict with the experienced world, but for this reason possesses no scientific value of any kind. What turned us away from the old metaphysical explanations of nature was not their conflict with the experienced world, but their lack of contribution to experience, because of their lack of power to lead to conclusions. The hypothesis of the Fenris-wolf as the cause of solar eclipses was not definitely and finally refuted by any experience of ours, as our present hypothesis might be, if ever a solar eclipse were to be observed at any other time than in the phase of the new moon. But in just this possibility of a precise refutation lies the scientific value of the latter hypothesis.

As our present view surpasses the myth of the Fenris-wolf, so, in little less degree, does cosmic dualism surpass in value for deduction all other metaphysical hypotheses which have been set up in the history of human thought. All essential characteristics of cosmic physiognomy, as well as the state of things, "reversal," apparently so paradoxical, but explicable by their means, can be categorically deduced from the dualistic hypothesis. If our experienced world displayed an opposite physiognomy—if we could make judgments about the future better than about the past—then this hypothesis would be overwhelmingly refuted. Just because of this, it is overwhelmingly confirmed by the actual state of things in the experienced world.

2. *Dualism and Monistic Hypotheses.*

In view of what has been said, all that can stand in the way of unconditionally preferring to all others the hypothesis just presented, is the principle of dualism itself. For it cannot be denied that monistic world-views are more agreeable to the autocracy of our intellect, and that in our inclination there inheres a scientific tendency too, in so far that, supposing we were given a choice between two hypotheses of equal explanatory value, a dualistic and a monistic one, we should have to give the preference to the latter in order to be logically consistent. Therefore we must by all means compare the explanatory value of the dualistic hypothesis with that of the conceivable monistic world-hypotheses. But in so doing, we cannot consider any of the views which are monistic only in appearance, but instead actually present a disguised and hence inconsistent dualism, since they hypostatize a principle which binds chaotic and necessary determinants into a fictitious unity. All theories of this kind—whether found in history or recently devised—are inferior to consistent dualism in intrinsic plausibility, and would need to be compared with it only if they at least equaled it in their usableness. With regard to intrinsic plausibility, we need consider no hypotheses except the only conceivable ones which are consistently monistic: the hypothesis which seeks to explain the world solely by means of a unitary first cause of all law, order and form; and that which seeks to explain it solely by means of absolute chaos. Of these two the first, in the various forms of theism, has been very frequently and thoroughly discussed by philosophers; the second never as yet, if we limit the concept of absolute chaos strictly and exclude all disguised dualistic interpolations. Hence the second will first be considered here.

An idea which can easily be adapted to the hypothesis of absolute chaos, and seems to confer on this a prospect of usableness, has been expressed by the physicist Boltzmann—although based, in accordance with his own bias, on the fundamental principle of materialism,

a hybrid thing and therefore antecedently improbable as a cosmic hypothesis. I proceed to quote him in suitably modified form:[1]

In absolute chaos any continuity, law and form such as our experienced world exhibits, is infinitely improbable. If absolute chaos is the primal principle, how does our experienced world arise in this state of infinite improbability? Improbability is not impossibility. To throw 12 a thousand times in succession with two dice is very improbable; but it is not impossible. And if the throwing is only continued long enough, the appearance of such a series is actually probable. Now, even if the infinite universe is in a state of chaos, still there will be—and this is necessarily implicit in the nature of probability—relatively small, absolutely finite regions, in which something infinitely improbable occurs. Such a part of the infinite universe is our experienced world, the solar system, the Milky Way and all the fixed stars. Hence our experienced world represents a region which is an exception to absolute chaos. After a long but nevertheless finite time, it will again revert to an absolutely chaotic state. But then some other part of the universe may enter upon a state in which movement, life, evolution hold sway, and in which again decay follows. For that which arises from chance is transitory, and only the necessary is lasting.

We see: this is the same procedure which previously, from the dualistic point of view, was adopted in order to explain the beginning of the world. For this explanation the smallest conceivable persisting form is sufficient, while according to Boltzmann our whole experienced world, the solar system, the Milky Way and all the fixed stars, are to be regarded as purely fortuitous forms—but this makes no essential difference in the logical applicability of the idea.

But though when it is thus expressed, we are at all events dealing with a scientifically arguable hypothesis, nevertheless its inferiority, when compared with dualism, becomes evident at the very

[1]Based on "Report on the Establishment of a Memorial to Ludwig Boltzmann," by Hasenöhrl. (*Bericht über die Errichtung eines Denkmales für Ludwig Boltzmann, erstattet von F. Hasenöhrl.*)

first step—the testing of its explanatory value. If all order, law and form have arisen out of absolute and therefore infinitely improbable chance, then new order and form cannot constantly and repeatedly produce themselves. The tendencies to quantitative and qualitative branching into the future remain unexplained. Hence nothing is less explained by this hypothesis of chance than is the whole organic world. The tendency to blind endings is indeed explained, but in such a way that it seems to illustrate the proverb: *qui nimium probat, nihil probat.* Consider the following:

One who has thrown 12 a thousand times in succession with two dice, if he feels assured that it really happened by pure chance and that some unknown causal nexus was not involved, will not expect to throw 12 again the thousand-and-first time. Usually the layman even thinks that another throwing of 12 is particularly improbable then. Actually there are no greater odds against it than the first time, namely the probability 35:36. That is, applying this to our case, if we are seriously of the opinion that all the conformity to law in our experienced world really owes its origin merely to an antecedently infinitely improbable chance, then we must logically regard as infinitely improbable, too, the smallest conceivable finite persistence of this conformity to law into the future. In other words: at every moment we must expect, with the certainty of physics, the universal and immediate fulfilment of the "tendency to blind endings"; that is, the immediately impending destruction of the world. And even if this expectation were refuted by experience over and over again, through seven, through ten decades of our life, still, so long as we believe in the hypothesis of chance, we cannot abandon it.

Yes, even more! That which we call our empirical world is put together in very small measure out of direct experiences; in very great measure out of interpolations between direct experiences and out of inferences from experience, which we all make on the principle of preferring those assumptions which bestow on our world as a whole the greatest degree of simplicity, continuity and self-sufficiency. We should have to discard this fundamental rule in our attitude toward

nature, and replace it by the reverse. The assumption that the same sun rises in the morning which we have seen set the evening before, that it is the same sun whose position at different hours of the day we observe in the sky, that when we were not looking it traversed the distance from one point of observation to another in a continuous course without deviations and excursions—all these and all similar interpolations and inferences regarding our life-environment, objects of which we make use, our own productions, our friends and members of our families—must be avoided, suppressed, converted into their opposites, as being exactly the reverse of rational behavior. For if all order and law really owe their existence only to absolute chance, then those interpolations must be most probable which bestow on this world as a whole not the greatest, but the least, degree of order and law.

Further detailed discussion appears superfluous. In its logical character, the unmodified hypothesis of chance resembles thoroughgoing skepticism, in that, for its consistent advocate, it destroys every possibility of planned activity, indeed of any form of expression accompanied by the expectation of being understood. Still, let one more contradiction in its fundamental premise be pointed out. Time is one-dimensional, space has three dimensions. Even if there is no space such as we imagine it, yet (as the correctness of our physical predeterminations demonstrates with infinite probability) there is certainly, as the in-itself of the material world, something analogous to it in a three-dimensional continuous manifold. The probability that, in the infinity of one-dimensional time, a one-dimensional continuum should arise by pure chance is actually finite; and this reflection tells us nothing about the absolute finite magnitude of that which has arisen by chance, whether this corresponds to the distance of the tip of my index finger from the writing-paper or from the farthest nebula of the Milky Way. However, the appearance of a two-dimensional—in fact of a three-dimensional continuum corresponds in its improbability to the expression ∞^3, understanding by ∞ the infinity of the one-dimensional eternity. That is, the

supposition that our three-dimensional experienced world owes its existence to absolute chance remains, in spite of Boltzmann's idea, infinitely improbable; or one may say, nonsensical.

The unmodified hypothesis of chance, as the only cosmic explanatory principle, seems therefore untenable in every respect. Built on an illusory foundation, it lacks the necessary explanatory value, and consistently carried out, would rob us of every possibility of life.

(Here let it be expressly pointed out that the foregoing objections are directed against the adaptation of Boltzmann's idea employed in connection with the unmodified hypothesis of chance, and not against this idea itself. Only the first of the adduced arguments—the reference to the hypothesis's lack of explanatory value—remains likewise valid against Boltzmann's own theory. The succeeding arguments become untenable, if—as Boltzmann does—we presuppose, not absolute chaos, but matter, chaotic only in its collocations and directions of motion, but in its dynamics completely governed by natural law. But this presupposition belongs with the many monistic world-hypotheses which are such only in appearance, but which in reality weld together arbitrarily, in an utterly incredible cosmic primal compound, the dualistic elements of unity, order, and law on the one hand, and of chaotic manifoldness on the other. Matter exists uncreated and indestructible—from eternity to eternity. From eternity to eternity exist just n material particles— atoms or electrons—not one more, not one less! These particles are the seat of energies whose magnitude is finite: that is, determined by an absolute constant. The particles—if they are supposed to be atoms—are arranged in just as many categories, strictly distinguished from one another, as there are chemical elements. If they are electrons, then they all belong to one category. Then, although the absolute magnitude of the energies lodged in the particles from eternity could just as well have any other size—although the particles are subject to no natural order or law as regards collocation and direction of motion—still, as regards the absolute magnitude of their energies, they are so marvellously arranged that all the particles of one and the same category either—

as has generally been the tacit assumption up to now—resemble one another with mathematical exactness, or oscillate within relatively narrow limits about a fixed average which exists from eternity. And indeed, if we take the point of view of the old conception of chemistry, we must assume just as many absolute energy-constants of this sort, arbitrary and yet established from eternity, as we assume chemical elements; from the point of view of a unitary primal stuff, however, only one. From eternity, therefore, strangely and incomprehensibly, in matter chaotic absence of order is knit together with strict order and law. This supposition cannot be avoided, either, by extreme relativity. If we do not think of the energy-magnitude of matter as determined by absolute magnitudes of space and time, then we must think of it as determined by absolute magnitudes of relations; for the proportion between 7 and 13 is itself just as much an absolute magnitude as 7 and as 13 in themselves. The conflict of law and anarchy cannot be eliminated by the idea of eternal primal matter. Hence to its assumption as a final cosmic hypothesis, beyond which we cannot go, there attaches so great a degree of antecedent improbability that only a very conspicuous explanatory value could reconcile us to it. But this explanatory value it does not possess. In explanatory value it lags immeasurably behind the avowedly and consistently dualistic hypothesis. For it explains only the tendency to blind endings, and perhaps trace-formations too, but by no means the tendencies to quantitative and qualitative branching into the future; by no means, then, the whole organic world. And therefore this disguised dualistic view deserves as little consideration, compared with avowed and clear dualism, as do all the attempted explanations put forth in the history of human thought, up to now, which rest on a like foundation.)

So there remains only the consideration of the second possible consistently monistic view of the world. The monistic necessity-hypothesis—as we will call it for the sake of brevity, though this is not altogether exact for all possible interpretations—can be put forth either with or without those additions which particularly stamp

it as theism. In its theistic form, it is of course known to every one with a taste for philosophy. What recommends it to our mind and heart, as well as the difficulties it encounters—all this has already been discussed so often and in such detail, that to go into all the forms of the hypothesis and all the attempts to defend it against obvious criticisms would take us very far afield. Besides, it would be superfluous, since mention of the most essential points is sufficient to reveal its inferiority as compared with dualism.

The monistic necessity-hypothesis starts out by asserting generally the law of sufficient cause, and by recognizing that the assumption of a beginningless chain of causation, in which each member was first an effect and only then a cause, does not meet the demands of this law satisfactorily; and that consequently adherence to the general law of sufficient cause forces us to assume a first world-cause which is founded in itself. Thus far the process of deduction, as such, is unassailable. But now, if we try to test what the hypothesis is able to furnish, and put the question to ourselves, what would have to be the nature of a world emanating from the first cause founded in itself, and from it alone—then we have at once come upon the first, insoluble difficulty. For it is obvious that the emanation from the first cause of a world definitely located in absolute time, with some sort of unequivocal determinations of manifolds and magnitudes, is itself in turn inexplicable. Either we must assume an inner (perhaps psychical) process in the first cause, in connection with whose explanation the problem would merely repeat itself and thus lead to an unsatisfactory regression, or we must permit ourselves to employ other arbitrary and illogical ways of thinking. Hence, since at the very first step the monistic necessity-hypothesis fails us, its explanatory value cannot be rated highly.

And in addition, we must call attention to this: that even if we were willing to accept every one of these illogical ways of thinking, still a deduction of the fundamental features of cosmic physiognomy from the unmodified necessity-hypothesis, with a certainty and significance even approximating that which can be obtained from

the dualistic assumption, would not admit of any possible discussion. And this state of things would remain the same even if, in both the monistic and dualistic hypotheses, we were to proceed from the assumption of a unitary primal cause of all form to theism proper.

Usually the seeming purposiveness of the organic world is adduced as one of the strongest empirical proofs for the existence of God. The marvellous structure of living creatures, even in the most minute details of their organization, is supposed to demonstrate with an irresistible convincingness that here a foreseeing mind was acting for the attainment of definite ends. As regards monistic theism, the argument is utterly untenable. An all-powerful God, the one source of all that is, does not need to employ means of any kind—artificial or otherwise—for the attainment of his ends. If the way organic creatures are constructed is meant to serve an end willed by God (perhaps the awakening of psychical life), God, by virtue of his omnipotence, could bring about this end directly, without any causal intermediaries. However, it is quite different when the argument is applied to dualistic monotheism. As opposed to the resistances and unfathomablenesses of infinite chaos, God can be supposed to be infinitely powerful, infinitely wise, but not all-powerful, all-knowing. His will has limitations. He may very well be constrained to employ means in order to accomplish ends. For dualistic theism, the teleological argument holds good—so far as it is not restricted by the consequences of the theory of evolution, and called in question by the reproach of anthropomorphism.

From monistic theism can of course be drawn a definite conclusion, which falls in the category of values, regarding the nature of the experienced world. The work of an all-powerful, all-wise, and all-beneficent God could contain nothing but good: the experienced world must, whatever the form of its physiognomy, at all events resemble a paradise. As we all know, this one possible certain conclusion does not agree with facts. The labored attempts which have been made to harmonize the existence of evil in the world with the all-power and all-beneficence of God have indeed developed

into a branch of theology, "theodicy," but have not been able to silence the protest of sound reason. For dualistic theists, the existence of evil in the world is no problem and no source of doubt. The all-beneficent, infinitely powerful and infinitely wise God is still not all-powerful and all-wise. From eternity he has found a cosmic force opposed to him, comparable with him in magnitude. The existence of all the evil in the world is explained by the resistances which blind chance, infinite chaos, opposes to the divine emanations.[1]

With this the superiority of the dualistic world-view in explanatory value has been demonstrated, and the only question remaining is whether this advantage is not neutralized by antecedent improbability or assailability of its fundamental propositions. The dualistic world-view sets up the same cosmic principle as the monistic necessity-hypothesis, but is distinguished from the latter by contesting the universal validity of the law of sufficient cause, and by drawing from this the logical inference: the assertion of the existence of absolute chaos. That the assumption of a unitary first cause of all order, law and form does not run counter to the rules of rational thinking may be regarded as already guaranteed by the great frequency and wide diffusion of monotheistic world-views in the history of human thought. But in addition, we possess a proof of this in the fundamental principle of our scientific formation of hypotheses in general. This is the principle: preference of the simpler hypothesis, wherever this seems admissible—that is, in harmony with experience. Thought which always proceeds on this principle, without giving itself any abstract reason for doing so, can take no offence at the hypothetical assumption of a unitary first cause of all order, law and form. Only the union of this assumption with the assumption of absolute chaos, or the assumption of absolute chaos in itself, can be attacked as antecedently improbable or altogether absurd.

The assumption of absolute chaos involves the denial of a universal law of causation. There is certainly no sin against logic in this, inasmuch as philosophy up to the present has labored in vain

[1]These views are later modified in Section VI, in the discussion of the Fifth Dogma.—*Translator.*

to demonstrate the universal validity of the law of causation (which law was thought to be indispensable). But the failure of all these attempts furnishes, rather, a strong ground of probability for the dualistic view. We have previously shown how, from the denial of the universal law of causation, the assumption of absolute chaos follows with logical consistency, when probability-calculation is employed. The assumption of a universal law of causation—more exactly, of the universal law of sufficient cause—and the assumption of absolute chaos are in fact in a relation of flat contradiction: whoever supports one thesis must attack the other. However, there is a philosophical movement[1] which endeavors to obtain from this very fact a proof of the universal law of sufficient cause, believing that it can point out an absurdity in the very concept of absolute chaos. The assumption of absolute chaos would fill up the temporal and every conceivable continuum of real manifolds in general (except where the persisting exists by virtue of emanation), with an infinite multitude of ever-changing, diffused, merely momentary existences. Here—so it is maintained— there is an absurdity. To be real means nothing else than to share in temporal continuity. But in this, that by denial of the universal law of sufficient cause we are reduced to the assumption of an absurdity, of completely diffused chaotic being discontinuous in every respect, there is given to us the long-sought (indirect) proof for the correctness of that law—that is, for the universal law of causation.

I reproduce these views here without being able to share them. On the contrary, I regard them as disproved by reference to the merely momentary existence of that which is in the present. (The present is a time-point. The past is a time-point. Only that which has once been present can become past. The linear past, therefore, does not merely *contain* infinitely many present-points: it rather *consists* of these. For if it did not consist of points, it would have to contain something which had never been the present. And therefore the conception of being which is only momentary contains no

[1]Franz Brentano and his school.

absurdity. This argument holds good just as well for that which fills up time—for that which is in the present and that which is in the past—, but can be grasped more clearly and free from complications with reference to empty, absolute time as such.) Whoever adheres to the opposite view will as a result have to contend with all the difficulties of the monistic necessity-hypothesis, and to him the immeasurably greater explanatory value of the dualistic world-view will remain inexplicable.

So much with regard to the assumption of absolute chaos in itself. When it is combined with the assumption of a primal principle of all law, order and form, the latter is of course deprived of the proof attempted by means of the universal law of sufficient cause. But an unprejudiced examination will not be able to discover any incompatibility in the two fundamental propositions of dualism, nor even any probability of it.

Yet, it may still be argued, the mere lack of intrinsic absurdity or improbability is not enough to prove a cosmic hypothesis, even if it possesses the greatest explanatory value with regard to our experienced world. For we really do not know whether our experienced world may not constitute only an insignificantly small part of the universe, in which perhaps an entirely divergent or quite opposite nature prevails. Hence, a cosmic hypothesis may very well be refuted, but can never be proved, by conclusions drawn from the experienced world. We shall indeed be forced to require, without fail, complete harmony between its implications and our experiences, but nevertheless it is not permitted us to find the essential proof of its correctness elsewhere than in the *intrinsic* credibility of its assumption.

To this the first reply is that the explanation of even a part of the universe—of the whole of our empirical world—possesses corresponding value, even if we leave undecided the question whether there is any connection between the principles established and other data which for us are as yet "extramundane." Second, it is actually possible to convince ourselves that there is a positive intrinsic credibility in the cosmic hypothesis upheld by dualism.

3. *The Intrinsic Probability of the Dualistic Hypothesis.*

The dualistic hypothesis regards the world as a product of chance and necessity. All order which has become established since the beginning of the world, all regularity, similarity or resemblance in form which we come upon in the world, is traced back by the dualistic hypothesis to emanations of the unitary principle. If in a country we discover many coins of similar form, we will immediately make the assumption, as the most probable explanation of this, that they all were stamped either in one mold or in several molds made after a common pattern: that is, we will trace back this regularity of form to a real unity as its cause. The dualistic hypothesis deals in analogous fashion with every regularity of form, static as well as kinetic, of being as well as of becoming, which is included in the world. The identity (or, as seems probable from the most recent observations, merely very close similarity) of all atoms of hydrogen, of carbon, of iron, in short, of the atoms of chemical elements, is no exception to this. This regularity itself is, according to the dualistic hypothesis, no ultimate eternal fact: it too is the result of a becoming which proceeds from the unitary primal source. By itself, however, the primal source of all order and similarity was incapable of acting—incapable, therefore, of producing any kind of form. It needed for this, and continues to need, first stimulus and then resistance from without—chaotic incitations which chance offered and offers to it. Of the way in which the chaotic is thereby raised to form, we may perhaps get a remote idea from the creative energy of artistic imagination, which (as Leonardo pointed out) rearranges chance spots of color on the wall into magnificent decorations, or from the geometer's passion for orderliness, which constructs the one circle appertaining to any three points of a surface, the one conic section appertaining to five points. Therefore, just as all regularity of form is to be explained by the unitary principle, so all manifoldness (according to the dualistic hypothesis) springs ultimately from chaos.

To him, then, who endeavors to accustom himself to this way of thinking, it will seem more and more natural and self-evident, and he will come to be astonished that any one could ever look at the mystery of the world from other points of view. To be sure, if the possibility were offered us of understanding all that exists as proceeding with necessity from one principle, we would accept it with pleasure and would discard the belief in blind chance. But this possibility may be recognized as delusive, for, reduced to the briefest formula: by means of one principle alone we simply cannot understand anything that is manifold. And by the same sign we know the unmodified necessity-hypothesis to be rationalism gone beyond its bounds. Yet, if here we perceive a too great presumption in our reason, on the other hand it is the complete surrender of reason which leads to the hypothesis of absolute chance, and seeks a false tranquillity in the idea that there is nothing at all in the world which requires explanation. He who has followed these, the only consistent monistic paths, up to the point where they lead into the impassable, feels astonished that it was not clear to him from the beginning that the world must be made up of the necessary *and* the fortuitous. Chance and necessity may be interwoven into an incalculable number of hypothetical cosmic constructions. But of them all, the one which is antecedently most worthy of credence is the one which assumes that the two principles have been separate from the very beginning. That is, of all the world-views which are possible without either too great presumption or surrender on the part of reason, the dualistic hypothesis here advocated possesses the greatest intrinsic probability.

The convincing force of this conclusion can be materially strengthened by an experiment in thought, which will be set forth in what follows. It is interesting to observe the reaction of our logical instincts when we put before ourselves the fiction that an experienced world confronts us, in all respects just like the actual world, with the one exception that its temporal course is reversed, and therefore all the past is transformed into the future, all the future into the past. To construct this fiction for the most important types of actual becoming requires

some effort. The reader is now invited to cooperate with the author in penetrating into a "topsy-turvy world" of this sort; with the assurance that this is not a meaningless game, but an experiment with a definite epistemological goal. We will restrict ourselves to material processes in the inorganic and organic worlds.

As a guide to the understanding of the astonishing and bewildering spectacle which is afforded by the attempt to reverse, let this consideration serve: that, presupposing laws of causation like those which govern its normal course, every purely mechanical process can be turned right around, if we think of the directions of movement of all its material parts as changed into their exact opposites. Even the transformation of kinetic energy into heat is no exception to this, if we accept the kinetic theory of heat. This transformation is to be thought of as the splitting up of unitary streams of energy into chance vibrations of particles. But if these vibrations themselves occur only in accordance with mechanical laws, then it is clear that, if we keep in mind the arrangement of these particles after the splitting up of kinetic energy has taken place, and think of the direction of each one's movement as reversed, in the now topsy-turvy world the former unitary stream of energy will have to develop again out of the seemingly chaotic vibrations of the particles, in the same way as it disappeared in them in the normal world. This spectacle we witness in most reversals of material processes of our experienced world, and the strange way in which the joining of seemingly chaotic heat-vibrations finds its completion in energy-forms is what primarily gives to the "topsy-turvy world" that appearance of incredibility which we will now illustrate by some examples.

In the normal world, on a high mountain-cliff, a fragment breaks off from the solid mass of rock as a result of dampness and frost, and when a thaw sets in, loses its balance. It plunges down the overhanging mountain-side, strikes the rocky base, breaks into many pieces. We will follow one of these pieces, as it rolls down the lower slope, loses several more splinters by colliding with stones, and finally comes to rest by a hummock of earth. It has then expended all its kinetic

energy in raising the temperature of the rocks and earth on which it struck, and of the air which offered resistance to its motion. How would this process—certainly not uncommon—appear in the topsy-turvy world? A stone lies by a hummock of earth. Suddenly the seemingly chaotic heat-vibrations of the underlying earth rush together in so extraordinary a fashion that they bestow on the stone a strong impulse straight upward. The air offers no resistance. Just the opposite. As a result of remarkable heat-activities produced from within itself, it opens a way for the stone, yields of its own accord as the stone moves straight upward, and furthermore aids this motion by heat-vibrations—tiny, but in their summation tending toward a goal. In its motion, the stone rebounds against a projecting rock. But in so doing it does not lose either a splinter from its structure or a part of the impetus of its movement. Just the opposite. It chances that another small stone is at the same moment thrown to the point of the rebounding, by the collective heat-vibrations of the earth and air, and see! This small stone is pressed so closely to our stone—again by heat-vibrations—and the surfaces of the two, seemingly broken at random, fit together with such minute accuracy, that the forces of cohesion come into operation, the little stone grows fast to the larger one in a compact mass, and the augmented fragment is now able to pursue its direct upward way with increased rapidity, being aided by seemingly goal-seeking heat-vibrations given out by the projecting rock against which it rebounded. It would be superfluous to elaborate the picture. Essentially the same processes are repeated, until the fragment of rock, amalgamated with many others, finally attains the top of the cliff and there is again incorporated into the solid mass of rock.

Such a process would be possible. It would even be possible— the kinetic theory of heat being assumed correct—if governed by the actually valid specific laws of cause and effect. It calls for nothing more than an appropriate grouping of particles, and appropriate directions of the seemingly chaotic heat-vibrations in them. And still an occurrence of this kind in our normal world is so monstrously improbable that we may venture to assert: even though the firm earth-

crust has been exposed to the influences of the weather for many millions of years, and every year millions of rock-fragments have broken loose on a height and have rolled down over a precipice, still we are certain that such a topsy-turvy process has never occurred even a single time. Why not? We will postpone the answer and go on to another example.

A stone falls into a pool of standing water. On the surface of the water, till then smooth as a mirror, circular concentric rings are formed, which spread over the surface and are broken and reflected by the irregular margins of the pool. Then ensues a complicated confusion of overlapping wave-lines, which however quickly diminish in strength and clearness, until finally the friction of the water against the banks and within itself has consumed the waves' energy of motion—that is, has transformed it into heat—and the mirror-smooth surface is restored. Now reverse this process. Notice how by means of the heat-vibrations given off by the banks and from within the water, first a confusion of wave-lines is formed at the irregular margins of the pool; how this confusion, its impetus to motion constantly augmented by fresh heat-vibrations, arranges itself marvellously in regular concentric circles, which draw together toward their centre. As the last one of them contracts, a stone is uplifted—strange to say, exactly at the centre of the wave-rings—again by means of other heat-vibrations coming from the bottom and from the water. And now the impetus of these rings combines with ever-increasing fresh heat-vibrations from within the water, so as to push the stone up out of the water into the air with a strong impulsion. At the moment, though, when the stone leaves the surface of the water, the whole turmoil subsides, and the mirror-smooth pool lies there as if nothing had happened.

Many such processes would occur in the "topsy-turvy world"—above all, there, where in the normal world systems of vibratory waves spread out in the shape of a circle or sphere from a centre of energy and are deformed or broken in different ways by resistances: hence wherever the air or the ether is made to vibrate by means of a source of sound or light. The fixed stars would seem like enormous funnels

of energy into which poured, mysteriously seeking a goal, narrowing ether wave-lines from all quarters of the heavens. On the earth, volcanic craters would present a similar spectacle. We will again postpone the interpretation of these incredibilities, and turn to some examples from the organic world.

On a sunny winter day, a hare runs through the snow and leaves behind a track, which is immediately blown away in many places by the wind; but on slopes which face the south, where the snow thaws under the influence of the sun's rays and at evening freezes again, it is to be seen for weeks; until finally, when a general thaw sets in, it vanishes altogether. In the "topsy-turvy world" the track of the hare would begin to appear (though not as a whole, but fragmentarily) here and there, first as indistinct indentations in the snow which has turned to ice (or rather in the ice gradually loosening up into snow); then after weeks, in the intervening spaces, because through heat-vibrations flakes are sent forth from the loose snow, while the indentations gradually deepen and in their shape approximate the print of hare's feet, until finally the whole row of impressions is complete; and now the hare, his head rearward and his hindpart forward, we cannot say "runs" over the snow, but, against the tension of his muscles, is shot along by heat-vibrations so cleverly that a foot always lands in the already complete print of the track. Still more marvels. Whenever the foot comes out of the print, the hollow is filled up so accurately with loose snow, by means of seemingly goal-seeking heat-vibrations, that complete conformity with the surroundings ensues, and immediately, over the path traversed by the hare, spreads a field of snow, perfectly smooth, as if it had never been otherwise.

It is easy to see that these are essentially the same incredibilities as in the examples from inorganic nature, only intensified into grotesqueness, monstrosity. And this is just a simple case of trace-formation by organic creatures. Try to imagine to yourself the tracks left in the snow not by one hare, but by a whole winter battue with many hunters, beaters, dogs, many hares, several roe-deer, foxes, and red-deer; how these tracks cross and cover one another, how one treads down the

track of another, so that here and there smoothed-over surfaces are left, and so forth. Now reverse these proceedings; notice how there, through the seemingly like causes of heat-vibrations from the chaotic, different lines of tracks form themselves; and then each of the living creatures is forced, shoved, thrown on the track suited to him, the roe on this one, the red-deer on that one, every hunter on the track corresponding to the style of his shoes—always by strangely combining heat-vibrations from the earth, from the air, from within the organisms concerned; and only then will you have a faint idea of the importance of the concept "trace-formation" in our normal world.

The impression of incredibility made by a topsy-turvy world can scarcely be heightened by further examples. However, it is worth while to observe it in still other fields. In the "topsy-turvy world," the assimilation of food by animals would of course be the exact opposite of what it really is. Food would be excrement, excrement food. The characteristic feature of assimilation in animals would be the formation of chemically highly complex compounds out of simpler ones. As excrement, besides water, what would leave the bodies of animals and human beings would be chiefly fragments of organic creatures, fragments which would then arrange themselves into living plant or animal bodies. Now observe how in the normal world the fruit, let us say of a cherry tree, is consumed for the most part by human beings, in smaller proportion by birds of different kinds; how some of the fruit falls unnoticed to the ground and there partly decays, partly furnishes food for worms. Then imagine these processes reversed—see how the cherries of the tree reconstruct themselves, chiefly out of the excrement of so many different kinds of living creatures! Or reverse the fate of an ox's carcass, which, slaughtered by the butcher, offered for sale in the meat-market, passes into the cooking-pots and roasting-pans of a hundred families and finally into the stomachs of more than a hundred persons.

Natural laws for the origin of living organisms cannot be discovered in the "topsy-turvy world." Living hares would originate from the excrement of human beings, dogs, foxes, wolves, wildcats, golden

eagles, hawks, and many other creatures; but by no means only from the excrement of animals. Often bodies of living hares would arise entirely from the play of inorganic natural forces, and almost never would a living hare appear that had been formed of animal excrement only. And essentially it would be the same with all animals and plants; only that, in comparison with this example, the part played by excrement in their construction would generally be much smaller, and often would be entirely lacking.

On the other hand, in the "topsy-turvy world" the destruction of the organism, instead of its origin, would be subject to strict natural laws. There would in general be no real death, but—as the reverse of procreation—a gradual reabsorption of a living organism into the body of another of similar kind. It could be predicted with mathematical certainty—at least for the section of the "topsy-turvy world" corresponding to our realm of experience— that none of the organic bodies formed in such an uncountable number of ways would be entirely transmuted into inorganic activity—would "end blindly." A bit of each one would be saved by passing into the continuous stream of life. And this kind of becoming and passing away would hold good essentially for the inorganic world also. In the "topsy-turvy world" no forms would "go to pieces." All passing away of forms would occur without break, as if by a gently sloping decline; while a great, perhaps even the greatest, part of the forms would grow out of the chaotic, through putting together of parts which we, judging by appearance, would not characterize in our normal world as anything but "fragments." Yet in spite of these numberless, mysterious, spontaneous beginnings of form, in spite of the absence of all abrupt blind endings, the total result in the "topsy-turvy world"—at least in so far as it would present the antithesis of our realm of experience—would be, owing to a universal tendency toward convergence of forms, not heightening, but lowering, of form-quality quantitatively and qualitatively. It would be as though a power stationed in the future, gifted with the ability to work retroactively upon the past, were smoothly and gradually to drain out of the world all the possibilities of form slumbering in chaos.

In the "topsy-turvy world" we should find ourselves constantly tempted to this absurd interpretation by the aspect of the data of experience.

The "topsy-turvy world" would be, although not logically impossible, still incredible to the last degree. Boltzmann has already called attention to this by explaining the constant increase of heat in the normal world by the probability of transition from order to confusion, and the improbability of transition from confusion to order. Our study enables us to deduce the incredibility of the "topsy-turvy world" and the credibility of the normal world from more clearly defined principles.

It is incredible that, in many places and independently of one another, individual configuration-sequences of one and the same category arise, which then in their further course fuse together into fewer and fewer configuration-sequences. It is still more incredible (that is, the same as more improbable) that in such fashion (that is, arbitrarily and without connection) many categories of forms arise (men, horses, cattle, foxes, hares. . . oaks, firs, roses, tulips. . . quartz-crystals, felspar-crystals, stalactites. . . houses, plows, engines, drinking-glasses. . . . etc.) so that then they may unite in orderly course to form still fewer configuration-sequences. On the other hand it is credible or probable that from one, many of the same or similar kind proceed and gradually come to differ. In other words, divergence in form, with blind endings, is intrinsically credible. Convergence in form, from spontaneous beginnings, is intrinsically incredible.

It is credible that we arrive at laws to which there is no exception, if we question forms of a given category about their origin; the like result is incredible, if we question them about the effects which they produce.

It is credible that the happenings in the course of the world leave traces behind. It is incredible that they send out signs in advance.

From this we perceive: to an intellectual comprehension acting intuitively and synthetically, the fundamental traits of cosmic physiognomy, which dualism is able to deduce from its hypothesis, appear

intrinsically probable, because of the fact that a world of opposite nature at once impresses us as being grotesque and incredible.

And further: Let us imagine that a complex of realities like the "topsy-turvy world" is really forced upon us as a fact by the inexorable compulsion of experience. How would we behave toward it? How would we try to explain it? We should have to reject as absurd that suggested way of thinking, mentioned above, with the form-removing retroactive principle in the future, although what we experienced would keep forcing us toward it. No alternative would be left us. The seemingly spontaneous beginnings of form (here men, there foxes, there roses etc.) we should have to regard as merely seemingly spontaneous, but actually brought about by teleological, goal-conscious collocations, thought out in advance, of particles of matter and the directions of their movements; and the same would be true of the strange business of their convergence, proceeding smoothly and gradually to fewer and fewer, lower and lower configuration-sequences. What then is the goal of this creative power which sees and plans in advance? Can the sudden awakening of form and its gradual conduction into not-form be a final goal? "No, and again no! The goals of the whole must be of an opposite kind. The experienced world is the grotesque prank of an incomprehensible world-demon, to whom we have been completely given over, except for our power to know. Beyond the limits of our experienced world, another comprehensive world-law must prevail!" That is, after all, we could not understand even a "topsy-turvy world" itself by using topsy-turvy principles. We should judge it to be an exception, an enclave, a counter-current in the great total stream of world-activity; and to this comprehensive world-activity we should again ascribe those traits of physiognomy which seemed to us intrinsically credible. And again that means: the dualistic hypothesis does really have for us that intrinsic credibility which we must demand of a cosmic hypothesis.

III. THE NATURE OF THE UNITARY PRINCIPLE

1. *Its Psychoidal Nature.*

Everything that is must be of some nature or other; and this holds good also for the unitary first cause which is assumed by the dualistic hypothesis—the cause of all order, law and form in the world. But it is antecedently probable that we are able to understand the nature of this unitary principle only imperfectly. Still, indirectly, some conclusions regarding it may be drawn with certainty.

From eternity—that is, independently of any influence or stimulus from absolute chaos—no quality of such sort that it would admit of a heightening by degrees can be ascribed to the unitary principle, since every finite modification by degrees can have its ultimate ground only in absolute chance. The unitary principle must be of such nature that an absolute chaos not identical with it, and a world not identical with it, proceeding from its cooperation with absolute chaos, would be possible. Finally, the activity aroused within the unitary principle since the first, purely fortuitous, influence from chaos, must be of such nature that it combines the finite gradation (arising from chance) of its modifications with a unity (required by the unitary principle).

From these requirements—or rather from the first two of them—it follows categorically that the unitary principle cannot be of material nature. For if it possessed finite extension in space, the reason for its not being larger or smaller could be sought only in absolute chance. But if it possessed infinite extension, then a material world not identical with it, that is, lying outside it, would be impossible.

But these requirements could be fully met if the unitary principle were of purely psychical nature. To a purely psychical being could be ascribed a creative and form-giving power which is infinite, and therefore not to be heightened by degrees. Nevertheless, a material world, and even other psychical beings beside itself, would be possible. And

every one possesses in his inner experience indubitable proof that a psychical inner activity is conceivable which combines an actual unity —not one introduced by our way of thinking—with differentiation by degrees.

(The old theology has already drawn essentially the same conclusions, but nevertheless was not able to formulate them with perfect clarity, since, by the recognition of absolute chance as the only conceivable ground of explanation for every finite modification by degrees, it would have undermined the foundation of its own doctrine.)

The knowledge, however, that the unitary principle could not be of material, but could perfectly well be of psychical nature, is far from proving that it really is of psychical nature. Since we cannot know whether, beside the psychical and physical categories which are data of immediate experience, there may not also be, and perhaps are, other —and how many other—categories of reality, we can conclude from what has been said only that the nature of the unitary principle must bear more likeness to the psychical than to the physical; that we come closer to the nature of the unitary principle when we represent it to ourselves in the form of a psychical being.

Still, against the admissibility of such an assumption, objections can be raised, proceeding from that intellectual trend which seeks to deny independent existence and efficacy to the psychical in general, and hence to anything "psychoidal," allied to the psychical; taking its stand on the doctrine of a universal psycho-physical parallelism, it erroneously puts upon matter alone the responsibility for reality and power to act. The forms in which this view appears are varied. One of them, psycho-physical monism, usually called simply monism, affirms that the psychical is identical with the physical (physical and psychical are related as are outer and inner surfaces of a hollow sphere). Of course psycho-physical monism and the dualism opposed to it are to be strictly distinguished from the cosmological monism and dualism of which we have been treating heretofore. Cosmological monism is quite compatible with psycho-physical dualism, as is shown by Christian dogma and by the teachings of many deists. Likewise the cosmo-

logical dualism here advocated would be compatible with psycho-physical monism, if the latter view could be regarded as a way of thinking which would do even partial justice to the facts. But this it does not do, as can be easily understood.

Psycho-physical monism, the doctrine of the identical nature of psychical and physical, has no clear meaning except on a basis of substantialism, which is the assumption that substance is a category not only of our thinking, but also of things, independently of our thinking. He who believes in the actual existence of substances cannot avoid considering his own ego as a unitarily existing substance—at least during the course of his empirical life. Just as little, though, can he then consistently avoid regarding the organic assimilation of matter in his own brain and in the brains of others as a transformation of material substances, and hence as a loss of identity in substance. But now, when, perhaps in the brain of an old man, not one atom can be found which has retained its place since childhood—with what material particle can the ego be identified which has continuously persisted since his childhood? To this question no answer can be found; and so at least this much is demonstrated, that the theory of "psycho-physical monism" is incompatible with a substantialist conception of reality; that substantialism leads, rather, unavoidably to the assumption of a purely psychical substance: that is, a soul separable from the body. But then, if according to the psycho-physical monist there are no substances, no "things" which can be numerically distinguished, but only aggregates of qualities, what sense is there in asserting that psychical and physical are two sides of one and the same thing or of one and the same essence? What sense is there then in the designation "monism" for the theory under discussion? To this question also no answer can be found. And so we think we are doing fullest justice to the aforesaid theory if we drop entirely the term "monism", which is only misleading in this connection, and put the question to ourselves thus: "Abandoning the idea of substantialism, how far can we justify by experience and carry out logically the tendency, dominant in present-day thought, to regard the psychical as a phenomenon accompanying the physical, devoid as

far as possible of being and efficacy? the 'de-energizing of the psychical,' as we will call it from now on."

It is desirable to preface this investigation with the establishment of that one incontestable fact, which is always adduced as the first proof by adherents of the substantialist school of thought, and which actually may have led—or perhaps misled—the human mind into the path of substantialist thought: with the establishment of that fact, obviously present in every one's inner perception, of the unity of consciousness.

As is well known, it is within my option to apprehend every object in the external world of space—a stone, a clod, a snowflake, a drop of water, a brook, a lake, the sea, a cloud, a tree, a flower—as one thing or as a collection of several or many things. Likewise I can apprehend together in one, according to the way I regard them, many stones, many clods, many trees, when I speak of a heap of stones, of a heap of earth, of a forest. The upper limit to this possibility of apprehending together is set only by the concept of the spatial universe, the lower limit of this possible division only by the concept of spatial but extensionless points. Between these two limits, every numerical way of apprehending what is spatially present seems an act of free will, not extracted by our thinking from what is present, but put by our thinking into what is present. In similar fashion, it is within my option to apprehend as a unit every part of the contents of my consciousness, for instance the idea of one stone, when I look at a heap of rubble, or of one tree when I look at a forest; or to combine many of these parts and to treat my idea of a heap of rubble, or of a forest, as a unit. Likewise I can insert the contents of my consciousness into a collection, as a part of it, and regard as a unit "the living consciousness of the German nation, of humanity, of all psychical existences in the world." But if here I went through all the possibilities of a numerical apprehension of what is present, from the lowest to the uppermost limit, I should not carry with me throughout, as was the case with external data, the consciousness that my way of apprehending was voluntary. All gradations of this numerical apprehension of the psychical are indeed freely willed, with the exception of a single one: of that one, namely,

in accordance with which I regard myself as a unit, you and me as a duality. When I assert that in a certain room there are eight chairs, three tables, two lamps, these are freely-made number-apprehensions of what is there; I could just as well speak of so and so many million atoms or of a single set of room-furnishings. But when I assert that there are six human beings in the room, each possessing a unitary consciousness, then this numerical apprehension is not freely made, not inserted by my thinking into what is present, but forced upon my thinking by what is present.

The idea of substance, and the considering of nature as being substance, doubtless originated in this incontestable metaphysical signification of the unity of consciousness. But in the psychical realm, in particular, from the experience of unity have been drawn a series of additional conclusions, which appear to possess only an alleged validity, which carry the principle of unity too far, and come into conflict with the conclusions drawn by analogy in empirical observation of nature. The most important of these conflicts will now be adduced, and in doing this the empirical view, as against the substantialist *a priori* way of thinking, will always be given the preference; since the object of this inquiry is, to determine how far the tendency to de-energize the psychical can be carried in matters which on the whole are still scientifically open to question.

An inference by analogy, through comparison with the movements of our own body, warrants us in regarding the other similarly moving human bodies of our experienced world as animate: that is, as possessors of unitary consciousness. As is well known, we do not stop here with human beings, but extend this view to include the higher and lower animals, down to the one-celled living creatures on the borderline between the animal world and the plant world. So far empiricism does not come into conflict with substantialist thought, not even if (as unprejudiced comparisons demand), we also include the higher plants and the whole plant kingdom in the realm of what is considered animate. However, a conflict arises at once in the problem of the propagation of one-celled living creatures, which, as is well known, takes

place through cell-proliferation. Empiricism here demands, for a thorough-going psycho-physical parallelism, the assumption of a corresponding proliferation of unitary consciousnesses. Substantialism opposes this assumption. Without further examination, we take the side of empiricism, as in this, and in all analogous cases, we hold that proliferation of unitary consciousnesses is not only possible, but does actually occur. And likewise fusion of unitary consciousnesses in the case of the observed fusion of two one-celled living creatures into a single one-celled living creature, and in all analogous cases.

A new conflict appears when we observe a state or colony of one-celled animals and its gradual transmutation into a unitary, many-celled organism. In a certain sense, it seems that in the first stages of this transmutation the whole is a unitary being and the possessor of a unitary consciousness. But at the same time every cell in itself still possesses so much independence that we cannot reasonably deny it a separate consciousness. And should this attempt be made, where is the line to be drawn? Gradually, in the phylogenesis of the many-celled being, a certain morphologically and functionally differentiated cell-complex has attained dominance over and supreme direction of the other cells. Shall we assume that, at an arbitrary moment of time in this continuous development, the unitary consciousnesses of the individual cells of that complex suddenly combine into a single one? This assumption would be an arbitrary one. Empiricism rather demands the view that a set of cells (a, b, c, d, etc.) each in itself possessor of a single unitary consciousness (A, B, C, D, etc.), and all the cells taken together (s), can still simultaneously be the base of a single unitary consciousness (S). This would not contradict substantialism, either. But now the question is about the relation of the cell-consciousnesses A, B, C, D, etc., to the consciousness S of the whole complex. Shall we assume that here a complete separation prevails, as substantialism would demand? Animal psychology hardly offers us any information. But human psychology does. For there can be no doubt that the individual human being also psychically constitutes a state, and one composed of higher and lower unitary consciousnesses, whose number perhaps equals or

even exceeds the number of cells in his body. What every individual calls "his" consciousness, and whose unity makes itself known to us in inner perception, is only the central, dominant consciousness in this state. And now direct psychological investigation shows that the sub-consciousnesses do not remain strictly separate entities beside and outside the over-consciousness, but that they can enter with part of their content into the over-consciousness and can withdraw from it again, and that an overlapping of one consciousness on several others, complete or partial identity of different unitary consciousnesses in all conceivable combinations, is possible.[1]

Or, expressed with more reserve—but consequently now no longer stated as a hypothetical concession, but as a fully valid assertion—we would have to do violence to our experience and conclusions drawn from them by analogy, if we allowed substantialism to keep us from considering such a thing as possible. We therefore assume that it is possible.

Further, experience shows us "blind endings"—dissolution or death—of kinetic systems, cells and cell-complexes which we judged to be possessors of unitary consciousnesses. Substantialism here assumes a separation of the soul-substance from the body, and its continued existence. Empiricism disputes the right to regard the psychical existing in nature as equally indestructible with matter, and asserts at least the possibility of an extinction of conscious processes with physical death. We follow the latter view.

With this thoroughgoing emancipation from the substantialist way of thinking, the first step has been made in the direction of de-energizing the psychical. The second step cannot be taken under the aegis of empiricism, since it tends rather to clash with an unprejudiced interpretation of experience, and is obliged to rely on postulates. This is the view, which indeed sees everything psychical as called forth or brought about by the physical, but nevertheless denies the interference of the psychical in the causal activity of matter in general, and even in the case of what we call the willed activities of men; so that—to

[1] I refer here in particular to the psychological researches of S. Freud.

illustrate by an often-cited example—the movements of Immanuel Kant as he wrote down his *Critique of Pure Reason* would have to be explained purely automatically, without reference to his conscious processes; that is, as merely material effects of their material antecedents.

For the present, we will accept this idea too, and will ask only the question: in what way then the ontological and causal connection of the psychical with the physical is to be assumed at all. That there is no unity of substance, and that as a result the "two sides theory" can no longer be applied is clear, after what has been said. Likewise it is clear that in the total material world, as physics represents it to us, it is impossible to discover an instance, or even a suitable image, of a relation of that peculiar kind. What comes nearest to it would be the comparison of the psychical to a mirror-image of the material process—but here we would have to think, not of the physically exact, but of the naive view of a mirror-image: of the view which considers the mirror-image of a thing or event as something indeed existing, but altogether incapable of acting, as something which is indeed brought about by the real thing, the real event, but is itself quite incapable of reacting on its originator, or on any other real things or events of any kind. (That the mirror-image has at least an effect on our real eye, when we see it, is a fact which completely refutes the naive view; by which, however, it is always ignored.) Existence and simultaneous being-influenced, without any possibility of its own action—existence, as it is ascribed in the naive view to the "unreal things" which the mirror shows us—that is the category to which the indicated way of thinking would like to assign the psychical. And now we come to the question: can this classification be carried out consistently, and is it so securely founded that it could forbid us to regard the cosmic unitary principle, the source of all effective force in nature, as a psychoidal being, allied more closely to the psychical than to the physical?

To begin with: as to the result of carrying it out. The mirror-image offers us a view of its "original", which means of the real event which it portrays, regarded from the one side which is turned toward the

mirror. The view it offers us would presumably be perfectly identical if the mirror were the best conceivable; but actually, since this ideal cannot be attained, what it offers us is the one view of its original, and only with greater or less weakening of the luminosity of the colors, and more or less omission of detail. The original, therefore, is like its mirror-image, but even if the latter were to present a perfect view of it from one side, the original is always richer and can never be poorer than its mirror-image; for never can anything that does not exist be reflected in a mirror. On the other hand, the physical activity, the brain-process which as the ultimate material cause underlies the states of consciousness inwardly perceived by us, is, so far as we know it from experience, completely unlike the psychical (which here may be thought to play the part of its mirror-image); it is perhaps just as rich in detail, indeed perhaps even richer, but in manifoldness of qualities incomparably poorer. In the psychical there blossom forth colors and qualities: red, yellow, blue, green . . . all musical notes, all sounds . . . all perfumes, all flavors . . . joy and pain . . . affirmation, negation . . . etc. etc., which find no place in the physical world-picture, indeed do not even possess an analogue. The physical is evolved in time, the psychical involves time. This means: if I imagine a physical occurrence, there is always included, in the momentary present of my idea, a partial copy of the past of the process. Therefore a brain-process will never, by itself, be adequate as physical base for an idea. The resemblance of original and mirror-image fails, at the very first move, to serve toward the understanding of the relation between physical and psychical.

The following comparison would better approximate this relation, in the form in which it must be represented by the view which de-energizes the psychical. Let us think of any narrative, for instance of the Odyssey, as recorded in a script which, incomparably richer and more nearly complete than ours, gives expression to every nuance in poet's colorful, resounding imaginary picture—but only by expression in writing, by some kind of diagrams set down in black on white. And now let us think of the strip of paper, on which these diagrams are

drawn, as passed before a magic mirror, which possesses the marvellous property of then reflecting, instead of the diagrams on the strip of paper, the poet's colorful, resounding imaginary pictures themselves, perceptible to the senses. The passing along of the inscribed strip of paper could then be compared to our brain-processes, the colorful, resounding image appearing in the mirror to the phenomena in our consciousness. At the same time we may keep in mind that recent technical skill has actually constructed a feeble analogue of such a "magic mirror"—the gramophone. The transference of pictures, too, has been successfully accomplished by a procedure similar to that of the gramophone, which however requires a great deal of time for each separate picture. But should future efforts be successful in reducing this time to a small fraction of a second for each picture, and also in preserving in the corresponding "photogram" not only the contrasts of light and shadow, but all nuances of color, and of reproducing them luminously in their "photogram"—then the combination of a gramophone with a "gramophot," the latter functioning kinetographically in color, would in the effects it produced give us a feeble analogue of the function of that "magic mirror," which itself in turn offers us a simplified picture of that transference which occurs when our brain-processes are translated into the phenomena of consciousness which we perceive.

From these considerations one thing stands out with perfect clearness: the view of the psychical as a reflex of material processes, utterly impotent in itself, cannot be upheld in any instance. Even if we grant to the view which de-energizes the psychical its boldest assumptions, even if we hold fast to the demand for the integrity of all material activity, including so-called acts of will, still we are compelled to ascribe internal causal efficacy to the psychical, that is, the power to produce psychical effects. That supposed apparatus—a combination of a gramophone with a gramophot functioning kinetographically in color—would be a technical miracle. In it would have to occur marvellously complicated and differentiated causal activity toward an end. A still more marvellously differentiated causal activity occurs in the

purely psychical realm, when the material end-member of the physico-psychical chain of causation, the physical or chemical brain-process, is transformed into sight, hearing, taste, smell, into joy and pain, hope and fear, desire and will, belief and doubt, affirmation and negation, into assertory and apodictic knowledge, into intellectual grasp of the past and future.

But then, if the psychical undoubtedly possesses such great internal causal efficacy, what justification is there for doing violence to the judgment of sound human understanding, for denying to the psychical, and hence to the will also, the ability to produce physical effects; and for degrading our goal-conscious interference with material nature —the force which has already set upon the greater part of the firm earth-crust its visible characteristic mark—into an automatic play of material particles? For this intellectual monstrosity no other excuse than the title of a "postulate" can be presented: it is a claim which a special branch of knowledge has set up *in majorem ipsius gloriam,* that is, for the extension, in fact for the all-comprehensiveness, of its own realm of competence. "The causal integrity of the material world!" where is it guaranteed? who has demonstrated it? Is it not refuted, daily and hourly, by what we might call "eye-witness"? Many will assert that the law of conservation of energy demonstrates this integrity. This is entirely wrong. Material particles can be turned aside out of their paths at any time, without expenditure or consumption of energy, and hence without infringing the law of energy, if the directions of the forces which cause the turning aside are perpendicular to the momentary tangents of the curves of the particles' paths. A purely psychical being on whom was bestowed power to influence matter, though only under this restriction, could nevertheless bring into existence in our material world every construction of his fancy.[1] Such an ingeniously restricted interference of the psychical in the material world may be considered improbable. Be that as it may. Acts of will infringe the law of energy! What is this very law itself but a postulate, a presupposition, which has justified itself for several

[1] I owe this knowledge to a personal communication from Boltzmann.

decades in the formation of physical hypotheses, but which has never been proved and never can be (strictly) proved, and which perhaps will even be regarded by the coming generation in the same way as we today look back at that "postulate" of the old astronomers; that the movement of such lofty beings as the stars of heaven could not proceed in any but the most perfect paths, that is, in absolutely circular ones?

The doctrine of the impotence of the psychical over matter is therefore a prejudice, which cannot by any manner of means escape the reproach of narrow unscientific dogma because it, as well as the view of sound human understanding, is also opposed to the prejudices of religious dogma.

Our experiences do indeed show that the whole psychical life of man occurs in dependence on his brain-processes. But our experiences do not at all permit of the conclusion that this dependence is immediate for all categories of psychical processes. All disturbances and apparent losses of psychical activities and contents of consciousness, which have been found to be conditioned by disease, injury, or removal of certain parts of the brain; the influencing of psychical life by variations in the quantity and quality of the blood conducted to the brain from other organs; the dependence of psychical performances on the morphological structure of the brain, on the nature and number of the physiological stimuli conducted to the brain by the sensory nerves—all this, and all else that may fall within the realm of experience, could be just as well understood by the assumption that there are two categories of actual psychical phenomena, a category A, which can come about only under the immediate influence, or at least cooperating influence, of some brain-process; and a category B, which is brought about by "purely psychical stimulation," which means that in its coming about brain-processes took part only mediately, and on the other hand, only psychical processes immediately. It is not meant to assume here that this is really the state of things, that this bipartition of the contents of consciousness actually exists. I assert only that as yet there are no experiences of any kind which would disprove this view.

Look for instance at the psychical phenomena of judging, which presupposes ideas of some sort, without however being itself resolvable into mere ideas or ideational processes.[1] It would be quite conceivable that the ideas, both concrete and abstract, belong to category A, but that the judgment which often—not always—follows belongs to category B. Or the judgment too might belong to A, and to B just the consciousness of proof which appears along with judging. Or finally, proof too might be classed under A, and under B only the inner sense of apodictity (not merely "it is so," but "it must be so") which often—not always—adds the finishing touch to the proof. Such ways of thinking could be refuted only if it could be shown that when specific, locally or qualitatively definable, disturbances or anomalies in the brain are present, the power to form concrete and abstract ideas remains intact; but on the other hand the ability to pass judgment—to arrive at consciousness of proof, of apodictity—is paralyzed or essentially impaired. But established facts of this kind do not exist at present. It will perhaps be objected that every intellectual worker can observe in himself how much more easily he can arrive at conclusions when he is physically in good condition (refreshed by sleep and not in need of food . . .) than when his body is below par. Also it will be said that the occurrence of judgments, of consciousness of proof, and of apodictity is manifestly under the immediate influence of the blood-conduction in our brain. And indeed it might be so; that is something we will not dispute. But every one can determine from his own experience that we do not arrive at conclusions, at consciousness of proof or of apodictity, without a preliminary widely-branching play and interplay of abstract ideas. So it might just as well be that this interplay of ideas is directly dependent on blood-conduction, but that the judgment itself founded on this interplay—the proof, the consciousness of apodictity—belongs to category B.

Summing up all that has been set forth in this chapter, we find:

[1]Pointed out by Franz Brentano, in his *Psychologie vom empirischen Standpunkt;* cf. also *Von der Klassifikation der psychischen Phänomene,* new amplified edition of the relevant chapters of the *Psychologie.*

the psychical is a "real thing," an "actuality" in the truest sense of the word. The psychical is not an unreal and illusory somewhat; it is a somewhat that can act, and not only on the psychical itself (in the inner conscious life of every individual) but also, if we do not sacrifice the testimony of sound human understanding to a dogmatic "postulate," on the material. We must admit these empirical inferences, too, if we emancipate or try to emancipate ourselves from all substantialism in our thinking, and thus from every assumption of a psychical substance. Indeed it is even possible that in our own conscious life we possess a realm of "purely psychical" processes, a category of psychical activity influenced only indirectly by our brain-processes and by the physical generally, which means by the medium of other psychical processes.

And from this it again appears, that even if we give full credit for its empirical foundation to the modern tendency to de-energize the psychical, and follow it to the limits of logical possibility in its deductions—still we have not the least occasion to regard as impossible the existence of a purely psychical being capable of producing effects: if not as substance, yet as an aggregate of non-material qualities. If it were established that there could be only two categories of the real: psychical and physical, then, by virtue of the reasons adduced at the beginning of this chapter, the nature of the creative unitary principle would be shown to be a purely psychical one, and likewise the nature of the processes within it would be shown to be that of psychical phenomena; which if not exactly of the same kind as those of human beings, would still have to be assumed more or less similar to them. But since we do not know whether, in addition to the psychical and the physical, there may not be other—and how many—categories of the real, the scope of this argument is limited to merely establishing the psychoidal nature of the unitary principle and of the processes within it.

2. *The Problem of Consciousness of an End.*

If the similitude of a purely psychical being is still the most adequate representation which we are able to make of the cosmic unitary prin-

ciple, then the question presents itself: whether we should not also accept a theistic world-view, since we represent the activity of the unitary principle as analogous to human end-conscious behavior. It is the much-disputed teleological problem which confronts us here.

As always in philosophy, here too the prime necessity is conceptual clearness. We say that a reality, whether thing or process, is adapted to an end, when the ruling principle of its nature is its ability to produce certain effects. We call the particular effect "end," referring to its function as ruling principle of the corresponding reality. Adaptation to end is therefore etymologically a correctly named concept. Everything is adapted to an end which owes to an end the adaptabilities of its nature.

Our human experience furnishes us with abundance of illustrations showing that what is adapted to an end (our actions, the machines which we construct) comes about from the activity of a will striving toward an end as goal; a foreseeing will, which employs some means or other for the attaining of its goal. Hence the conclusion is obvious, and was early made by human thought, that everything adapted to an end which we find in nature, including that which we human beings have not produced or at least not with consciousness of an end, is to be regarded as testimony to another end-conscious will different from our human one, yet nevertheless similar to it. But this explanation has a serious defect. We human beings can give effect to our end-conscious willing only by the cooperation of our body. But our body is itself a real structure adapted to an end—indeed a structure of incomparably greater adaptation to end than anything which we are able to produce by its aid. Our body is begotten by our parents, it is true, which means brought into existence, but not begotten by them in the marvellous adaptation to end of its organization, with foreseeing and fore-regulating consciousness of end. If everything adapted to an end in nature had to be explained by analogy with our human doing and making, then the highest example of adaptation to end which nature offers us, the human body (and along with it the human mind), needs this explanation above all. But then, if we keep to the analogy,

the explanation of man by means of an end-conscious active will presupposes a being of much greater adaptation to end than is man himself—a being who would excel us human beings in adaptation to end, and therefore doubtless in differentiation in organization, just as greatly as we in this respect excel the most nearly perfect of the machines which we construct. Then how are we to explain this being who works with such immeasurable adaptation to end? It is easy to see that here we come to an unsatisfactory regression, which means that instead of arriving at an explanation, we are forced to the continued assumption of hypothetical beings similarly needing explanation —in the given case, needing it a great deal more. It is therefore not hard to comprehend why the "teleological world-view" has been finally rejected by philosophy as an anthropomorphic prejudice. But by this the task of finding another explanation of adaptation to end in nature —above all in organic nature—has been elevated to the central problem of metaphysics.

We all know that our modern theory of evolution has attempted to explain adaptation to end in the organic world without assuming a creative consciousness of end. We all know likewise the rejoicing with which the apparent success of this attempt was received. But we all know too the serious doubts which now pretty generally reveal that the rejoicing was premature. We will call to mind the essential points in this.

First of all, it must be granted that the concept of "adaptation to end," as we defined it at the beginning, contains nothing about consciousness of end, so that the problem of explaining adaptation to end without supposing a consciousness of end is not self-contradictory. The Darwinian idea, then, is this: the explanation of adaptation to end in the organic world by natural—which here means planless, unregulated, fortuitous—selection from an inestimable number of forms, themselves in turn fortuitous. "The survival of what is adapted to an end is explained by the perishing of all that is not adapted, or less adapted, to an end." The purely negative character of this attempt at explanation has been justly pointed out as its defect. "How does it happen

that forms of such extraordinary adaptation to end as living organisms —dynamic systems capable of assimilation, of propagation, of variation without accompanying loss of power to assimilate and propagate— how does it happen that they ever came into existence?" That is the crux of the question. Even today it is becoming more and more widely recognized and admitted that to appeal to chance, even with the assumption of never so great a number of chance forms, does not furnish a satisfactory answer.[1] And our previous discussion of the infinite improbability of the appearing of even the smallest continuum, as a purely fortuitous thing, merely furnishes new food for thought of the same tenor. It is true that Darwin himself, perhaps the most moderate of all Darwinians, never ventured to apply the chance-hypothesis to the coming into existence of the organic in general, with its power of propagation and variation. But he did, no doubt, consider purely fortuitous variations in the direction of ascent in structure, of the perfecting of organic ability to function, as empirically possible, which means possible to a certain extent. And here he made an error in calculating primary probability-chances, as great an error as if he had considered the chance appearance of the organic itself to be finitely probable. With every evolutionary step upward (if it is to happen by pure chance) the theory of evolution must assume the taking place of an overwhelmingly improbable occurrence—which is equivalent, not to an explanation, but to complete abandonment of the hope of

[1]In his lectures at the University of Vienna, as early as the end of the seventies, Franz Brentano strikingly illustrated the inadequacy of the chance-hypothesis by the following simile:

Let us imagine that somewhere a functioning machine was discovered, perhaps a steam-engine, of such marvellous kind that it "waited on" itself, hunted for coal in the earth and dug it out in order to heat itself, drew water to be used in the boiler; that when worn out, it repaired itself; that it produced from itself other machines of like capacities. And then some one asserts that this machine came about through a chance grouping of bits of metal in the earth! Further, imagine that the second-generation machines brought forth by this machine did not exactly resemble their parent in their make-up, but in many ways fortuitously varied a little from it. What is then to be expected? that the machines of the second and following generations, because of these variations, will gradually lose their ability to function? or that some of them, as a result of these chance variations, will acquire greater and greater ability to function? With overwhelming probability—only the former!

one. Notwithstanding, the theory of descent, with its convincing proofs, obviously remains justified; the importance of selection in the "struggle for existence" (*recte* in the rivalry for propagation) in nature remains justified; the indispensability of an adequately rigorous selection for the preservation of a race-type remains justified; in short, all the practical conclusions which must be drawn from this for the future of civilized humanity remain justified. But as a cosmological hypothesis, as an explanation of adaptation to end in the organic world, the inadequacy of "Darwinism" can today no longer be questioned.[1]

Realizing this, biologists have for some time directed their efforts toward discovery of positive grounds for the appearance in nature of forms adapted to an end, in order to supply what is lacking in the Darwinian train of thought. But efforts with this objective have not so far met with success. For the most part, it is not real attempts to find a solution, but only abandonment of hope of any, which hide behind a scientific-sounding name such as "vitalism" or "immanent purposiveness." "Psycho-vitalism," too, which professes ability to explain adaptation to end merely by the assumption of a psychical influence not further analyzed, is either a reversion to the old theistic-theological attempt at explanation, or a pseudo-explanation by a word, instead of by a concept. The idea which has most content is that the end to be attained in the future produces adaptation to end by temporally retroactive causation. But this idea demands the assumption of time as a mere apprehension-form of our intellect, for if time exists in reality, then it is absurd to say that the future, which as yet is not, exerts a retroactive influence on the real which now is. But whoever tries to reflect on the ideality of time and carry it out consistently will soon be aware that he is faced with an impossibility. If in reality there is no time, then too in reality there is no change and hence no action . . . etc. It may be that time is only imaginary—but at all events we are compelled to consider it real, if we are not willing to let all thinking turn into a muddle of hazy embryonic concepts. The future

[1]Perhaps I may be allowed to point out that in my writings on sexual ethics and biology I have adhered to this point of view from the beginning.

cannot possibly be called upon to explain adaptation to end in the present—not even under the aristocratic name of "entelechy." And so we would simply have to acknowledge that there is a yawning gap in our understanding of nature, or in some form or other try to discover a way of going back again to the old theological explanation—were it not that the dualism here set forth furnishes the "missing link" (of course understood in quite a different sense from that which it has in the problem of transition from animal to man), the part which was lacking, which for the first time really bestows on the theory of evolution that significance which hitherto has been ascribed to it prematurely and without logical justification: the significance of conclusively eliminating consciousness of end as a cosmic explanatory principle.

We will turn our attention to the primal cosmic occurrence, which, according to our theory, took place in the beginning and still is always taking place: to the activity of form-giving, which proceeds from the unitary principle and is released by excitations from chaos. Let us recall the examples that were given. Three random points on a plane determine the form of a circle unequivocally, five random points determine unequivocally the form of any conic section. The form of the circle, as well as all the forms of all other conic sections, shows clearly a combination of unity with manifoldness. However, in the circle the factor of manifoldness is most weakly represented, the factor of unity most strongly. On the other hand, the unity which we perceive in an ellipse or a hyperbola belongs to a higher class than that of the circle. Through three given random points of a plane, infinitely many ellipses, infinitely many hyperbolas may be drawn, but only one circle. If, for example, we make the supposition that the unitary principle is limited in its form-giving to conic sections, then we must consistently infer that, faced with the problem, the "proposition," of three random points on a plane, in making the greatest possible assertion of its nature by means of the smallest amount of energy, it will not produce even a single one of the infinitely many conceivable ellipses or hyperbolas—not even a parabola, in which likewise the element of

unity, compared to the manifoldness, is more weakly represented than in the circle; but only the one circle which is determined unequivocally by the three points. From this example we may abstract the general law, in accordance with which we must consistently imagine the form-giving activities of the unitary principle. Always, following the excitations from chaos, that form becomes established which with the smallest expenditure of energy realizes the greatest possible predominance of the factor of unity, as opposed to the chaotic factor of manifoldness. But this taking hold of the chaotic "proposition" by form must not be thought of as happening in a fashion analogous to that of us human beings when with intention and consciousness of end, founded on complicated deliberations, we construct the circle belonging to the three points of the plane. If there were no other explanation of the unitary principle's form-giving but this, then the completion of the Darwinian train of thought by the dualism here presented, indeed this dualism itself as a cosmic explanatory hypothesis, would be nothing more than ingeniously disguised reasoning in a circle. But we can think of form-giving as realizable and realized in an entirely different way: as a sudden synthesis of unity, the impulsive force, with the "proposition" of chance, a synthesis complete at one stroke, not first thought out and willed in advance but immediate. There are phenomena in the mental life of man which enable us to share or approximate the immediate inner experience of such processes: the moments in which a creative idea comes to us, in which the first sketch of an artistic form, of a scientific hypothesis, of a practical plan of action, arises in us. Whoever has experienced anything of the kind in himself will agree that these processes belong to a category fundamentally different from that of end-conscious activity. What is intimated to us in such cases of "inspiration" is that immediate form-giving which is here asserted to be the primal cosmic occurrence; and it is probable that in these moments we are "nearer to the world-soul than at other times"; indeed, perhaps even enter into a partial identity with it—which will come up for discussion later.

Consequently my hypothesis is the assertion of a natural law, accord-

ing to which, as immediate reactions to excitations or propositions from chaos, and following the principle of the greatest possible performance with the least expenditure of energy, the primal source of all reality imprints its unitary nature on the forms which it creates. It is plain that as the onset of chaotic manifoldness constantly increases (as was set forth in the preceding chapter) the creating must progress to freer and freer, wider and wider form-giving, and to higher categories of the unitary component, in a way which we can picture to ourselves as like the transition from the form of a circle to the form of the other conic sections.

What this hypothesis offers toward completion of the Darwinian train of thought is as follows: For the concept of chance-forms in general, it substitutes the concept of unitary forms released by chance excitations, and thus essentially alters the proportion of probability-chances for the occurrence of adaptation to end. The unitary form in itself is by no means adapted to an end. Whoever asserts that nature—figuratively speaking—"improvises in unitary forms," has not by saying this explained the coming into existence of adaptation to end. But he has provided a starting-point for the Darwinian explanation, from which it can proceed without breaks in the train of thought.

On the substratum of emanations of lower order, as exhibited by our inorganic world, let us imagine new form-giving impulses superposed. The kinetic configuration-sequences which arise in such a way will display various degrees of permanence in their struggle against the resistances of their substratum and of absolute chaos. In accordance with the law of least expenditure of energy, the form-giving principle will give the preference to the more permanent among them, and will employ them in the putting forth of new forms. These new forms will certainly not follow in the direction of that which is adapted to end, which means of that which is more useful in the struggle against the resistances, but—always in accordance with the excitations from chaos—in every possible direction. But among them, in turn, there may be some which increase the permanence of the configuration-sequences involved, and thus attract to themselves the form-

giving power of the unitary principle (somewhat as the holes in the perforated tin bottom of a can attract the flow of down-pressing water) and so lead to new forms. And now it is easy to see how, by repetition of processes of this kind, configuration-sequences, which present merely a delusive appearance of originating in adaptation to end, must be sent forth in different directions. Previously we defined as adapted to end every reality which possesses, in its ability to produce certain effects, the ruling principle of its structure. But then how can an effect, which is supposed to be produced only in the future, become, or have become, the ruling principle of that which now is? It appears only by its anticipation in a consciousness of end existing in either present or past. The appearance is deceptive. There is still another way. The continuance of a unitary configuration-sequence, either unbroken or effected by periodical recurrences, can do the same thing as an anticipating consciousness of end. For the structure of my liver, the ruling principle is its ability to produce bile. But my liver has become what it is, not by the influence of the bile which it will produce in future, but by the bile-like secretions in the liver-like organs of my ancestors, to which secretions it is due that just these ancestors survived in the struggle for existence, and therefore the form-giving principle used their structure and no other as the point of departure for new variations. By virtue of the periodicity of the configuration-sequence involved, a series of effects, similar to that which I today designate as the "biological end" of the organ, was already existing in the past, and by continued variation in the struggle for existence (rivalry in propagation)[1] there ensued a gradual remodeling of the periodically recurring basis for effects of that kind, until it reached its present form. That which directs seems to be the future, but actually is the past.

Among combinations due to absolute chance, form adapted to an end would possess infinite improbability. Among unitary forms released by means of chance, form adapted to an end also still possesses

[1]Cf. my essay, "Contributions to the Theory of Selection" *(Beiträge zur Selektionstheorie)*, in Vol. III of Oswald's *Annalen der Naturphilosophie*.

overwhelming improbability, but only finite, so that a probability, small indeed, but nevertheless finite, exists here for the occurrence of forms adapted, and better adapted, to end. Experience is in full agreement with this unmediated probability-estimation. The new forms which we observe in organic life show no tendency at all toward adaptation to an end, though they do indeed show a tendency toward the rhythmical, which we perceive aesthetically as unitary form. Among all the mutations which up to now have come to light in cattle-breeding and gardening, and which have become fixed partly through artificial selection, there is scarcely one adapted to an end, scarcely one, which if set among the conflicting forces of non-human nature, would not soon have to give way to the original, naturally selected form of the animal or plant species concerned. But among these variations and mutations there are certainly many which have made the animal or plant species concerned more suitable for the end which man pursues in them. In a free struggle for existence, our dogs would probably soon be overcome by wolves. But in the environmental conditions created by the existence of human beings, the dogs are better equipped than the wolves for the struggle for existence, and will certainly survive them phylogenetically. Likewise, countless millions of sudden variations and mutations, which then in turn perished, have doubtless taken place in nature before man. That however a small part of them too were adapted, and better adapted, to the conditions of natural development corresponds exactly with unprejudiced probability-calculations, if we replace the Darwinian concept of chance coming-together by the concept of unitary form released by chance.

Where the struggle for existence is less severe, in the so-called "sanctuaries" (as in New Guinea, where there are none of the larger beasts of prey), nature has more scope for the development of her new forms. Here it becomes especially evident that these forms (for instance, in the plumage of the birds of paradise) have no intrinsic tendency at all toward adaptation to an end, but on the other hand all display the typical aesthetic characteristic of unity in manifoldness.[1]

[1]Taken from a lecture by Wilhelm Bölsche.

The extraordinary adaptation to end of many parasitic forms also speaks against a prevailing consciousness of end in nature; as, for instance, the so-called bladder-worms, which are so organized and so directed that by means of two metamorphoses they pursue the course of their life through two animal bodies, that of the sheep (sometimes also that of man) and that of the dog. In order to make comprehensible the coming into existence of these hideous creatures, what purposes must we needs ascribe to a creator who with foresight shapes the organic world? But by the assumption of a universal urge toward form, operating without foresight at the points of least resistance, the bladder-worm's high degree of adaptation to end, as the result of millions of years of natural development, can be comprehended in the same way as adaptations to end in the structures of the sheep and dog themselves.

Another similar difficulty in the teleological view relates to a much larger field of experience. Even though there are also many organic forms which—in reality or in appearance—have supernumerary parts in their structure, still the number of "balanced types" is much greater, in which every organ, including the organs of representing, thinking and desiring in man and beast—with the exception of some rudimentary fragments from ages past—displays adaptation to end in a high degree. The whole organism here appears to be a complex of "means," formed as if a marvellous knowledge and foresight had put it together with consciousness of an end. But now what is the sought-for "end" which these "means" are supposed to serve? We can find no other answer than to point to the organism itself. Preservation of self, preservation of kind, preservation of that configuration-form which is altogether and in every respect "means," is also its only plausible "end." Means and end seem, in the organism, to coincide: a perception to which Goethe has already given expression in the words, "The only end in life is life itself." But even this view, which bids fair to erase the distinction between means and end in the organic world, cannot be followed out consistently in the sense of consciousness of end. It refuses to serve, when confronted by the facts of phylo-

genesis and organic transmutation. When, in the course of eons, a fish evolves from the worm, a reptile from the fish, a bird from the reptile, the foreseeing end-conscious creator must obviously have made a fundamental change either in the means of attaining his "end," or in his ends. Now, empirically, in our own end-conscious behavior, we are very well acquainted with a similar change in "means" when we seek identical ends under different conditions. Thus a certain human individual may be, in varying circumstances, striving toward and attaining an identical end, his nourishment, now by means of hunting, now by means of fishing, cattle-raising, agriculture—or by simple purchase of articles of food. But obviously a similar interpretation of organic transmutation cannot be upheld, for here the retained end is lacking. With the means the end too must have changed; and with the thousands and thousands of organic species which simultaneously are and were undergoing transmutation, thousands and thousands of the foreseeing creator's ends (since here means and end always coincide) must have changed and are still changing, always parallel with the adaptations most suitable at the moment for preservation of individual and kind. This assumption would afford no explanation, for it would be no more probable than the phenomenon to be explained, taken just as it is. We should have to presuppose a creator whose fixed end it is, not to produce life in certain configuration-forms, but life in general and indeed as much life as possible in configuration-forms of as many kinds as possible. But now, since a life-form is nothing more than a kinetic configuration-form with relatively great power to maintain itself, and since experience shows that by far the greater number of all variations and mutations which occur do not increase, but lessen, the ability to preserve individual and kind, we must modify that assumption still further: the creator's end is—not expressly "life," but only in general to produce form in as great abundance, variety, and richness of content as possible. What we call life creates itself of its own accord as the unintended result of this form-giving, since the persisting forms always supply the proximate initial conditions for new forms. And with this we would now

have reached the hypothesis of our unitary principle, if we were also to drop the definition, become utterly meaningless, of "that which is conscious of an end." To give form is not an "end" with the creator, for every "end" presupposes "means", and the "unmediated" forms are incompatible with anything of the sort; but it is the *nature* of the unitary principle to give form, to bring every stimulus, every "proposition" from without into a synthesis with the unity of its own being. And by these syntheses is explained not only the inorganic world, but also the world of living organisms, with its deceptive appearance of an "immanent consciousness of end."

Another consideration of a general kind points in the same direction. The analogy between our mechanisms, which are undoubtedly constructed with consciousness of an end, and organisms, seems to speak for an end-conscious creation of the organic world. However much we may seek, we can discover no essential, strictly universal difference between mechanism and organism, if we confine ourselves to description. On the other hand, there is certainly such a difference in genesis. Our machines, like organisms, possess definite static forms, and when put in operation exhibit dynamic forms or systems. But every machine must first be produced as a static construction, and indeed must usually be produced and put together out of many parts: every machine, therefore, in its initial stage is a purely static construction, before it can be put in operation. Organisms come into being in an essentially different way, since the static in them is in motion from the first, and develops not by the putting together of parts, but, from the very beginning, out of the stirring whole. Our human mechanisms which have come into existence through consciousness of an end, are of statogenic origin; organisms (and, like them, all the inorganic dynamic systems which have grown up in nature, such as rotatory movements, wave-currents, etc.) are of kinetogenic origin. A further proof that the latter too may have come into existence in a different way from machines.

In addition, against the dominance of a consciousness of end as the cosmic principle, speaks the imperative aspect of the end-conscious

provenance which we found in the "topsy-turvy world" (that fiction which we arrived at by exchanging the places of future and past in our experienced world), and which, in spite of the "senselessness" of its end, still cannot be thought of as other than end-conscious. The impression of monstrous improbability made by the "topsy-turvy world" rests in great part on the vague feeling that we could never explain this world in any but a teleological way. And again that indicates that an analogous feeling, that the normal world could be explained without teleology, belongs among the reasons for its immediate credibility.

If to what has been said we now add the fundamental error of the teleological explanation, which was set forth in the beginning and which alone is enough to discredit it—the infinite regress into which it plunges us—we can scarcely hesitate to regard this explanation as now finally discarded by serious thought. What we have to put in its place is a combination of Darwin's idea of selection and the assumption of an immaterial psychoidal principle, form-giving, but without end-consciousness—of an unmediated synthesis, taking place according to natural law, of fortuitous manifoldness and creative unity.

Consciousness of end is, therefore, not a cosmic explanatory principle. But it is a cosmic fact. There is, in the cosmos, end-conscious form-giving—without doubt among men, and in elementary ways, among the higher animals; there is, perhaps, end-conscious form-giving among countless millions of beings inhabiting other planets of our system and of millions of other solar systems—beings with natures analogous to our own. Nevertheless, consciousness of end, even if it has already ruled on earth, in particular, for some millions of years, must be considered a relatively late cosmic product, a form which has arisen only by means of that which is indeed adapted to end but which came about without consciousness of end. Animal psychology shows irrefutably that the further we descend in the scale of evolution, the more the actual adaptation to end in animal behavior exceeds the consciousness of end. What we call "instinct," whose domain we generally restrict to the animal kingdom, as opposed to man,

is nothing but a talent for coordinated movements, which occur with adaptation to end, but either quite without consciousness of end or only with a short-sighted consciousness of end—with a consciousness of end which extends only to some members in the chain of inaugurated effects, but not to the "biological end" itself. Thus, for example, the behavior of nest-building birds shows unmistakably that they go about the construction of a nest with consciousness of an end, and intelligently seek out and bring together materials suitable for this. But their consciousness of an end does not extend to understanding and desiring a nest as a means of caring for the young. Their consciousness of end stops short with the nest; the nest is for them its own end. Among us human beings, in many fields, the consciousness of end has already arisen to "biological ends," but still not everywhere. We human beings too, especially in our social behavior, are still in many ways under the sovereignty of instincts.[1]

Many biologists have thought of the process as reversed. Consciousness of end is supposed to have been present at first, and this then created instincts in a way similar to that in which we human beings cultivate in ourselves automatic mechanisms, which then function like instincts: for example, reading, playing the piano with notes before one, riding, driving a coach, driving an automobile, and many more. This last observation is unquestionably correct, but the conclusion drawn from it is just as unquestionably wrong. We would then have to ascribe to the lowest animals the greatest consciousness of end, and hence the greatest intelligence! This way of thinking forgets that consciousness of end and intelligence presuppose correspondingly complicated equipment, a correspondingly complicated brain—which is just what we do not find among the lower animals. This way of thinking is guilty of an oversight like that of the theological way of thinking. The inculcating of behavior-tendencies which function like instincts, the "mechanizing" of movements among us human beings, would admit of explanation by the assignment of the psychical equipment,

[1] I have discussed more fully this rise of human end-consciousness under the guidance of the actually adapted to end, in my *System der Werttheorie,* Vol. I, section 44.

necessary for the conduct of certain activities, to one of the many sub-consciousnesses in the state of which our ego-consciousness is the sovereign.

Consciousness of end is therefore a late cosmic blossoming. None the less, it is today a mighty terrestrial power. May we then assume that the shaper of all stands aloof from this blossoming created by his activity, perhaps altogether unaware of it? Is it believable that we men, in and with our consciousness of end, excel the shaper of all? The problem here brought up places us face to face with the question (until now scarcely touched upon) of the ontological relations between the unitary principle and its creatures.

Using the hypothesis of a strict substantialism, we could give a perfectly clear and definite significance to this question. But now, guided by conclusions drawn from analogy and by psychological experience, we must put substantialism aside and accept as possible any complete or partial overlapping of one consciousness by another. Then, however, the question as to the ontological relation of the unitary principle to its emanations, and in particular to its psychical creatures, cannot be definitely formulated. Still, since we must imagine the unitary principle as psychoidal, in any case we must infer its kinship and ontological connection to be closer with psychical than with material realities. Indeed, there is no reason for regarding as impossible at least an analogous partial overlapping of human consciousness by the unitary principle, in the same way that the former overlaps its sub-consciousnesses. But if that is possible, then it is also probable that the cosmic new creation of a power so mighty as is consciousness of end, does not take place without the creative principle; that the apex, up to now, of cosmic development—apex at least so far as our experience goes—does not tower above the shaper of all as something alien to him, but appertains to him as his own. In other words, it is possible that God thinks with our brains and wills in our willing. And in this is included the further question: Even though end-conscious willing does not supply an explanatory principle for the past development of the world, will it

not rise to be such a principle for the future development of the world?

An end-conscious willing makes two presuppositions: differentiated activity within a psychical or psychoidal being and a group of realities which are subject to some kind of natural law, whose changes can be foreseen, and which therefore can be used as means. Neither of these conditions existed at the beginning of the world. A unitary principle creating form in absolute chaos could not possibly create form end-consciously. With the growth of the cosmos and the development of the activity within the shaper of all, both conditions have arisen. Today there is a possibility that the cosmic becoming is in transition from the instantaneous form-creating of the first period, which was instinctive and blind, to use a human expression, to a second phase of end-conscious creating. But the means through which this transition should take place we could then seek nowhere but in ourselves. They would be—we ourselves, we human beings.

IV. NEW POINTS OF VIEW

1. *Causality, Space and Time*

The foregoing leads by a natural transition to new ways of looking at various problems, which are now to be discussed.

Consistent dualism has to suppose the unitary first cause of all law, order and form to be a principle directly opposed to purely fortuitous chaos. So far, this principle, in accordance with the hypothesis of absolute necessity, has been regarded and treated as a reality necessary in itself. What is meant by this is a reality whose existence, if we were able fully to grasp it conceptually, could be deduced from the concept with necessity, in just the same way in which we deduce with necessity from the concepts the non-existence of a four-sided triangle, or the coexistence of the qualifications equilateral and equiangular in the triangle. The doubt whether that which is in itself necessary in this sense can exist at all—whether it is at all thinkable that existence can be deduced with necessity from a concept—might perhaps be met by referring to the concept of time. Time seems actually to be something positively determined, whose existence is necessarily evident from its concept. It seems really impossible to follow out the idea that time does not exist. It seems that here are words to which, if the matter were taken seriously, no one could ascribe a definite meaning. That time exists and must exist seems to be just as obvious as that a four-sided triangle does not and cannot exist. It is true that in philosophy the question "Does time really exist?" has often been raised, and even answered in the negative. But that is no proof that those who uttered such words also connected with them definite, clear ideas. In the concept of time are to be found the most difficult of all metaphysical problems. I make no pretensions to possessing the insight that time must necessarily exist. I refer to the concept of time only as an instance refuting the assertion that to make the assumption of something necessary in itself is nonsensical. The shaper of all can therefore be thought of as a

being necessary in himself, and all his emanations released by absolute chance can moreover be thought of as acts ensuing by strict necessity.

However, this hypothesis is not the only one compatible with a consistent dualistic world-view. Catholic dogma sees in the one God and in his acts of creation the source of all necessity, but denies the dependence of God in his acts on necessity; rather it regards him as its author, and ascribes to God himself, in his existence, the attribute of freedom, as well as to all his acts. I have not been able to persuade myself that there is anything inherently unsound in this view. In essentials we come upon it—in the anthropomorphic realm—in the ethical problem of the freedom of the will, taking the form of a controversy between determinism and indeterminism. If we may entertain any hope of light on this question, we can seek it only in the arcana of ethical experience. That way will not be followed here. Attention is merely called to the fact that for consistent dualism there is a twofold possibility in the hypothesis of a unitary form-giving principle—inherent necessity and inherent freedom. For a source of all real necessity, free in itself and in its emanations, would also be a principle maximally opposed to absolute chance.

Connected with this problem is the question of how far the law of causation is valid according to the consistent dualistic hypothesis. Here, first of all, the strictly necessitarian idea of the unitary principle will be taken as a starting-point.

It has already been shown in detail that any continuity without causality is infinitely improbable. Hence wherever, in the world of reality, we come upon continuity, there we can infer, with infinite probability, the existence of causality too. But now, since we are able to experience, both outwardly and inwardly, only that which continues, this is the same as saying: "It is infinitely improbable that anything purely fortuitous will ever enter the realm of our world of experience. In everything that we experience and shall ever experience, we may assume and expect, with infinite probability, a causal element of necessity." By "causal element of necessity" we are here to understand the same thing which we could also characterize as a

"reality with causal power to act," that is, a reality of such nature that —if it were alone in the world, or in so far as it was subject to no disturbing influences from without—it would have as its result a series of processes or states determined unequivocally to all eternity.

From this it follows that consistent dualism, although it denies the universal validity of the law of causation, nevertheless allows to causality an essential bearing on the shaping of the future. Of the resistances of absolute chaos we can expect, with infinite probability, only attritions, unruled in their directions, and amorphic in their total effect, of which we can state further that, according to experience, they lie below the threshold of our observation. The purely fortuitous appearing of a prodigy capable of being perceived by us is, according to consistent dualism, not impossible logically, but still infinitely improbable, which means empirically the same as out of the question. There remain, then, only the emanations of the form-giving principle, released by absolute chance, which are not causally predetermined and therefore cannot be foreseen at all—not even by God. Such emanations, according to the teaching of consistent dualism, in all probability fall within our realm of experience in all, or some, organic mutations and the "sudden ideas" or "inspirations" of human genius. And that these are not causally predetermined and cannot be foreseen is certainly a consequence from whose recognition consistent dualism does not shrink—and indeed does not need to shrink. It is true that the usefulness of the law of causation as an intellectual instrument for the predetermination of the future is theoretically considerably restricted thereby, but empirically not noticeably so; since the emergence of mutations and of the sudden ideas of genius has so far persistently baffled every attempt at explanation.

The hypothesis, too, of a shaper of all, free in himself, instead of necessary in himself, does not make any noticeable change empirically in this state of things. It must be assumed, with regard to the form-giving principle necessary in itself, that as often as absolute chance offers a "proposition," and in proportion to the relations of forces (incalculable by us) between one infinity and another, at the point of

least resistance in the universe the form-giving principle throws out an emanation. The same hypothesis applies to the form-giving principle free in itself, with the modification that the emanation does not have to occur of necessity in a particular case, but can just as well be lacking. As we have no concrete knowledge of the conditions for possible emanations, the prospect of practically possible knowledge of the future, when a free shaper of all is presupposed, is no less than when he is presupposed to be necessary in himself. In both cases the law of causation remains empirically the same intellectual instrument for predetermining the future as which it has been functioning in practical life and in intellectual pursuits hitherto.

From what has been set forth, it also follows that consistent dualism has to distinguish two elements in all that is real: the stimulus or proposition arising from chaos—the *chaotogenic element*—and the active force proceeding from the form-giving principle ("force" being understood here in a wider than physical sense)—the *henogenic element.* Here, with reference to space and the spatial determinations of things, there is a fundamental difficulty in the question: what in them is to be regarded as henogenic, what as chaotogenic?

Three-dimensionality, which could just as well be two- or four- or N-dimensionality, doubtless should be called a chaotogenic element, and continuity of space a henogenic element. However, space as such is infinite—indeed infinite space is necessarily given along with the existence of the smallest bit of space. Infinite space, therefore, could not be created otherwise than by a single act of emanation. But is this, with overcoming of all chaotic resistances, in any way conceivable? If we assume that anything of the kind is possible, does not the chaotic resistance, measured against the overwhelmingly infinite might of the unitary principle, shrivel together into an unreal nothing, whose invoking as the explanation of all evil in the world is simultaneously degraded to an empty fiction?

From this dilemma we are rescued by the thought that for the reality of space and of spatial determinations we possess no binding guarantees of any kind. The judgments of so-called external percep-

tion do not deserve unconditional confidence, as is proved by the facts of sense-deceptions, illusions and hallucinations. The far-reaching predetermination of the future, which physics makes possible for us by its representation of the world, does indeed prove that something in great degree analogous to this representation of the world exists outside of us (which means independently of our representation), in reality. But we are unable to say anything definite about the absolute determinations of this external world existing in reality. We know only that it must stand in a far-reaching analogy of relation to the physical representation of the world. This applies particularly to space and spatial determinations. It is certain that in reality outside of us there exists a topoid (space-like structure) of at least three dimensions, which in its determinations displays a far-reaching analogy to physics' hypothetical material representation of the world. But more than that cannot be asserted. In its absolute determinations the topoid of reality may be entirely unlike its spatial representation in our idea of it.

The property of the three-dimensional space of our perception because of which, when the smallest bit of space is given, infinite space seems also necessarily given along with it, we will call "infinity-tension." This property is a characteristic of space following from its concept. It is not, however, forced upon us empirically and could never be deduced empirically. We have no occasion at all to require it of the topoid which exists in reality, or to ascribe it to this. Besides, when we try to represent perceptual three-dimensional space to ourselves as real, the infinity-tension involves us in contradictions which have often previously been urged. Anything infinite, existing in completion, is, strictly considered, unthinkable. Hence it is not at all permissible for us to ascribe infinity-tension to the reality-topoid. But with this, the previously mentioned difficulties vanish which stood in the way of our regarding it, in its continuity, as of henogenic origin.

These reflections, further, open up the possibility of doing justice to an idea which so far has been urged only in making absurd demands: the theory of spatial relativity. It is certainly a highly sig-

nificant empirical fact that we are able to determine movements of bodies only in relation to one another, never in relation to absolute space. But whoever draws from this the conclusion that the concept of absolute spatial determinateness has no meaning involves himself in contradictions—so long as in doing this he has in mind the space of our perceptions. On the other hand, nothing hinders us from supposing the reality-topoid to be in accordance with the relativity-theory: that is, so that to every space-relation in our physical world, as we picture it, corresponds an absolute determination in the reality-topoid; while on the other hand, absolute determinations in space as we picture it possess no foundation at all in reality. The reality-topoid is then to be thought of as an exact replica, not of the physical world as we picture it, but of its first differential coefficient. In such form the relativity theory no longer contains any contradiction. Of course the question of how it comes that we represent the external world to ourselves by its integral, and hence with too great precision, remains at present still unanswered.

Metaphysical reflections on space lead naturally to analogous questioning with regard to time. Are there henogenic and chaotogenic elements in time too? The one-dimensionality of time does not point, as does the three-dimensionality of space, to a chaotogenic origin. One is a number distinct from all other numbers. The one-dimensionality of time points to a henogenic origin. Time could be simply regarded as a henogenic emanation if—it were in any way possible to regard it as an emanation. But this idea would contain a contradiction in itself. Time can never have been emanated, since being emanated, like all becoming, can take place only in time. If the question whether time has existed from eternity has any meaning at all, it can be answered in no other way than with "yes." But there is a difficulty, in the idea that absolute chaos, since it has existed from eternity, shares in the continuity of time and therefore in a henogenic element. Here we have come to the limit of the human mind's power of abstraction. It would be overbold to wish to solve all riddles.

According to consistent dualism, are we to represent the world to

ourselves as spatially (in a topoidal version) and temporally infinite or finite? The world began, according to this view, with an event which is finitely probable only in infinite time. An eternity must have gone by, to make this event probable. Hence no infinite time can have passed since the beginning of the world. The world must be regarded as temporally finite—and hence as spatially (in a topoidal version) finite also. For only from a creative force infinitely superior to chaotic resistances could infinite works emanate in finite time.

But although the world cannot be accepted as temporally and spatially infinite, still it may be accepted as temporally and spatially immeasurable. That is to say: however large we may assume its dimensions to be temporally and spatially, we can never know whether it is not a million or a billion times larger.

2. *Height and Purity of Form*

A new group of problems in the field of cosmic physiognomy attaches to the characterization of the different types of form which we find in the experienced world. The classifications made so far, into static and kinetic forms, and on the other hand into forms of animate and inanimate nature and organic derivatives, are far from including all the qualitative differences which it is possible for us to apprehend.

It is a fact of fundamental importance that there are degrees of form: that every form displays a definite *height of form.* A rose has higher form than a pile of sand: this we perceive just as immediately as that red is a more saturated—a more vivid—color than gray. The higher forms are distinguished from the lower ones, in addition, by the fact that the combined product of unity and manifoldness is greater in the former than in the latter. When the degree of manifoldness of parts is the same, those forms are the higher which bind this manifold into a closer unity. When the closeness of the unity is the same, those forms are the higher which include the greater manifoldness. A good method for comparing the height of forms is this: Imagine the forms under

consideration (a rose, a pile of sand) to be demolished bit by bit, without plan. Whichever of the two forms, during this process, goes through the wider range of alterations, is the higher. Everything perceptual has some form or other: we can merely imagine the absolutely formless. When in the realm of perception we find that there are "blind endings" —the passing over of the formed into the unformed—strictly speaking, this is always at bottom only a lowering of form, a passing over of the higher into the lower; or by this expression we assert the loss of certain qualities of form: for instance, of that special property which distinguishes the forms of organic derivatives from those of inanimate nature.

Another characteristic of forms, which so far has not been discussed, is that of *purity*. This characteristic too has degrees, but is distinguished from height of form by the fact that because of its nature it possesses an unsurpassable maximum, whereas infinite heightening of form is conceivable. The ideal forms of the mathematically exact sphere, of the mathematically exact regular polyhedron, are forms with maximal purity (which means purity which, even in logical possibility, cannot be surpassed) but with relatively small height of form.

By consideration of the characteristics of height and purity of forms, an abundance of new and metaphysically important relations can be discovered in the cosmic physiognomy. For a long time the fact has been known that the phylogenetic evolution-series, from the lowest organisms to man, represents an ascent in height of form. The ontogenetic course of evolution from the germ to complete development shows (at least in so far as it is visible to us) an ascent in height of form, associated with a descent in purity—the latter, though, caused by the relatively chaotic influences of the environment. However, there is also a type of forms which become purer and purer through chance attritions from without. These are the friction-forms (cf. p. 34), such as, for example, the forms of water-worn pebbles, which, the longer they are in being shaped, approximate so much the more the form of a pure sphere or disk, while they (not all friction-forms, but some of them) at the same time decrease in size; while the "impulsive forms"

(like organic individuals)—those forms which owe their existence either to the direct initiative or the active continued influence of new emanations—in their growth from within outward, simultaneously with a decrease in purity and an increase in visible height of form, increase in size also. In general, the way in which impulsive forms grow seems to be the rule in nature; the way in which friction-forms are shaped, to be an exception to the rule.

Height and purity of form are, to our human feeling and desiring, values, values for their own sake, *intrinsic values;* and indeed very great intrinsic values—perhaps the greatest of which we have any knowledge at all. Are height and purity of form also values in themselves? that is, apart from our human feeling and desiring, hence absolute values? Have we reason to suppose that height and purity of form are also values for the psychoidal primary source of all form? After all that has previously been said, one is strongly tempted to answer this question with a "yes." But let it be emphatically pointed out that the cosmogonic hypothesis here set forth, although it probably leads to the assumption of absolute values, nevertheless does not depend on this assumption. The difficult problem of the existence of absolute values can be completely eliminated from its proof.

Perhaps height and purity of form are absolute values in a much deeper sense than that which is intended when relative values, based on actual feeling and desiring of some psychical individual, are contrasted with absolute ones. Perhaps all values of psychical and psychoidal beings can be traced back to an urge toward height and purity of form: all happiness, to satisfaction of this urge, all pain to its inhibition. The difference, indeed often opposition, of so-called valuation-bias (feeling and desiring) in individuals, would then be due to the fact that, corresponding to the difference in character, the inner form-giving process is promoted in one, hindered in another, by similar influences. The valuations which (for instance, love of humankind) are based on this, that the inner form-giving process of the individual concerned is influenced homologously by external processes promoting and hindering form, may be called *homonomous valuations:* the

opposed (for instance, malice) *antinomous.* And taking a comprehensive view, it is permissible to derive the comforting assurance that, on the whole, homonomous valuations must always be those which predominate in number and power, and therefore are victorious in the course of cosmic becoming, while antinomous valuations must always be the vanquished. This would be the dominance of a *cosmic justice* residing in the nature of things.

But this idea—for whose more exact investigation our psychology and psycho-physics are not yet far enough advanced—can be expressed here only as a conjecture.

V. CHIEF PROBLEMS OF DUALISM

1. *Rationalistic Prejudices*

The way of thinking which (with a derogatory implication) we designate "rationalistic," is characterized by over-estimation of the scope, efficiency, or value of reason: i.e. of the ability to know, or to judge correctly and with insight. If the consistent dualism advocated in this work is right, the doctrine of the necessity of all that is real deserves the designation of a rationalistic world-view. For the way in which the necessary can be known is much more complete, much more satisfactory to reason than the way of knowing the fortuitous. The necessary can be known in advance, even before it has happened, the fortuitous only afterward. The necessary can be known with apodictic certainty, the fortuitous only with assertory certainty. Only from something that we regard as necessary, and as necessary not merely in its dependence on another something known only assertorily, but necessary either in itself or in being conditioned by something known as necessary in itself—only from something known in this way do we receive the impression of knowing it completely, without reservation, to the very core. If then all that exists, exists of necessity, or in other words, if there exists only the necessary, the whole cosmos must be rational, by its nature, to the inmost core; and reason has a much greater scope than it has according to the dualistic view here represented. But if this necessitarian doctrine is impracticable and erroneous (as here we have tried to show), then it deserves the derogatory title of a *rationalistic prejudice,* and we are tempted to look, for the psychological motive back of its coming into existence, in an over-estimation of reason—of its scope, its efficiency, its value.

Also the much more moderate view, which does not assert the necessity of all that is real, but does assert a complete, accurate and unequivocal determination of the future by the past, extends the bounds of the knowable further than is permissible according to the dualism

here set forth; and hence, if the correctness of the latter is assumed, deserves the epithet "rationalistic."

There is no intention of endeavoring here to enumerate and refute all extreme rationalistic views. Some of them only will be pointed out, for the sake of an unprejudiced comprehension of the discussion to follow.

The view is rationalistic which holds that any reason can know itself perfectly and completely, and in addition know anything else. The knowing of A must, as a real process, be in some respect different from the knowing of B. What is true of the knowing of two separate objects A and B is also true of the knowing of two parts *a* and *b* of one and the same object—provided we are willing to accept any distinction in principle between individual things and parts of them. The knowledge of a differentiated object: i.e. of an object with some kind of parts distinguishable in some respect, must therefore be differentiated in at least the same degree as the object known. A knowing reason and something else, existing outside of it, when taken together certainly form something more differentiated than the reason alone. In order to know itself perfectly and completely and in addition something else, reason would therefore need a greater degree of differentiation than it possesses, from which the impossibility of the assumption immediately follows.

A knowing reason can therefore at most know itself perfectly and completely, but nothing else outside itself. But that too is impossible. For a reason that is occupied with nothing else but itself is just as absurd as a shell which encloses nothing but itself, or a chain which hangs in the air suspended by its own members, or a will which employs means without being directed toward a goal. Ultimate reference to something objective, lying outside itself, is the indispensable prerequisite for every rational activity. Such reference need not be knowledge: it might be an error, or a merely imaginary reference and therefore neither a knowing nor a mistaking reference. But this reference itself is indispensable. Knowledge is something which at bottom and in the last analysis is directed outward. And therefore self-knowl-

edge, perfect and complete, is an impossibility, which logically cannot be aspired to by man nor yet ascribed to a God.

From this, understandably enough, it does not follow that partial self-knowledge is impossible. Essential elements in our knowing and faculty for knowing can indeed be known. But always an unknown residue must be left, regarding which we cannot find out whether or not it too contains something essential. That is: Never can we find out whether or not we are aware of everything essential to our knowing and faculty of knowing.

The objection will perhaps be made that what is impossible in a moment of time may very well be practicable in temporal succession. And this is so far correct, that a reason could know the whole sum of the determinations which constituted its being in a certain period of time A, by means of several (at least two) acts in successive periods of time, A_1 and A_2. But these acts would have to differ, and the reason which knew itself completely would therefore have to be susceptible to change. Further, the knowledge could relate only to a past state of itself. But because of its susceptibility to change, the reason concerned would never have a guarantee that its own momentary self was still identical in all essential determinations with the known past phase. Complete knowledge of self, guaranteed complete, would therefore be impossible in temporal succession, quite apart from the fact that splitting up the knowledge of an object into several successive acts can never serve as an equivalent for knowledge of it as a whole in one present act.

Consequently, however we may view the problem, complete knowledge of self, guaranteed complete, remains a thing impossible to man and God. Even more impossible, also, is a divine omniscience, which would have to unite complete knowledge of itself with complete knowledge of the world. Further, for us human beings, it is a hopeless task to try to deduce the scope of our knowledge from the study of the knowledge itself, to base human science on a science of the human faculty of knowledge, and thus on epistemology or "Critique of Reason." In spite of their tendency toward self-abasement, efforts of

that kind have their origin at bottom in a self-glorification of reason.

From these examples it should be clear what is the concept of "rationalistic prejudice" or exaggeration which is to be employed frequently in what follows.

2. *Inner Necessity*

The dualistic world-view here advocated impugns the universal validity of the law of causation, but regards causality as the source of all that is perceived and of all that has form in the world. Consequently, for it, as for every other carefully thought-out view, the question of the content and origin of the concept of cause remains a problem of fundamental significance.

More than once the view has been urged, that the concept of cause is not created out of immediate experience, but obtained by synthesis, and that causality means the same as "necessary conditioning of one reality by another." According to this, we are supposed to have obtained the concept of necessary conditioning from the wide realm of the non-real: for example, from the conditioning of relations of spatial dimension by one another, such as the conditioning of equiangularity of a triangle by its equilateralness, of equality of diagonals by the properties of the rectangle, and the like. From instances in which we can know necessary conditioning directly, we are supposed to have obtained the concept, and then to have transferred it to the realm of the real, in which we are never able to know necessary conditioning immediately, but only to infer it, with greater or less probability, never with absolute certainty. This teaching, in many respects very plausible, is nevertheless untenable: which shall be here demonstrated first of all, as introductory to further study of problems of causation.

A characteristic inseparably bound up with the necessity of a conditioning is its universal validity or invariability. But this seems to be lacking in real or causal conditioning. Let us look at a simple causal process. A perfectly elastic ball A, resting on a smooth frictionless base,

is struck squarely in the middle by another ball B, likewise perfectly elastic, and of equal size and mass, gliding along over the smooth base. The ball B then transfers its motion to the ball A, and itself remains at rest. In this process the complete cause consists of the moving ball B, of the ball at rest, together with its base, and, if you like, of the gravitation of both downward. But it is not true that as often as this cause appears, without exception the same effect follows, just as actually, without exception, the equiangularity of a triangle is conditioned by its equilateralness, the equality of the diagonals of a rectangle by its equiangularity. For if, for example, the ball A simultaneously with the impact of B receives a push in the opposite direction from a third ball C, an essentially different effect appears, although nothing has been changed in or taken away from the previous total cause.

Cases of this kind, which did not escape those who originally made the analysis of the concept of cause which we are discussing, compelled an extension of the concept of causal conditioning into the realm of the negative. The total cause of the first-assumed process is by no means completely given by naming the two balls, their base, and possibly as a cause their gravitation downward. To be reckoned in the total cause, beside the positive conditions, are also the negative conditions of the absence of all antecedents which, if they were present, would disturb or hinder the real occurrence.

In reply to this attempt of causal analysis to save itself, it must first be pointed out that it departs from the basis of the original theory. For now causality can no longer be defined as "necessary conditioning of one reality by another," but only as "necessary conditioning of one reality by the presence of another and by the absence of disturbing circumstances." In the second place, however, it is now easy to see that with this the attempted analysis proves itself to be merely one in appearance, and the definition based upon it to be incorrect. For the disturbing or hindering possibilities everywhere, such as in the example cited, are incalculably many. Never can they be enumerated and each thought of by itself in its own peculiar determinateness. The only way

in which they can be thought of is merely by the demand that they shall not disturb or hinder the real event. But in this definition the idea of causality obviously is already included, for disturbing, changing, or hindering are nothing else than specific cases of causing. The attempted analysis of the concept of causation defines in a circle. The concept to be defined is surreptitiously assumed in the definition. If we should try in turn to derive, from necessary conditioning, that "disturbing" or "hindering," which must be absent so that the total cause may be complete, we should be compelled to have recourse to the absence of a second category of possible disturbances or hindrances of the first ones, and so on *ad infinitum*. The concept of causality does indeed include in itself (in a sense to be explained more exactly) the concept of necessary conditioning; but it cannot be constructed out of this. It contains something more and something else than this concept.

As a last resort we might perhaps attempt to drop the addition of negative conditions to the concept of total cause, and to understand by cause nothing more than a complex of real processes which, if it were to exist in the world alone, would have as its necessary and therefore invariable consequence the appearance of other real processes, its "effect." While it is true that in its scope this concept coincides with the concept of causation, in content, however, it differs: just as the concept of a curve with the formula $x^2+y^2=r^2$ is indeed the same in scope but in content is very different from the concept which we ordinarily associate with the word circle. If we are able to apprehend the concept of cause no more precisely than by the roundabout way of an imagined world-process which contains nothing but the reality-complex under consideration—then in most sciences we could work with the concept of causation no better than a wood-carver with a plowshare or a two-handed sword. For certain elucidations this roundabout way of imagination commends itself, but for the great majority of cases it is useless. For it is by no means necessary that the cause should exist alone in the world in order that the effect may appear. An incalculable manifoldness of objects and processes

may exist along with it, without interfering with the effect. This manifoldness would always have to be kept in mind when the concept of causation was applied; and thus no practical end could be attained.

The concept of causation is not obtained by synthesis, and lends itself to definition just as little as many other fundamental scientific concepts. The necessity of the consequence—in a certain sense implied—is only a secondary characteristic of the concept. Primarily we think of being caused as something which may also be expressed by the prepositions "from"[1] and "by."[2] The effect is produced "by" the cause; it proceeds "from" the cause. This by and from is not constructed by our thought, but is experienced directly and inwardly. We experience causality in the psychical effects which we ourselves—or the self in us—bring about. This has been pointed out as categorically as possible by Franz Brentano. As instances of this he adduces the resulting of the conclusion from the premises in logical deduction, and the resulting of the will seeking means from the will directed toward an end. By this is not meant that there may not be other cases also of inner perception of causality.[3]

The derivation of the necessity of the consequence, from the inwardly perceived "from" or "by" involved, likewise comes from Brentano. Assuming that the cause produces an effect, not with necessity, but only with probability, this probability could never be referred to a certain period of time, since every determination of this kind would be arbitrary, but only to a moment of time. Then if the probability of the appearance of the effect is assumed for the moment of time to be $\frac{m}{n}$, in which $m < n$, but otherwise may be assumed to be anything, then the probability of the appearance of the effect for two moments of time will be $(\frac{m}{n})^2$, for three $(\frac{m}{n})^3$, for a finite period of time $(\frac{m}{n})^\infty$, which is zero. This means: if the cause were to produce the effect, not with necessity, but only with

[1] *Aus.*
[2] *Durch.*
[3] Cf. Alois Höfler, *Psychische Arbeit.*

probability, then it would produce no effect at all. In the concept of cause drawn from direct inner perception, of origin involving "by" or "from," the necessity of the result is implicit in our thinking. But this is an *inner* necessity, which has as its invariable result not the appearance of the effect itself, but only of the tendency toward it: the appearance of the effect is the result only when no circumstances hinder it—a situation which obviously would exist if the cause were alone in the world. To this extent all the ideas employed in the attempted analysis of the concept of cause are absolutely correct. But they do not facilitate the analysis of the concept of cause but instead presuppose this concept, drawn from inner experience.

From the cause follows with necessity, and therefore invariably, only the tendency to produce the effect, and only when no other causes from without interfere disturbingly. But if such disturbance or hindering of the effect ensues, then the disturbing causes from without cannot remain uninfluenced, but experience in their results, or in the tendency to these, an equivalent disturbance or modification in the same direction which the undisturbed progress of the first effect would have taken. All this—and much more—is implicit in our concept of causation drawn from inner perception, and can be deduced from it in the same way that the theorems of geometry are deduced from our concepts of space.

For our investigation, these results are significant in more than one respect. First of all, because they offer a direct confirmation of the indirectly derived proof (in Section III, chapter 1) that to the psychical as such must certainly be ascribed ability to produce effects—at least within its own sphere. We understand now that we perceive these effects directly; in fact that we could have derived the concept of cause and effect only from psychical effects. Now it is time to go a step further, and to point to the fact that from the existence of psychical effects it is also permissible to deduce with empirical certainty the appearance of physical effects of the psychical.

Actually this proof has already been furnished by Leibniz—though quite unintentionally—since he was forced, by his view that an effect

of the psychical on the physical was impossible, to the assumption of his egregious "pre-established harmony."

It is, at all events, empirically established that a great part of our psychical experiences (among them doubtless the external—i.e. directed toward movements—acts of striving and willing) are coordinated unequivocally with some kind of physiological process in our cerebrum. This means: to each of these psychical acts corresponds a certain physiological process: whenever the physiological process makes its appearance, it is accompanied by the corresponding psychical act, and vice versa. Now if the psychical is supposed incapable of producing any physical effect, no movements of any kind, and also no brain-processes of any kind, could occur in a living human being, which would not likewise appear without being accompanied by the psychical. That means: in every case, the human being's external acts of striving and willing would also have to be purely physically determined. Then there would be two ways of harmonizing with this the existence of a purely psychical causality. The first would consist of the assumption that psychical causality is restricted to a special realm of our mental life, which has no kind of causal connection with our external acts of will or our involuntary expressive movements. This way cannot be followed, for there is no such realm. The second way would lead to the hypothesis that psychical causing always takes place in our mental life in such fashion that in the process only those acts of external striving and willing come about which exactly harmonize with the brain-processes and corresponding movements produced by purely physical causation. But that would be nothing but the hypothesis of a pre-established harmony between physical and psychical, which is its own condemnation.

An influencing of the physical by the psychical, whether with or without violation of the law of energy (cf. p. 69), consequently does take place, as certainly as inner psychical causality exists. That the manner of this influencing is a mystery to us need not astonish us, if we consider that perhaps it is indeed employed, but nevertheless not understood, by God himself. For of course a creative power that

completely knows itself is an impossibility, just as is a reason that completely knows itself. The cosmic priority of reason is the figment of a passing phase (the rationalistic) of human mental development. The efficient activity of the cosmic form-giving principle is like the creating done by artistic genius. First the work is present—"in the beginning was the deed"—and in the second place, never complete and perfect, comes the understanding of the work.

All efficient activity, therefore, possesses inner necessity. Whether it flows forth out of an inherent necessity or out of freedom is a question which I do not risk attempting to answer. On the other hand, it is clear that all efficient activity, because of its inner necessity, possesses continuity and consequently power to create form. Hence the identity of "lines of causation" and "configuration-sequences" (p. 9) whose characteristics were taken as the point of departure for this discussion.

Being a reality bent, in accordance with its nature, upon continuity and form-creation, hence upon order, the power of producing effects is the only thing that cannot rise out of the absolute chaos of the purely fortuitous or groundless; and the question now presents itself, how the origin of that absolute chance-form with which, according to the hypothesis here set forth, the world began, is to be more exactly thought of. First of all, the distinction between "active influencing" and mere "offering resistance" (p. 27) can now be more clearly understood. In offering resistance there need be no tendency at all to order or continuity. It is true that an "inertia" can offer resistance; but so can a countless number of non-persisting momentary existences of the most widely differing categories. Consequently, it is no longer a mystery that the effects of tendencies in form-creation can be altered and distrubed in unregulated fashion by the resistance of the absolutely fortuitous real—that all finite efficient forces which are not constantly receiving fresh impetus from the primal source must ultimately be destroyed by chaotic resistances. But how could the first form-stimulus to world-creation arise out of chaos, which cannot produce any efficient force?

Let us take the energy of a body in a state of uniform motion as exemplifying a simple efficient tendency with inner necessity. We will then understand the course of the movement as continuous alteration of the position in space of one and the same body, possessed of ability to persist. But a result similar in its unmediated continuity could be attained, if, in infinitesimal succession over the the course in question (corresponding to the body's swiftness of motion) ever-new bodies (in other respects exactly alike) with merely momentary temporal existence, should appear and then disappear, instead of the one body equipped with ability to persist. The result would be like a movement, and, with reference to a persisting reality, in this case a positive influencing could be added up out of an infinite number of merely momentary resistant forces. The case is infinitely improbable. We have no reason to assume that it will ever appear in the future. For the future, though stretching into the unbounded, none the less can never reach infinity. But that from eternity this may once have happened to be the case is not only not impossible, but actually probable. And when this was the case the world began.

3. *Rational Probability-Inferences*

The importance of probability-inferences for science is recognized by the newer logic. If we were restricted to the certainty-inferences available to us, all our knowledge would be fragmentary, practically valueless and theoretically unsatisfactory as well.

It is then interesting in itself, and in addition one of the strongest proofs for the correctness of the dualistic world-hypothesis here advocated, that only this hypothesis is able consistently to give information about the nature of the rational probability-inferences which are so indispensable to science—that it alone is able to incorporate the existence of these inferences organically into its system. This will now be explained in more detail.

The categories of the probability-inferences employed in science are the following:

1. Interpolations. For instance, at different times during the night we observe at different points in the sky, gleaming disks which resemble one another. We draw the probability-inference that these disks are really one and the same thing—we call it the moon—which has moved in succession from one point in the sky to another. That is: between the observed positions or bits of the way we interpolate a continuously stretching path; and in so doing we select from all the possibilities open to us the one which affords us the total picture which is simplest, most orderly, and most conformable to law. Such simplifying interpolations in the stuff of experience are made by the child—of course without logical awareness—from its first breath, so to speak. Then, as their result, appears the experienced world of naive realism, which science too is forced to assume, at least as a point of departure for its further operations.

2. Inferences, from observed conformities to rule, regarding underlying natural laws. The supposed laws may be thought of as exactly and strictly valid universally, like the law of inertia or the laws of the lever; or as so-called rules, which means as close similarities, which can be only approximately formulated, and which possibly are also encumbered with exceptions, as for example the laws of growing old, of sex maturation, of the growth of teeth in man. Natural laws may relate to processes, as in the examples cited, or to qualities, like the assumption—made by the oldest chemistry—of the absolutely identical properties of all atoms of oxygen or hydrogen, or of the "characters," appearing with none but individual variations, belonging to the different species of animals and plants.

3. Inference, from the observation of n similar cases, regarding the $n + 1$st case. This inference (which is sometimes wrongly regarded as the only valid and indispensable conclusion which can be drawn by induction) on the whole possesses validity only as a mediated inference: which means, only when the existence of a natural law or at least of a tendency in nature, can be concluded from the n observed

instances. In playing roulette with apparatus known to be honestly constructed, if the ball stops ten times in succession on the red, no rational person will therefore expect the same thing to happen the eleventh time.

4. Inference by analogy. This is the same as the preceding, except that instead of similarities, there are mere resemblances, and consequently the connecting link between the n observed instances and the $n + 1$st instance cannot be exact laws, but only "rules."

5. Inferences from the present regarding origin or past: the kind of inference typical of historians in all fields; temporal *a posteriori* inferences from "traces" to that which produced them (discussed in detail in the first chapters of this work). These inferences, too, require mediation through the assumption or the knowledge of natural laws, or at least of natural rules; though sometimes of very specific ones, as for example that writing is produced only by the human hand, or that "this" is Goethe's handwriting (that only Goethe produced symbols of this particular kind). To the same category, too, belong the inferences which "hypostatize" realities, i. e. which assume them, in order to be able to range data of experience under hypothetical natural laws—like the hypothesis of world-pervading ether, which is required by the undulatory theory of light.

6. Inferences from the present to the future, to what is to be effected: these too mediated only through natural laws or rules: practically and biologically the most important and weighty inferences made by man, the inferences on which the saying is based: "Knowledge is power."

7. Preference for the hypothesis (of natural laws or of realities) which at the time is "simplest," "most natural," "most useful for inference." To this category belong the preference for the scientific rather than the mythical-anthropomorphic explanation of natural phenomena, the preference for the Copernican solar system rather than the Ptolemaic, the axiom of logic, "entia non sunt multiplicanda praeter necessitatem."

8. All sciences, including the *a priori* ones, have to put their confi-

dence in memory, which furnishes only probability-propositions. If it might be possible to derive this confidence from absolutely certain premises, this particular process of probability-inference would be one of the most important for all scientific knowledge.

9. Finally, here belong probability-inferences of the result to be expected in games of chance and in analogous situations arising among human beings and in non-human nature; which situations, however, do not by any means possess the wide distribution claimed for them by many who theorize about calculations of probability.

When we try to represent to ourselves the way and manner in which, on the basis of immediately perceived data of inner experience and with the aid of the principles of the *a priori* sciences, our knowledge of the world is built up by means of the aforesaid categories of probability-inferences—then we have to appreciate the significance of the fact that man does not begin to think scientifically *ab ovo,* but that this comes only after the world-view of naive realism, arising from instinctive judgments, is already in existence. Scientific thinking is then limited to corrections of this world-view and changes in it, which are indeed sometimes very extensive but which, so far as they are well-advised, still leave its fundamentals intact. The hypothesis of the real existence of an external world which has an extensive analogy with that of the naive world-view, holds its own against the most severe scientific criticism, and would have had to be discovered by a stroke of genius on the part of a scientific investigator, if we all had not ourselves grown up with it as a possession ready to be used by our reason.

All the categories of probability-inferences which have been mentioned follow naturally as consequences of the dualistic world-view here advocated.

This view regards the world, in so far as it arises from the absolutely fortuitous, or in the process of coming into being was and is produced by the resistances of the fortuitous, as irrational—not opposed to reason, but utterly incomprehensible by reason. In this connection, it is admitted without reservation (cf. p. 37) that this view is forced

upon us by the actual situation: that is, that from the logical point of view there would be no question that preference should be given to the rationalistic world-view, to necessitarian monism, were there any possible way of carrying it out without contradiction and in harmony with experience. But the world, being what it is, makes this carrying out impossible. The world, therefore, in its actual state of being, is a *principium obstans,* a stumbling-block to pure reason. It would be more comprehensible—if this fiction may perchance be allowed—that nothing whatever should exist, than that our world should exist and be what it is. Since, then, only of necessity and as it were by compulsion, does reason admit the intrusion of the absolutely fortuitous, groundless, utterly incomprehensible, into the actuality of the world, it is at least psychologically quite understandable that in its world-view it seeks to reduce to a minimum the extent of this intrusion. Indeed, it might be a question whether this attitude in itself should not be regarded as logically justified.

But if this should be contested, a similar logical maxim arises from the following reflection. The infinity of the eternal time which elapsed up to the beginning of the world is one-dimensional. Hence only in this time is it probable that a one-dimensional persisting chance-form appeared, as the means of release through which the world began. A one-dimensional persisting world would therefore be altogether probable, from the consistent dualistic point of view. But our actual world is continuous not only in time, but in addition, in at least the three dimensions of the spacelike reality-topoid (cf. p. 93 f). How is this plural dimensionality to be explained? We must either assume that the first chance-form already possessed continuity in several dimensions; or that, resembling Cantor's projection of a three-dimensional manifold (the point-aggregate of a body) on a one-dimensional manifold (on a line), it contained in its own arrangement the stimulus for the development of the world in several dimensions; or finally, that to react to a one-dimensional stimulus with emanations having plural dimensions was inherent in the nature of the creative principle (which would be comprehensible if, to the altogether unitary

source of activity, we were nevertheless to ascribe the analogue of a need or longing for manifoldness and development). But whatever decision may here be made, a residue is left, not only of the inexplicable, but of the absolutely improbable. The actually existing world is not, it is true, an antimony of pure reason, as Kant would have it, but it is certainly an antimony of rational conjecture. In other words: *The world is not nonsense, true enough, but it is a miracle.*

It is now clear that in its view of things reason has not only a psychologically comprehensible motive, but also a logical right, to limit as much as possible (since it has not yet been able to deny) the world, this *principium obstans,* this stumbling-block for pure thought, this miracle. Hence we have, as the first inference of consistent metaphysical dualism, the logical maxim: *The first chance-form and the world which proceeded from it, and in particular the chaotogenic impact on this world, are to be assumed as small as they possibly can be:* that is, as small as is compatible with the facts of experience and with the inescapable conclusions drawn from these.

A second maxim has an essential relation to the first. The arising out of absolute chaos of the persisting, of the conformable to law, of the ordered, or of that which in any way has form, may not be assumed more than once in the world-process of becoming, without assuming the infinitely improbable. In other words: *Wherever in the world, since the first chance-form, order or regularity or form exists, it is to be referred to henogenic and not to chaotogenic origin.* Only the resistances which the henogenic emanations encounter, and the stimuli to further release of emanations contained in these resistances, are chaotogenic. But whatever is ordered and conformable to law in these emanations is of henogenic origin. Furthermore, in the succession and reciprocal relations of the chaotogenic resistances, nothing in any way ordered or conformable to law can be supposed to show itself. Where anything of this kind appears, it is a proof that here is involved a henogenic impact, an effect intrinsically necessary, a tendency toward conformity to rule.

Now, from these two logical maxims it is possible to deduce, with-

out any trouble, the categories of probability-inferences employed in science.

1. Interpolations. If I am able to comprehend the successive positions of the gleaming disks in the sky as constituent elements of the relatively simple continuous path of the moon, this is evidence of a conformity to law inherent in the succession of these positions. According to the second maxim I must not regard this conformity to law as fortuitous, but interpret it as henogenic in its origin. But the first step toward this interpretation consists in my putting, in the place of the many disks observed in the sky, the unitary thing "moon" and ascribing to it the "tendency" to move in such a path: i. e. to complete a movement corresponding to it. Similarly in all other cases of this category.

2. The inference of a natural law—that is, of a henogenic tendency —from observed conformities to rule, is nothing but a direct application of the second maxim.

3 and 4. Likewise the inference—thus mediated—of the $n+1$st instance from n observed similar ones, as well as the inference by analogy.

5. When I find a hare's track in the snow and from this draw the conclusion that a hare has been running here, that is equivalent to saying: it would be an utterly incredible accident if these prints in the snow, which can in no respect be distinguished from the track of a hare, had been made in any other way than by a hare running past. Other ways of making it might of course be devised. We could assume that of the various impressions in the snow, some were produced or hollowed out by the bills of birds flying over it, others by the movements of insects hidden in the snow, still others by vortices in the air; and all of these in exactly the form and arrangement which correspond to the well-known track of the hare. Now why should a hypothesis of that kind seem to us merely absurdly irrational and impossible to discuss? Because it would ascribe to chance a conformity to law which could without difficulty be traced back to a "tendency" known to us (the tendency of the running hare to make impressions of such and such a kind on a soft surface). Again it is primarily the

application of the second maxim which we find here. The only point to be noted is that the fortuitous, to which we here deny conformity to law, is not directly the absolutely fortuitous, but the chaotogenic part or the chaotogenic side of the "amphigenic" (this is the name I give to everything which has proceeded from both world-principles, the unitary principle and absolute chance—hence to the whole experienced world). But we deny conformity to law to the amphigenic, in turn, only with reference to the absolutely fortuitous, for this reason: because the apparent coming into existence of a hare's track at the very beginning of things would have to be traced back either to the first chance-form or to a concealed conformity to law in the fortuitous resistances which set free later emanations. To suppose the latter would contradict the second maxim; to suppose the former would contradict the first maxim (which we encounter here for the first time)—the maxim that the first chance-form must be assumed as small as possible. But wherefore do we not assume a henogenic tendency directed toward the apparent production of hare's tracks by the combined efforts of birds, insects, and air-vortices? Is it perhaps considerations of a theological kind which guide us here, so that we cannot easily ascribe to the unitary principle such a tendency, with no object but the deception of human beings? Our science would be in a bad way, if in all analogous cases we were reduced to such considerations. What we have here is again nothing else than an application of the first maxim. The world is as small as possible: therefore as few natural laws as possible, as few tendencies as possible, should be assumed. Here we find our way out of the difficulty by means of the tendency already known to us, required for other reasons too, of the running hare to make tracks of such and such kind. Any further assumption therefore logically cometh of evil, and the hypothesis that a hare has been running here is the only justifiable hypothesis for what is given by experience. And similarly in all instances of this category.

6. The most important, practically, of all categories of inference, the inference of future effects from present reality. This inference, like the preceding one, is admissible only when based on natural laws

or tendencies already known and verified otherwise; and thus presents itself as in essentials an application of the second maxim. But the presence of the appropriate cause is not sufficient to justify expectation of the appearance of certain effects. It is also requisite (as set forth in detail in the preceding chapter) that there be no disturbing hindrances. Thus, for example, a solar eclipse, calculated in advance for a certain hour of the year 1939, might fail to occur, because in the meantime a heavenly body, previously quite unknown to us, might collide with the moon. We may expect, but only with probability, that this will not happen: on the ground of what consideration? On the ground of the second maxim, we have become accustomed to the view, in scientific interpretation of astronomical experience-material, that the heavenly bodies are engaged in periodically recurring movements. The collision of two of the larger heavenly bodies would break into this periodicity and hence seems to us incredible to the last degree—which is also confirmed by experience. Therefore, an application of the second maxim, which is sufficient without adding metaphysical reflections. But for the adherents of the dualistic world-view here advocated, there would be further the theoretical possibility that the solar eclipse was hindered by a prodigy emerging without cause from absolute chaos (like the chance-form which occasioned the beginning of the world). That we nevertheless regard this as infinitely improbable, which is equivalent to regarding it as practically impossible, comes from application of the fundamental idea, the source of the first as well as of the second maxim: the emergence of the continuing, out of absolute chaos, possesses finite probability only when an infinite time is involved, but not for the period of time from today to a certain hour of the year 1939.

7. Direct application of the first maxim creates preference for the hypothesis which at the time is simplest, most natural, and most useful for inference. This is clear without further ado when the assumptions involved in a hypothesis can be counted: as in comparing the Copernican solar system with the Ptolemaic. The fundamental axiom that the world must be assumed to be as small as possible, and especially that the chaotogenic element in it must be restricted as much as pos-

sible, has reference, however, not only to magnitudes extending in space and time, but likewise to the multitude of constituent parts, distinguishable from one another, assumed in the world. And consequently, the closer analogy of the hypothetically assumed to the already known or existing is to be preferred, according to the same principle. Similarly with the greater inference-value of a hypothesis: and this because it narrows or completely abolishes the margin for chaotogenic intrusions.

8. Our confidence in memory might readily be deemed incapable of proof—even considered as a mere probability-inference. The apparently obvious proof: "We may trust memory, on the whole, for it has deceived and led us astray only in rare, exceptional cases"—contains an easily detected circle. That memory has only rarely deceived us we know only through memory itself. To try to deduce from this knowledge—if such it is—the trustworthiness of memory, would be an obvious *idem per idem*. Consequently, Meinong claimed for memory an *immediate presumption-proof*—which will come up for discussion later. Still, a probability-proof of the prevailing trustworthiness of memory is possible. In a moment, therefore in strict simultaneity, provided there is sufficient range of consciousness, memory can show us a great store of recollections which have a far-reaching and deep harmony among themselves, as well as with what is perceived at the moment. If we were to assume that memory on the whole or even in great part deceives us, then we should have to regard this harmony as a work of chance; while, on the other hand, if we assume the prevailing correctness of memory-data, it appears to be a consequence of the conformity to law and the harmony existing in the real world itself. The latter assumption is therefore overwhelmingly more probable.[1] Such is the proof. (Whether, however, Meinong's assumption of an immediate presumption-proof is thereby rendered superfluous, is a question that need not be raised here.) The proof is a direct application of the second maxim. From the harmony of memory-data among themselves and with what is perceived at the moment, we

[1]Reproduced from an oral communication of Franz Brentano's in the year 1889.

infer the presence of a natural law—more particularly, of a rule: the general tendency of memory to be correct.

9. Finally, inference in games of chance, and mental processes in all analogous cases. Let what is here essential be shown by an example. If with a die I throw the same number 100 times in succession, for instance "five," that would be the extreme of conformity to rule or law which could possibly be thought of in connection with 100 throws. If the die is constructed honestly in every respect, no one will look for this outcome; and if nevertheless it should occur, every rational person will marvel at it as a scarcely believable miracle of chance, and will declare himself ready to accept it only if he has, with so-called absolute certainty, excluded every secret trick in the production of this outcome (i. e. hence every "tendency," as for instance special skill in throwing, off-centre position of the die's centre of gravity, and the like). The reason for this intellectual attitude lies in the reverse application of the second maxim. This maxim instructs us to interpret every empirical conformity to rule, whenever possible, by a law, a tendency. Consequently we conclude in the present case: Since demonstrably there exists no law, no tendency for the throwing of "five," no conformity to rule is to be looked for in this connection. Conformities to rule, although in less degree or of altered nature, would exist if in one hundred throws the number "five" should be thrown 99, 98, 97 times. In fact a distribution of throws like the following would still be characterized as a certain conformity to rule or arrangement in favor of "five," which accordingly would seem antecedently incredible.

One	14 times
Two	13 times
Three	10 times
Four	11 times
Five	39 times
Six	13 times
Total	100 times

But since all six sides of the die can be considered in a completely analogous way, the reverse application of the second maxim here reveals the expectation that, out of 100 throws, the number of times each side of the die is thrown will not vary too widely from the average, that is, from 17 or 18; which expectation, as of course we know from experience, is generally fulfilled. Now that is assuredly an approximate conformity to rule: but not one conditioned by chance, nor by chaotogenic elements, but by the regular shape of the die, and therefore nothing to astonish us. All probability-inferences in cases resembling games of chance depend upon this principle. What meaning it can have, accordingly, for the individual case, e.g. to state the probability of the throwing of "five" at the first cast as 1/6, is to be expounded later.

From this it is evident that—the consistent dualistic world-view being presupposed—all the categories of probability-inferences available for use in science can be deduced with ease from the application of our two maxims. But these are themselves derived from a single principle of thought. In order to formulate this, we designate as "miracle of chance" every arising out of the absolutely groundless, out of pure chance, of anything conformable to law or order, hence anything persisting or possessing form. The principle then reads: *"Elimination as far as possible, or at least limitation, of all miracles of chance in our conception of the world."* In applying the principle, it is necessary to bear in mind that the supposition of any kind of order or conformity to law in the chaotogenic, i.e. in the elements of the real world which spring from absolute chaos, also includes in itself the assumption of a miracle of chance. Then, from this one principle all the probability-inferences of rational thinking may be derived.

In the logical treatment of probability-computations the opinion keeps cropping up again and again that all rational conjectures depend on comparing the numbers of "favorable" and "unfavorable" cases among those "equally likely." But hitherto no one has yet succeeded in carrying out this idea, in view of the multiplicity of probability-inferences actually employed in science. On the other hand, in

view of the just formulated single principle of rational conjecture, this carrying out may well be possible—a further important proof for the correctness of the dualistic world-hypothesis.

The "miracle of chance," on more careful consideration, reveals itself as "one of relatively infinitely few among relatively infinitely many equally possible cases resulting from chaotic becoming," and correspondingly as of antecedently infinitely small probability. Let us begin with the simplest possible example, and compare the variations of just two elements, as in "heads I win, tails I lose" played by the tossing up of a coin. The greatest degree of order or conformity to law will then be attained if *all* throws alike show either the result "heads" or the result "tails." This highest degree of order is obvious in the case of one throw. If there are two throws it becomes one of two favorable among four equally possible events (*hh,* ht, th, *tt*), which we consequently represent by the probability-fraction $2/4 = 1/2$. If there are three throws, the highest degree of order is one of two favorable among eight equally possible events (*hhh,* hht, hth, htt, thh, tht, tth, *ttt*), with the fraction $2/8 = 1/4$. If there are n throws, the formula $\frac{1}{2^{n-1}}$ appears as representative of the highest degree of order—a quantity which decreases with great rapidity when n increases. If there are infinitely many throws, there is an improbability raised to infinity of the coming into existence of the highest degree of order or conformity to law. For the quantity $\frac{1}{\infty}$ approaches zero as its limit—still more quickly than this the quantity $\frac{1}{\infty^2}$, and much more rapidly than this in turn, the quantity $\frac{1}{2^\infty}$ under consideration here. Similar reckonings may be made for the lower degrees of order. The improbability of these events rises progressively with the number of throws. For the die, in analogous fashion, we find the formula $\frac{1}{6^{n-1}}$; for a regular icosahedron used as a die, we should have the formula $\frac{1}{20^{n-1}}$. This means the improbability of the orderly also increases progressively with the number of elements entering into a combination. That a ball in ∞ many throws would always touch

the ground with the same part—for that there would be a probability $\frac{1}{\infty\infty}$.

In the offspring of absolute chance we are dealing with the number —totally unknown to us—of all qualities in any way possible, capable of coming together in infinitely many momentary combinations (which are consequently discontinuous, and continuous only "by chance"). In view of what has been said, it is easy to perceive that, among all equally possible events, not only that which possesses perfect order, but also that in which order merely predominates, cannot here exist except in an insignificant minority, and that accordingly the expression $\frac{1}{\infty}$, or in words, the infinite improbability of the miracle of chance, appears merely an application of the old established principle of probability-computation—whose fundamental importance for all rational conjecture has long been surmised by investigators. However, it was the dualistic world-hypothesis that first brought this obscure surmise into the light of clear knowledge.

It remains now only to glance at the doubt whether the considerations advanced do not, after all, lead to a rational victory over the element of chance, and consequently in the last analysis, in spite of themselves, back to the opposed "rationalism." For "What is the sense," it may be asked, "of first introducing absolute chaos theoretically into our world-view, in order then to oppose it practically (that is, with every act of rational conjecture), for the sake of limiting its assumption as far as possible, even to the point of elimination?" All the logical clarifications and simplifications, led up to by the above-mentioned considerations—could they not have been arrived at much more basically and "more simply," if we had given absolute chance its walking-papers once for all, and had returned to the point of view criticized as "rationalistic prejudice": "In the world there is only that which is necessary, in itself or mediately"?

This expectation—a somewhat natural one, to be sure—would for all that be a grave error. From the rationalistic standpoint—that of necessitarian monism—the world, as has already been set forth, is on the whole inexplicable. This standpoint, therefore, really does not logically

enter into the question. If nevertheless we attempt to recognize it tentatively, that consequently means: If we accept the fiction that the world, with its absolute temporal determination, with its separate determinations of magnitude in the persisting, with its incalculable manifoldness of qualitative, of real categories, of primary natural laws, and with all the apparently random modifications in individuals of the characteristics of their kind—that all this (in a way utterly mysterious to us) can be deduced with necessity from the simple nature of a creator necessary in himself—if we risk this intellectual *salto mortale,* of utterly banishing the irrational and fortuitous from the conception of the world—then we shall lose all justification for striving, henceforward, to simplify this conception of the world as much as possible, for giving preference to the simplest of all the hypotheses which can be thought of in explanation of any existing event (and a countless number of them are always possible). If it was possible for God to bring forth out of the absolute simplicity of his being, without any external stimulus, the cosmic manifold N—why not then just as well 2 N, 3 N . . . *n* N etc.? If we are persuaded that every variation, seemingly so arbitrary, in natural laws, every confusion, seemingly so tangled, in the world, would have to become arranged in a fine conformity to law, had we the needful power of perception—wherefore then is there still any rational preference for the simpler? wherefore the interpolation of the arc-like moon-path between the observed stations of the gleaming disks in the sky? wherefore not the assumption of some other possible zigzag rambling path? wherefore the adherence to the axiom "entia non sunt multiplicanda"? wherefore the preference for the Copernican solar system as against the Ptolemaic? For this the rationalist (like his direct opposite, the pragmatist) can advance only motives of economy in thought but no logical reasons. The rationalist furnishes an example of the cogency of that warning: "Qui nimium probat, nihil probat"—he who proves too much proves nothing at all. By completely blotting out all that is fortuitous from his conception of the world, the rationalist has given up the possibility of a *logical comparative,* the possibility of preferring

one of several available hypotheses as the relatively best without therefore regarding it with the utmost conviction as the right one. But on the employment of this logical comparative is based the whole of our empirical science. If it were taken away, the whole structure would collapse.

The consistent dualist, on the other hand, is able to justify the logical comparative by the fundamental idea: Yes, the world is a stumbling-block for thought, a miracle of chance as regards the stimulus to its appearing. But just for that reason, the chance element in the world should be limited as far as practicable in our conception of the world, not merely for the sake of economy in thought, but also for the sake of knowledge.

Since, then (as is obvious, and has been previously set forth: cf. p. 38 f.), the monistic chance-hypothesis is just as little capable of forming a basis for our logical procedure as is monistic necessitarianism, the assertion made at the beginning of this chapter is confirmed: *"Only the dualistic world-hypothesis is able to supply logical information about the nature of the probability-inferences indispensable to science; it alone is able to incorporate the existence of these inferences organically into its system of thought."*

But often the solution of one problem in turn brings a new and different one into sight; and so it is here also. The mystery has not been explored to the bottom. That a logical comparative should exist at all might still seem paradoxical, in view of what has been said. In matters of knowledge we have still to deal with the alternatives "true" and "false"; and, correlated with these, the alternatives "to be" and "not to be." But are not true and false, to be and not to be, opposites, which because of their very nature exclude all increasing by degrees? Is there any sense at all in regarding one of two conflicting assumptions as "better, but nevertheless perhaps not conclusively right or true"? What justification is there, anyway, for the comparative in the theory of knowledge?

Perhaps the examination to be made in the next chapter will shed some light upon this question.

4. *Future Being and the Platonic Idea*

The following discussion concerning the nature of time and existence in time is not intended to serve as a definition of the concept of time. Regarded thus, at every step it would deserve to be reproached with the fault of the circle, of presupposing or directly employing the concept to be defined. The concept of time does not admit of definition any more than the concepts of space and being, or the contents of the sensations red, sweet, and cold, admit of definition. But it is quite possible to subject the concept of time to various analytical thought-operations, which, even though they constantly presuppose the concept itself, nevertheless contribute to its clarification and to that of the pertinent facts of the case.

Regarding absolute time, it is obvious that it exists in a line without limits, stretching from the infinite past through the present into the infinite future. Of all the infinitely many points of this line, only a single one possesses that fullest *real existence* in which an activity can take place; the momentary present. Every point in absolute time either is present, or was so once, or will some time be so. But it is not permissible to assert of all the points which at the moment are not the present, that they simply are not. Rather to each of them is likewise to be ascribed an existence, but an existence so to speak weaker than that of a point in the present in which an activity can take place. Every point in the past and every point in the future exists, however: namely, as a past point or as a future one. This means that its existence can be grasped only as projected upon some present moment. We have only two simple words to designate the nature of this projection-existence, namely "past" and "future." But we must not permit ourselves, because of this, to lose sight of the fact that there are infinitely many kinds of projection-existence, and of the past just as well as of the future. What happened two seconds ago has a different kind of projection-existence than what happened one second ago, and the same holds good in the realm of the future. And in fact every point in the absolute succession of time is destined to pass through

every kind of future and past projection-existence, just as it is or was destined to be once the present.

So much for absolute, empty time. Through confusion of our measures for time-magnitudes with this, the idea of the relativity of all time-determinations has developed, which, as obviously absurd, will not be gone into more closely here.

According to the extreme rationalistic conception, which regards all that is real as necessary, and also according to the moderate rationalistic view which assumes only unequivocal determination of all the future by the present, the momentary projection-existence of all the future is always just as fixed and unchangeable as that of all the past. Or in other words, the course of the world is predetermined for all eternity by the projectively existing, by that which, looked at from the point of view of any present-point, fills up the future. In the world nothing becomes or arises which supposedly has not already been, in projective existence. All becoming in the world is nothing else than the running of clockwork unalterably set.

Not so according to the dualistic conception here advocated. This divides the realities of the world into three classes: first, the prime source—whether necessary in itself or free—of all inner necessity in active influencing; second, the absolutely fortuitous, inscrutable to us, normally exercising only passive influence; and third, the cosmos which by its nature is open to our perception, all reality which has arisen out of the reciprocal influencing of the two principles, the reality which for that reason is here called "amphigenic" (the offspring of both—cf. p. 116).

To the prime source of all active influencing is also ascribed by our view the same fixed, maximal and unchangeable future existence, as by the rationalistic conception of all reality.

To the absolutely fortuitous is ascribed no being in the future, but something analogous to being, something weaker, which in words could best be designated as a "hovering."[1] The absolutely fortuitous "is" not in the future. It only "hovers" in the future. It has a claim

[1] *Schweben.*

to fixed being only when it becomes present. And as past, it then retains this fixed being to all eternity. How this is to be understood is shown most clearly by reference to judgment. A judgment in the present about the future appearance of something absolutely fortuitous is neither true nor false. Here an exception must be made to the law of the excluded middle. If the judgment in the present were true or false, it would thereby be, as it were, "already determined or established in the world" that what was judged would either come to pass or not. But it is not established, but in the deepest and truest sense "in suspense." Whether the absolutely fortuitous will appear or not remains absolutely uncertain until the present in question arrives: this means uncertain not only for every mind which reflects upon it, but in itself. From this it follows that God too cannot foresee the absolutely fortuitous. For to foresee here means to foreknow, and knowledge is found only where there is a true judgment. But a judgment about the future appearance of something absolutely fortuitous can be neither true nor false.

The future being of the amphigenic, finally, is something between the maximally fixed being of the necessary and the "hovering" of the absolutely fortuitous. Hence we have in language the word "probability,"[1] which however is ambiguous and consequently open to misconstruction, since it misleads into seeking the reason for this state of things in a mere lack of knowledge on the observer's part. Other expressions, like the "threat" of a danger, which yet can be averted, the "beckoning" of an opportunity, which yet can be neglected, have a significance colored by emotion and hence are not adapted to designate the general concept in question. Since, however, on the other hand, the compound "objective probability"[2] would be too clumsy for frequent use, and etymologically contradictory besides, let us here take the liberty of adapting another word. I call the weakened projection-existence of the amphigenic in the future, its "futuring."[3] Here, too,

[1] *Wahrscheinlichkeit.*
[2] *Objektive Wahrscheinlichkeit.*
[3] *Künftigen.*

the weakening of being, regarded as basically objective and independent of the observer, has like consequences for judgment. A judgment about the appearance of that which only "futures" can be neither true nor false. It cannot become true or false until the future to which it points becomes the present. Before that, the judgment is only more or less probable, and this according to the higher or lower degree of "futuring" in the amphigenic to which it relates. But the higher or lower degree of futuring in the amphigenic conforms to the proportion in which its coming to pass is dependent on elements of inner necessity or on elements of chance.

Here a difference appears, which can be best pointed out by reference to Plato's theory of ideas. Plato taught, as is well known, that the general types of individual things included under one concept possess an existence independently of these individual things. These general types existing in themselves he called Ideas. His view was soon refuted by Aristotle, and at present is no longer defended by any group which scientifically can be taken seriously. But what Plato mistakenly asserted of the present holds good, in a figurative sense, of the future.

When a stream of influence, which because of inner necessity tends toward a certain form-giving, springs forth from the unitary principle, it is (objectively) immeasurably improbable that its force will be simply neutralized by purely fortuitous accumulation of resistances. It is, however, immeasurably probable that the forms sent forth by inner necessity will experience through the resistances of the absolutely fortuitous all kinds of little undirected changes, unknowable in advance. The more insignificant these changes, the greater their probability; the more profound, the less their probability. In other words: the henogenic essence of things (their form or "Platonic Idea") always futures in a much higher degree than do their chaotogenic individual peculiarities. In harmony with this is the characteristic structure of natural genera. Everywhere, when we understand the character of natural objects more exactly, we find between individual representatives of a genus only agreement in type, never absolute

similarity. In the realm of organic nature this has long been known. But the inorganic, too, presents the same aspect since the atoms of the chemical elements have been conceived as worlds of rotating electrons. To the enduring natural generic structure corresponded, in its day, the stronger futuring of the "generic idea." The scholastic "universalia ante rem" finds its confirmation in looking ahead to the future.

And something more, too, reveals itself in this state of things. Of two futurings, incompatible with each other and differing in degree, the stronger does not always attain present existence; but in the great majority of cases this is what actually happens. Only seldom does that which futures more weakly (the improbable) come to pass; in the great majority of cases that which futures more strongly (the probable) comes true. To this corresponds the genus-creating power of the henogenic form-giving tendency, the "Idea." Organic artefacts, too, show a like generic structure. Birds' nests agree in that which is typical in the form, and vary from one another in relatively chaotic individuality, as also our palaces, ships, cannon, looms and much else. Also when we human beings conceive a plan of something to be carried out in the future we call it, with good reason, and referring to the central thought of Platonism, an "idea."

What has been set forth can also be expressed in the following way. In the realm of being (for present and past) the law of contradiction holds good: that A cannot be and not be at the same time. In the realm of the future no analogous law holds good. At the same time with A, its contradictory opposite can also future, but of course only to the degree that the futuring of A lacks complete being: so that consequently, when e. g. A futures with a degree of probability 2/3 or 5/7, its contradictory opposite can future only with the degree 1/3 or 2/7. Further, for present and past the law holds good that a universal cannot exist by itself in the absence of tendencies to individualization: whereas the degree of a universal's futuring is independent of the futuring degree of its tendencies to individualization, and can exceed this by any amount. And of course, in the realm

of the amphigenic, it is always the ordered, the form, which in degree of futuring surpasses the tendencies to individualization.

In the purely fortuitous, too, a universal has an analogous independence of the individual. Only here it is the unordered, the absolutely lawless and formless, which in degree of futuring always by far exceeds its tendencies to individualization. In the purely fortuitous future, the unordered, the lawless, always possesses the highest degree of absolute probability. In the purely fortuitous, therefore, the unordered is, as it were, an analogue to the Platonic Idea. Only the reason for the higher degree of its futuring is different. With the "Idea" it is the superior power of the active form-giving influence over the passive resistance of chaos or the chaotogenic. With the unordered in the purely fortuitous the higher degree of its futuring springs from the numerical superiority of possible unordered combinations over possible ordered ones. (Cf. the preceding chapter.)

According to the consistently dualistic view, there are two sources for chance disturbance and diversion of the inherently logical course of cosmic events: these are first, direct modifications of processes by the passive resistance of that which is absolutely fortuitous in its arising and passing away; and second, the influence of new emanations, which indeed, in their active power to influence, spring from the unitary principle, but are there set free by means of the incalculable nature of those direct modifications, and therefore in the last analysis by means of chance. The longer the time that elapses, the more opportunity and scope are afforded for these two sources of uncertainty in the future. Hence, on the average, everything future increases in uncertainty, or, which means the same, falls off in "degree" or "strength of being," the more distant the future which we foresee. But with this falling off in degree is combined an increase in scope. In number, everything that futures, therefore that can possibly come to pass, increases proportionally the farther we penetrate into the future. Only an infinitesimally small part, of all that has ever futured for a certain moment of the absolute stretch of time, attains existence when the moment becomes the present. With every step that time advances,

something drops from the futuring-load of every absolute moment of time in the future.

And something else is combined with this: beside the decrease in the futuring-load, a change in intensity too. In the course of time, after the entrance of newer and newer chance-components, the objective probability- or futuring-chances of an event may increase and then decrease and so on, until at length the present makes its appearance and puts a definite end to the performance. Very much of what is to come "hovers" in the future: not only in our way of thinking, but independently of it and objectively. Thus death of a human being at a certain hour in the future may threaten now more, now less, in the course of his life. Abstractly expressed: the content of an absolute moment of time in the future undergoes a change in its projections on advancing moments of the present. Different contents i_1, i_2, i_3, etc., of one and the same absolute moment of time in the future correspond to different moments of the present g_1, g_2, g_3, etc. But not so in the past. Here, there is allotted to all moments of the present g_1, g_2, g_3, etc. always just one single content, i, fixed to eternity, of an absolute moment of time. Consequently we may rightly assert that in the future, before it ever becomes present, constant change is taking place. However, the contents i_1, i_2, i_3, etc., which are freed in the process, must not be considered a chain of causation. Schiller says:

> "Threefold is the pace of time.
> With hesitation the future advances,
> Like an arrow the now flashes by,
> The past stands still forever."

To unprejudiced human understanding, this state of things is clear without further explanation. Only the rationalistic mind, perverted by an artificial training, takes offence at it.

If something in the future, still awaited, runs counter to our wishes, we call it a danger. He who takes his stand on absolute determinism cannot grant the existence of an objective danger. He would have

to prohibit himself absolutely from employing the concept "objective danger." But it is scarcely believable that any one could carry out this prohibition in practical life; least of all in the realm of deciding and willing. This Aristotle even in his day recognized and pointed out, as well as its bearing on the possibility of the advance judgment's being not true, or false. (Cf. *Organon,* Theory of Expression in Language, Chapter 9.)

True deciding and willing is incompatible with determinism consistently thought out and lived. There is, objectively, independently of our knowing or not knowing, a vacillation of the future, a threat of dangers, a deciding. And sometimes it is our will which by *its* deciding takes hold of the vacillating future and determines and directs it. Only this much is to be granted, that in unscientific thinking human beings are generally inclined to exaggerate greatly the chance and uncertain elements in what is to come, and to confuse a subjective lack of knowledge with objective uncertainty of the future.

5. *The Logical Comparative and Presumption-Proof*

The discussion in the preceding chapter offers at the same time an answer to the questions at the end of the last chapter but one: What justification is there, anyway, for the comparative in the theory of knowledge? What sense can there be in regarding one of two conflicting assertions as "better, but nevertheless perhaps not conclusively right or true"? Are not "true" and "false," with their correlates "being" and "not-being," opposites, which because of their very nature exclude all gradations?

And such is actually the state of things in the fictitious world of rationalistic prejudice; but not in the real world. In the real world of the amphigenic, only present and past have fixed being which no longer admits of gradation. But of the infinite realm of the future

neither fixed unalterable being nor not-being can be asserted, but only "futuring" and "evanescing,"[1] which admit of gradations (the latter expression, probably at once understandable after what has been said, is here introduced as the analogue of not-being in the future). If in the world there were only being or not-being, then in knowledge there would be only absolute certainty or absolute lack of knowledge, error. But, however, there is in the world, even if only in the world of the future, a futuring and evanescing, mounting by degrees toward being and not-being; and corresponding to this, there is in knowledge a rational presumption mounting toward rational certainty.

Yes, but —— According to this justification, would not all rational presumption have to be directed toward the future? And do we not use rational presumption just as much with reference to present and past? The *a posteriori* inference of past causes from what is perceived in the present—all that is known in history, in the history of man as well as in natural and cosmic history, possesses as a whole only the valency of probability. What is the use logically of a justification of rational presumption, if it relates only to the future and excludes present and past?

The gain would in fact be merely imaginary, if, as the examination in the last chapter but one has shown, all rational presumptions directed toward that which is present or past were not, in the last analysis, directed toward that which is projectively future (even if in actual fact it is that which is already present or past). All rational probability-inferences of the empirical sciences are based—as was there set forth—on the rejection of a miracle of chance. That the being or not-being of this miracle of chance usually is not thought of in connection with the future as it appears from the thinker's momentary point of view in the present, but in connection with present or past from this same point of view, does not change the fact that the miracle of chance under discussion is rejected because of the "evanescing" which it possessed when projected back to the point of view of a still earlier past—sometimes aeons further back—and its consequently

[1] *Flüchtigen.*

being then regarded as in the future. All rational presumptions are in the last analysis directed toward a future (even if mostly toward a future which appears such only from the point of view of a past very remote) which however has now itself become past.

This becomes especially clear in view of a situation in which the miracle of chance, improbable in the highest degree from the point of view of an earlier past, nevertheless has come about, and the rational presumption based on its rejection therefore actually misses the mark. Such instances are furnished in abundance by the regrettable cases of wrong convictions, in which a "trick of chance" has brought together apparent circumstantial evidence of the participation of an innocent person in a crime for which he is being tried, in such profusion that the judge in all good faith and conscience could do nothing else but pronounce sentence of guilt. His presumption, amounting in its strength to practical certainty, is not less rational in such cases because in fact it is wrong. Not only morally but logically too he was justified, indeed in duty bound to pronounce sentence of guilt. For such a "trick of chance," which means such a coming together of chaotogenic units governed by no henogenic tendency, yet arranged so as to call forth the sentence, was really an extraordinarily great improbability, considered as a future happening, before in the course of the world it was decided. This trick of chance once "evanesced" in a very high degree. That in this case what in itself was improbable has yet come to pass does not deprive of its logical justification the presumption that it would not happen.

No theory of knowledge having a rationalistic bias can account for situations of this kind—and along with them, for the principle of rational presumption generally, including the logical comparative.

From what has been said, too, there follows the solution for a logical dispute which has divided notable and acute thinkers. The impossibility of deriving rational presumption in any way from rational certainty caused the philosopher Meinong to postulate for the former a peculiar sort of convincingness—which he called "presumption-proof."[1] With

[1]*Evidenz der Vermutung.*

this an advance was unquestionably made in logic. But nevertheless, Brentano and his school (in the narrower sense), because of their consistent stubborn rationalistic bias, could not comprehend this. This school pointed—and indeed rightly—to the close correlation between certainty-proof[2] and the concepts of being and not-being. Because of this, they declared presumption-proof to be nonsense. This assumption, they said, remains an empty and in fact absurd postulate, so long as an analogue of being and not-being is not demonstrated which has to presumption-proof, either affirmative or negative, a close correlation like that of being and not-being to certainty-proof. But to assume or presuppose such an analogue is nonsensical.

From what has previously been said, it is clear that both parties are right to a certain extent: Meinong in his assertion of presumption-proof, and the Brentano school (in the narrower sense) in the demand they couple with it. Only, that it is not possible to meet this demand is—"rationalistic prejudice." The analogue of being and not-being, which is needed to justify and make comprehensible all rational presumption, and consequently its proof too, is—"futuring" and "evanescing" in the projective existence of the future.

In the projection of what is judged we must nearly always transport ourselves back into a remote past, in order to justify in our own eyes the reasonableness of our presumption. From the point of view of the present too, in order to have a rational presumption, in a particular case, relating only to the future, it is necessary to imagine the antecedent conditions.

Let us imagine a mathematically accurate equilateral six-sided pyramid constructed of unyielding inelastic material, inverted with base facing upward. If this pyramid is made to fall absolutely perpendicularly on an absolutely horizontal inelastic supporting surface, it will remain standing on its apex (which represents a mathematically exact point), provided external disturbing factors of some sort do not affect it. Let us furthermore assume that such disturbing factors of amphigenic origin (such as resistance of the air, currents of air and

[2]*Evidenz der Gewissheit.*

the like) are absolutely excluded. Even then, in a dualistic world conforming to the cosmic hypothesis here advocated, the pyramid will not remain standing on its mathematical apex in absolutely unstable equilibrium. Rather, it is infinitely probable that during the time of its falling (however brief, still of finite length) some kind of infinitesimal resistances will develop out of absolute chaos, which on encountering it will have the power to make it vary in some way from the one mathematically exact central position, so that it will then become top-heavy and fall over to one side. On the other hand, there is infinite improbability of a regular distribution of these resistances so that in spite of them the unstable equilibrium of the pyramid on its apex, or possibly, after its falling over, on an edge, will be maintained. There is also infinite improbability of the emergence, from absolute chaos, of a miracle of chance which would have such a violent impact on the pyramid that it would come to rest on its six-sided base (originally facing upward). Consequently it is infinitely probable, in view of the presuppositions which have been made, that the pyramid will come to rest on one of its six congruent triangular sides. But on which of these six sides—that, up to the beginning of its fall, is absolutely and in the truest sense "in the balance." This means that in the course of the world it is not yet decided or foreordained. No God, either, could foresee it. For this foreseeing would have to be a knowing, and therefore a true judgment. But a judgment about the falling or not-falling of the pyramid on a certain side, before the critical moment had yet arrived, would be neither true nor false, but only more or less probable. Let us assume that of the six sides only one is black and the others are white; then here, objectively and independently of the observer, there is a probability 5/6 of the falling of the pyramid on a white side, and a probability 1/6 of its falling on the black side. In this example, and only in this and similarly constructed imaginary examples of decisions made by absolute chance, does the probability-fraction have logical meaning and justification in an individual case.

Our actual empirical games of chance are different from this imaginary case in an essential respect—of course not merely because

the apparatus used in them (dice, coins, roulette wheels and the like) is not constructed with mathematical precision. In empirical games of fortune—from the point of view of the consistent dualism here advocated, too—the result in an individual case is generally predetermined, if not with absolute definiteness, still with infinite probability. We are driven to a presumption of as little value as that of a gambler only because of our ignorance of all so-called "variables": i.e., of the conditions of the ultimate event which in their coming together are not governed by any natural tendency, and are therefore chaotogenic. If we knew these conditions, we should be able to calculate in advance every individual throw of the dice or of coins with the same certainty as a solar eclipse. Consequently there is no sense objectively in setting up the probability 1/6 of the throwing of "five" in playing with dice, when only one throw is involved. That this is so often done, and by theorists too, arises simply from the popular confusion of the state of things in this case with that in the previously imagined ideal game of fortune, in which the "variable conditions" are not merely "chaotogenic," but emerge directly out of absolute chaos.

On the other hand, there certainly is sense in expecting, with very great probability, that in playing with dice, as well as in all other analogous cases in experience, the actual result obtained from a great many repetitions will not vary too widely in its numerical proportion from the ideal proportion (of favorable events to equally possible ones). A too-wide variation would be an orderly arrangement in the fortuitous, possibly even a miracle of chance, which is always highly "evanescing." From *this* presumption-proof, certain practical guides to action may be deduced (in playing dice, never to bet on the throwing of "five" with odds higher than one to six, and so on), which are exactly like those which would be reasonable in an imaginary ideal game of fortune. And consequently, as economy of thought, it is even quite advisable in the conduct of practical life to assume for every individual case too the corresponding objective probability (e.g., in playing dice 1/6 for the throwing of a certain number).

Further, special consideration must be given to the instances when,

in games of fortune, not only the variable chaotic conditions are unknown to us, but also a part of the constant henogenic ones—e.g., as when balls are to be drawn from an urn, about which we know merely that it contains only black and white balls, but not how many of each kind. Then for the first drawing we rate the probability at 1/2, for white as well as for black. If each time we throw back into the urn the ball that has been drawn, and each time, after the balls have been shaken up, draw a second, third, *n*th time—then if under these conditions one color, e.g., white, predominates, the successive probabilities vary most essentially from those which appear when an urn is used with a combination known to be divided in equal proportions: e.g., 50 white and 50 black balls. In the latter case the probability of white or black in each successive individual drawing remains equal to 1/2 (with the previously stated limitations and reservations). Even if I have drawn "white" ten times in succession, I have no reason to expect that white will turn up again the eleventh time with greater or less probability than 1/2. But not so with the urn having a combination of unknown proportions. Here, if I draw "white" ten times in succession, I can, it is true, assume that the black and white balls are present in approximately equal numbers, and that this result is an antecedently improbable trick of chance. But the more likely assumption is that there are present in the urn considerably more white than black balls. And then, naturally, I have to assume, for the drawing of a white ball at the eleventh draw, a far greater probability than 1/2.

But I can of course agree to a wager on the outcome of a long series of draws. Thus e.g., in the case of the urn with the known proportion of the combination 50 and 50, I could without a qualm risk my whole estate one to one on the wager that in 100 draws in succession 100 white balls will not be drawn. Although the loss of my whole estate would be much worse luck for me than the doubling of it would be good luck, still, in view of the overwhelming improbability of 100 successive draws of white $(\frac{1}{2^{100}})$, a bet of that sort would be entirely reasonable. Not so, on the other hand, with the urn having an unknown proportion in the combination of its balls. If in this urn were contained e.g.,

97 white and only 3 black balls, then the hundredfold repeating of "white" would not by any means be so improbable that I would dare, with any show of reasonableness, to risk on it the loss of my whole estate.

But as regards combinations with unknown proportions, still another way of playing is possible. Imagine instead of one, 100 urns with unknown and guaranteed "chaotogenic" proportions in their combinations of white and black balls; and assume further that from each urn only one ball may be drawn. From the point of view of probability-computation, these 100 draws are then exactly and precisely like 100 draws from one urn with the proportion 50 to 50 (balls always being thrown back again). This is equivalent to saying: if I do not know the proportions of the combinations, then in order to arrive at probability-estimates as valid as that for one urn with the proportion 50 to 50, I must ask for 100 urns: that is, I must enlarge my field of experiment a hundredfold.

From all this it follows that the state of things, when the urn holds a combination of unknown proportions, is unsatisfactory both theoretically and practically. This unsatisfactoriness has to be recognized. But in doing so, those theorists go too far who (like von Kries, for example, in his penetrating and valuable researches) deny to such a case any possibility of numerical rating in probability-computations.

In the case considered, as in all cases of rational presumption about the amphigenic and its behavior, the *nervus probandi* of these computations remains the evanescing (correlated with rational presumption) of a miracle of chance; by which Meinong's doctrine of presumption-proof seems to be justified in the empirical field.

But there are also cases of rational presumption about a subject-matter which in view of its nature seems to exclude any reference to a weaker being in the future. These are the presumptions regarding objects which we are wont to believe did not come into being and will not cease to exist, hence are aloof from all temporal change, perhaps even simply out of time. I presume e.g., that if the number π were carried out to a very great number of decimal places, perhaps a thou-

sand, that the proportion of the appearance of the individual numbers 1,2,3,4,5,6,7,8,9,0, in these thousand places would agree with the result to be expected as the outcome of a game of chance, that is, with drawing the numbers 1 to 10 a thousand times. This means that I consider a marked predominance of one or several numbers over the average of the others in these 1000 places as an improbable trick of chance. I cherish like presumptions regarding all irrational numbers. If, for instance, I should carry out $\sqrt{10001}$ to 100 decimal places, and if among these 100 places there were 99 sevens, it would seem to me a scarcely believable miracle of chance, quite as much as if in 100 draws from an urn with 10 lots, I had drawn "seven" 99 times. The presumption seems to me to have exactly the same justification in one case as in the other. And yet in one I am apparently dealing with that which has not come into being, and which therefore could never "future" nor "evanesce." For my "carrying out" of the decimal places, which means my taking cognizance of them, is indeed a real process, which takes place in time. But that of which I here take cognizance—proportional relations between ideal spatial or numerical magnitudes, expressed in the decimal system of numbers in progressive degrees of approximation to accuracy—how could that ever have come into being? how could that ever have futured or evanesced?

But if here there is a category of justifiable presumptions with which no weaker being can be correlated, what value, then, can this correlation have in cases of presumptions about the real? Through the existence of this one category of rational presumptions in the wholly rationalistic realm of relations of magnitude—in the realm where there can be no touch of the fortuitous, nor anything chaotogenic—through the existence of "mathematical presumptions," as they shall here be called for the sake of brevity—is not ruin brought upon our dualistic attempt to explain the "logical comparative," the probability-inferences in empirical sciences, rational presumptions in general? Does not this break down that argument, so conclusively in favor of the dualistic world-hypothesis: its unique ability to throw philosophical light on probability-calculations?

To these arguments which I myself have advanced, I reply as follows. The contributions of the dualistic world-hypothesis toward a logical foundation for probability-computations fall into two divisions. The first of these (presented in the last chapter but one) consists of the derivation of *all* the probability-inferences employed in the empirical sciences from that fundamental form which theorists have long—we must say "surmised," rather than known, to be typical of rational presumption in general. In this contribution alone—in the knowledge that only the dualistic hypothesis is qualified to make it, there is an argument of such convincing force for the hypothesis that if the problem of the logical comparative were not of interest in itself, there would be no need of any further discussion. But the first contribution is not in any way impaired or called in question by the existence of mathematical presumptions. Mathematical presumptions can even be very easily traced back to the fundamental type of all probability-presumptions, if in weighing equally possible cases we fix our attention, as many theorists recommend, not on objective determinations, but solely on our subjective ignorance. (Of the many possibilities in carrying out numbers to a great many decimal places, those in which one number appears especially often form only a small fraction—indeed only an infinitesimally small fraction, should we consider such a case as that in which one number appears 99 times in 100 decimal places. So long then as we have no more exact knowledge about the nature of these decimal places, which means that we have not worked them out, there exists for us only a slight—indeed infinitesimally small—probability for such an especially frequent appearance of one number.) The existence of mathematical presumptions, therefore, does not form an argument against the effective functioning of the dualistic world-hypothesis within the realm of probability-calculation in general. What they call in question is only the universality of the rule that rational presumptions are, in the last analysis, directed toward a futuring or an evanescing; and the justification, resting on this, of Meinong's doctrine of presumption-proof, against the objections of the Brentano school.

That mathematical presumptions cannot be based on futuring or evanescing is obvious, if mathematical relations, if all ideas which form the content of mathematical knowledge are regarded as something which simply has not become, something outside time or set apart from temporal change. But is this view really firmly established, secure against all doubt? Is it actually incontestable that all mathematical relations—and of course geometrical ones too—with every detail which was ever found in them or will yet be found—that all this exists and has existed from eternity, as non-real, along with the prime source of all reality, independent of him, even before he had made a beginning of the world of realities? Or is it not more natural to assume that the world of numerical and spatial relations, too, owes its existence in the first place to a cosmic activity, a henogenic emanation in response to chaotic stimulus? Even in itself, the latter view would seem to me at least as believable as the former. But now about our dilemma, confronted with surrender of the doctrine of futuring and presumption-proof. For me, the existence of mathematical presumptions possesses convincing force of a kind exactly the opposite of that which at first it seems to have. I mean that it points rather to this: that the ideas which form the content of mathematics and geometry do not belong with eternal truths, but, like everything else in the world which can be apprehended by us human beings, have become. But I grant that I cannot form any clear idea of the manner of this becoming.

But now some one might take me up and ask me if I consider the just-expressed presumption a rational one; and if the answer is "yes," to what futuring or evanescing I propose to refer it. And to this I should have to reply: the psychical activity to which expression is given in the sentence above is, it is true, also called a presumption; nevertheless it actually belongs to another category of mental procedure than the one hitherto considered, which has in common with probability judgments and inferences only this, that it is to be counted in the general class of judgments and is distinguished from certainty-proofs by a deficiency.

When a mathematician is on the point of discovering a new theorem, from the first moment in which the new idea dawns upon him to the moment when he apprehends it with full clearness, he passes through a series of mental states in which he comes closer and closer to certainty-proof without having yet quite reached it. We call the first phases of this series a "surmise of the truth"; for the later ones we have no particular expression at our disposal. There is no reason to object to the use of the word presumption here too. Any one who is philosophically competent understands anyhow that what is here spoken of is a mental activity *toto genere* different from all probability-computation. It is possible that a presumption-proof too, as well as a certainty-proof, may attain full clearness only in a prolonged gradual process of approximation. Then we are dealing with mental activities which, in contrast to the clear and complete certainty-proof, show deficiencies in two respects.

The category of "surmises" still includes much that is obscure, which is not cleared up by what has been said; and the same is true of the manner in which presumption-proof comes psychologically into existence. We should fall a prey to the rationalistic prejudice censured at the beginning of this section, if we were to expect that with the setting up of the dualistic world-hypothesis we had solved all the enigmas of knowledge, and in particular of rational presumption. Our theory of knowledge will and must always remain a long step behind the development of our actual knowledge. That should not keep us from seeing what has been completely and positively accomplished.

These positive accomplishments can be briefly summed up now in an expansion of the already known proposition: only the dualistic world-hypothesis can account satisfactorily for probability-computations, for the logical comparative, and for presumption-proof; only it can incorporate organically into its system of thought the existence of these phenomena.

6. *Reversal Again.*

It is clear that the objective uncertainty of the future furnishes a new ground of explanation, so far not touched upon, for that phenomenon, paradoxical to the rationalistic world-view, the ascertaining of which formed the point of departure in this inquiry—for reversal.

However, before this can be looked into more closely, let it be emphasized that in the exposition of Section I not *all* the grounds for reversal, arising solely from the cosmic physiognomy, were set forth. The elements of high degree and purity of form were not included in the inquiry there. Their consideration may yield new, purely physiognomical grounds for our greater ability to deduce past as compared with future. It is especially easy to demonstrate this with reference to high degree of form.

Everywhere experience shows that high degree of form, in products of nature as well as in those of art, is attained only gradually, in constant and correspondingly temporally extended evolution. Neither in nature nor in the realm of art and technical science does it happen that out of form of very low degree suddenly proceeds form of very high degree, without the intervention of a series of possible connecting links. This is true of living organisms as well as of machines, works of art, and systems of thought. The mere presence of a form of high degree unveils for us always and everywhere a bit of the past, tells us a story—the story of a step-by-step upward climb, through which this form arose. On the other hand, form of high degree, as such, does not by its mere existence permit us to foresee a bit of the future. For "that which was years in building may collapse in a few seconds." When forms break down, when they fall apart into the relatively chaotic, the intervention of connecting links is not necessary. Form of high degree can directly fall into the lowest order of particles.

But even with the establishment of this, the author must confess that to him it seems that all the physiognomical grounds of reversal have not yet been discovered. The examples (given on p. 50 f.) from the "topsy-turvy world" seem rather to indicate that there are still other

irreversible, purely physiognomical characteristics of form which I have not yet succeeded in analyzing. And it is natural to conjecture that in these too may be hidden further grounds for the explanation of reversal.

All these purely physiognomical grounds would make reversal explicable too in a completely determined world-process—in a world-process, therefore, which should be governed by a law of causation having strictly universal validity, and in which the future should possess a projection-existence as high in degree, as fixed and irreversible, as that of the past. But these purely physiognomical characteristics of our experienced world (as has been shown) indicate unmistakably that the rationalistic world-view is erroneous and that, instead, the absolutely fortuitous has an essential part in the coming to pass of all empirical realities. And in this there is a new ground for the explanation of reversal—a ground which by its nature is of such wide and deep significance that we might easily be tempted to deem all purely physiognomical grounds unimportant in comparison. For if the world is such in its nature that all the past is fixed in it forever, whereas the future is so long in a state of hovering and hesitation until it becomes present, nothing can be more obvious than the fact that we can draw *a posteriori* inferences about the past with greater authority than *a priori* ones about the future.

Still a warning must be given against ascribing to this "metaphysical" ground, as compared with the "physiognomical," a significance of practical weight. There is certainly a possibility that the metaphysical ground might have vast import, making all practical predetermination of the future illusory. But for the periods of time which are practically considered, this import is actually a minimal factor which remains below the threshold of perception and can be quite neglected without harm.

Only if a second indeterminate factor of the form given to the future should be added to absolute chance—if perhaps the Kantian "Thou canst, for thou oughtest" should possess validity, and the moral willing of man, like absolute chance, should be outside causation—only then

should we have to ascribe a practical and profound significance to the "metaphysical" grounds of reversal. However, this question cannot be dealt with here, because of its difficulties, which it is hard even to estimate.

On the other hand, it should be pointed out that the consistent dualism here advocated does not in any way conflict with the rationalistic demand for a law of complete determinateness, the inverse of the law of causation, for everything amphigenic in the past. The past as such remains fixed to all eternity. Consequently the world may perfectly well be of such nature that everything amphigenic in the past leaves traces indelible to all eternity, by means of which it could be reconstructed in thought by a backward-glancing mind possessing unlimited facilities for knowing. What has been established so far does not, it is true, furnish any ground for asserting this, but neither does it furnish any ground for contesting it. Only those absolutely fortuitous momentary existences which do not collide in any way with the henogenic (and these probably form the infinitely greater part of all that is absolutely fortuitous) sink back without trace, and hence to eternal oblivion, into the womb of time. But within the realities of the experienced world, the dualistic world-hypothesis opposes the rationalistic world-view only as regards our attitude toward the future, not as regards our attitude toward the past.

It is not true that the world is like wound-up clockwork, in which nothing can happen except what has been predetermined from eternity. The comfortless desolation of this rationalistic hypothesis is by no means a proof of its incorrectness, and has never been asserted here, either, as such. But now, after we have obtained manifold proofs to the contrary, originating in disparate realms of our thinking, we surely have a right to be glad that this comfortless rationalistic desolation has been done away with forever.

No tedious clockwork is the world, bringing to light only the predetermined, but an abysmal spring, from which rises the never-surmised, in ever-fresh abundance, with unfailing vitality, endless and boundless. That—is the world! No word of man was ever

uttered which strays farther from the truth than that senile "There is nothing new under the sun." Even our sun, a grain of dust in the universe, shines every day on the new, hidden though it may be from our coarse senses, our narrow range of vision. But the farther a mind reaches out into coming time, the more, and the more astonishingly, does the new "future" in it—most of all, most astonishingly, for the All-knowing himself, since by ascription he knows everything that can be known and therein possesses a measure for that which by its nature is unknowable because it is groundless, which nevertheless awaits reality. Even for the All-knower there is the mystery of nights that have been dark from eternity, and of seas which no plummet sounds. The beginningless can yet have an end. After eternal nights a twilight follows—behind horizons beyond the world the dawn comes up—out of the unfathomable sea the star of light arises, and

"A new day beckons to new shores!"

VI. THE NEW DOGMATISM

1. *Religion and Philosophy.*

Religion is the name we give to that psychical possession which bestows on its owners trust in the world, inner support against the terrors of life and death, and moral strength. In this sense, individuals often have their own religion, which means psychical goods which for them alone, and for no one else, perform the functions of a religion. In this sense an individual may, for example, "find his religion" in blind submission to the superior personality of another individual; or in exclusive devotion to a certain social-ethical objective, as at one time the freeing of slaves, or today the fight against the abuse of alcohol or the capitalistic exploitation of labor-power. However, spiritual goods which perform or have performed the functions of religion for a whole people, or even for a whole cultural group, always thus far contain or have contained a "world-view" as an essential constituent, which means a doctrine of cosmic scope, enabling its professors to "feel at home" in the experienced world about them by maintaining a certain attitude—a certain quality of intellectual and emotional behavior.

Beside the world-view, or better "tied up with it," there is much else belonging to the vital religion of a people or peoples; a religious cult, custom and morality which have developed out of the world-view, and, as it seems, a looking up to individual ideal forms, to gods, or to the founder of the religion, to saints or heroes, who give concrete meaning to the moral requirements of the religion. But the world-view always forms an essential part of all this: we might say, the rigid skeleton.

A world-view is always a sum of metaphysical assertions or theses—mostly positive in content, but sometimes negative too. Even the atheism of the Buddhistic religion, the assertion that there is no

creator of the world, is a metaphysical thesis. Consequently all religions of a people or peoples contain as fixed framework some philosophy—even though often a very childish philosophy, conceived in the first stages of development.

Philosophy consequently does not have its first beginnings in an age when there are professional philosophers. The customary separation of a history of religions from the history of philosophy is entirely arbitrary and misleading. All so-called philosophy in the narrower sense is rooted in the world-view of the corresponding popular religions, and has come from these either as development or as opposition. And reciprocal influence between the philosophy of religions and the philosophy of the schools has continued to the most recent times. Thus, for example, Kant's philosophy can be understood historically only through its close relations (hitherto still far too little appreciated) to Christian dogma. And as the philosophy of the schools has come from that of religion, so too the former in turn has influenced the latter, as in the case of Neo-Platonism and Catholic dogma.

Originally, therefore, philosophy was an integrating constituent of religion. But since the latter possessed a strong historical element of inertia, in its elaborated apparatus of a cult based on externalities and intertwined with state institutions, and often in the dominance or even state establishment of a priestly caste—it could no longer keep pace with the development of metaphysical research, when the latter began to split off professionally from the intellectual life of the rest of the racial unit. Thus the gulf between "religion and science" was formed, which later generations assumed to be a matter of course, unbridgeable, indeed inherent in the nature of things.

In particular, it was the effort to protect the highly esteemed religion, with all the cultural values which clustered about it, from the skepticism of a forward-marching science—in particular, therefore, it was motives ethically wholly commendable which gave rise to the persuasion that the metaphysical convictions forming the basis of

religion, the religious axioms or dogmas, were the offspring of a spiritual activity essentially and *toto genere* different from scientific research. Indeed, at times—it was so with Christianity—this assumption that the "doctrine" originated not in rational reflection, but in divine revelation, was itself elevated into a dogma. And to this attached, and still continue to attach, the most prolix controversies about the relation of the two ways which lead to truth (from another point of view, however, only to the conviction, here is truth, there is error), about their logical valency, about the possibility or impossibility of reconciling the ideas obtained in the two ways; in short, about the relation of "knowledge and faith."

This persuasion was strengthened by pseudo-arguments of many kinds: first of all by such a vast difference as that between anthropomorphic explanations of nature, forming the basis of religions, and the hypotheses of advanced science—which made it seem impossible that the former could ever have been the product of essentially the same kind of rational reflection. But this view is the consequence of an inveterate bias in the presuppositions of our modern scientific thinking, based as it is on the intellectual acquisitions of many generations, and shows a great lack of ability to imagine the world as it must have appeared to the traditionless ancestors of our race. For the range of ideas, the mental horizon of primitive man, the anthropomorphic explanation of nature was actually the most likely one of a rational sort, which logically he was perfectly justified in assuming. It was natural that the development of science should find that its appointed way led through this phase of anthropomorphism; wherefore all peoples, in great part independently of one another, have trodden this way. The myths of popular religions, considering the mental horizon of the times in which they were formed, were rational hypotheses, the simplest and the most useful for deduction at that time, just as the axioms of physics are at the present time for our range of experience.

Another argument, which seems to show an opposition of dogma and science, is found in the failure, so far, of all attempts to build

up a vital religion for a people or peoples on the foundation of results obtained by exact science. But for this failure so far, many other plausible reasons may be adduced, without our being forced to consider the design, as such, impossible of execution. Above all, the social cleavage of the people into educated and uneducated, of whom the latter, for the most part, have up to the present continued to find intellectually satisfying the primitive anthropomorphic view of nature in the religious myths. Then the still defective organization of philosophy itself, which has not yet been able to produce a unified world-view generally accepted even in academic circles. Finally, the early withering of cultured peoples, brought about by the evils and perils of civilization, because of which, hitherto, the course of development has always been interrupted and a relatively barbarous people with untrained minds, still inclined to the mythical view, has taken the place of the precocious decadents.

So there is no good reason of any kind to despair of the future fulfilment of the longing of all true philosophy, the establishment of religion on a scientific basis. We have now, in many fields, examples which show how the human will has clung to a goal with persistent tenacity for centuries, has not let itself be discouraged by any kind of ill-success, and at length, after unspeakable fighting and struggling, has attained it, too. Thus it may come to pass here also. And to furnish a substantial and permanent contribution toward success in this—I do not hesitate to acknowledge it—is the object and the motive of this very book.

The traditional designation for the summing up of the metaphysical axioms of a religion is the name "dogmatics." In the struggle of outlived positive religions against the living spirit of the times, the word has acquired an unpleasant connotation of "rigidity" and "formalism." I should gladly substitute for this word another not now in use, if such a word were at my disposal. But since that is not the case, I must hope that the new doctrine will also rejuvenate the old word and will drive its superficial secondary meanings out of the minds of those who agree with its fundamental content.

2. *The Kantian Argument.*

Any one who glances back over the results obtained so far in this inquiry, and agrees with them, must feel the intellectual need of gaining a more definite knowledge about the ontological relations between the activities of the human consciousness and the inner activity of the psychoidal unitary principle.

Our arguments leave two possibilities open here: first, strict separation, according to which the individual human souls (and of course animal souls too and perhaps plant souls) would be regarded as creations essentially differentiated from the prime source; more like it, indeed, than is dead matter, but ontologically just as independent as matter; and second, partial identity, such as we have to assume in man between his over-consciousness and the numberless lower individualities causally knit together with his organism—his "sub-consciousnesses." In particular, are all human activities, and in general, all psychical activities of the experienced world as a whole, to be considered as products of the unitary principle, or are they parts of its inner activity? This question—*mutatis mutandis*—has hitherto been answered in the most diverse ways by the various religious and philosophical world-views. But, as it seems to me, the history of human thought reveals one single argument which offers proof sufficient to end the dilemma: that is the fundamental idea of Kant's "Critique of Pure Reason."

In developing this idea, as is well known, Kant first distinguished judgments as being *a priori* and *a posteriori,* and subdivided the first into analytic and synthetic; and then raised the question: "How are synthetic judgments *a priori* possible?" In essence his answer runs thus: Synthetic judgments *a priori,* that is independently of experience, strictly universal judgments which do not express a tautology but widen our knowledge, are possible only when the knowing subject is judging in them what he himself has produced.

All the deductions which Kant drew from this proposition are, in my opinion, wrong, and exceedingly confusing and misleading.

To these deductions—here I completely agree with my teacher, Franz Brentano—is to be ascribed the decay of philosophical thought after Kant, and the low level, the loss of old established truths and traditions, the almost complete lack of discipline and the anarchy, of the greater part of contemporary philosophy. On the other hand, I oppose Brentano's view in this, that I regard Kant's fundamental idea, as much of it as I have reproduced here, as correct: not by any means in the sense of a proof which has attained perfect clearness, but still a proof caught in the state of becoming—in the sense of a "presumption" of that second category, differing from probability-judgments, whose first phases we designate "surmises." I am not able, it is true, to present a full and detailed development of the Kantian argument, but instead of that I can here refer, if not to the *consensus omnium,* still to a very general agreement. It would certainly be strange if a philosopher *merely* by asserting erroneous ideas should have attained such extraordinary historical influence as Kant. The power of his ability to abstract, the breadth of his mental horizon, the unqualified sincerity of his moral purpose—are indeed in themselves explanatory reasons of weight. Nevertheless, his influence would remain a riddle hard to solve, had all these forces been simply turned in a fundamentally wrong direction. The unexampled power of this system to win disciples—of this system, so full of obscurities, contradictions and unintentional falsifications and surreptitiousnesses, that philosophical thought was corrupted by it for more than a century—the power of this system to win disciples rests not only on the admirable qualities of its founder and on the fact that the system gave his contemporaries what they most urgently needed: a plausible excuse for the fundamental religious postulates, "God, freedom, and immortality"; the power of this system to win disciples, I am convinced, is, over and above, to be traced back to the objective correctness (that is, to the truth) of his fundamental idea: "There are synthetic judgments *a priori,* and the existence of these judgments can be explained in no other way than by the assumption that the knowing subject is judging in them what he himself has produced."

From this, Kant drew the conclusion that we human beings ourselves provide the objects of our knowledge by fitting the crude material into the subjective forms of knowledge, and thus he arrived at the hybrid concept of a "world of experience," which he placed indefinitely midway between things in themselves and our mere ideas, and which has no other function in his system than to be a license for contradictory assumptions, an apology for twofold truth: God, freedom, and immortality do not exist for the knowing reason, but nevertheless they do exist—for the postulating reason; in the last analysis an unintentional, well-meant, but ill-employed falsification of the concept of truth, which threatened to deprive the philosophy of the decadents of all strictness, all logic, all seriousness, indeed finally of all honesty; and in its fruits has brought to ripeness the exact opposite of all that Kant intended: instead of the rescue of those dogmas which Kant deemed the fundamental requirements of all religion, their complete denial, yes, denial of all religion and all metaphysics generally; even war against all metaphysical needs of man; and as a climax the Philistinism of modern "pragmatism," which seeks to elevate the mere usefulness of an idea into the sole criterion of truth.

Kant's conclusions—in themselves obscure and contradictory, for how should we human beings, unless we were gods, be able to produce our world of experience?—have been condemned by the subsequent course of philosophical development. But the fundamental idea, from which Kant drew his conclusions, nevertheless retains its convincing force. And what it proves is easy to deduce, in view of what has been said. "If synthetic knowledge *a priori* is possible only with reference to what is self-produced, and if we human beings possess such knowledge, then it follows: that we human beings, since we ourselves certainly do not have the power to produce our experienced world of objects, must be in essential connection with that principle which has produced them." In other words: "We human beings can be capable of synthetic knowledge *a priori* only by virtue of a partial identity of being with the psychoidal unitary principle. We human

beings are, as regards the psychical side of our being, not God's creations, but parts of God himself."

The fundamental idea of Kant's "Critique of Pure Reason" furnishes the desired proof for the second of the alternatives stated at the beginning of this chapter.

The intellectual and emotional consequences of this view cannot be developed here except in small part, and that only in a subsequent passage. First of all, it is our business to deal with the antagonism which certainly has been aroused in many readers by the condemnation, expressed in the preceding sentences, of the contemporary philosophy inspired by Kant.

3. *Anti-metaphysical Movements in Contemporary Thought.*

The object of this work is constructive, not polemical. And the author is fully conscious (as has already been emphasized in the Introduction) how futile is the attempt so to prevail by proof on teachers or disciples that they will give up their convictions, when certain fundamental philosophical views have become a part of their life. It is not the imperfection of scientific arguments, but the imperfection of human nature, which in 99 out of 100 cases puts psychologically insuperable obstacles in the way of such an undertaking, even where obviously correct opinions are combating obviously wrong ones. The present work seeks its adherents among the unprejudiced minds of the rising generation who are indeed philosophically gifted, but philosophically not yet drilled in any school and not yet committed to any. Consequently in my polemics—in giving grounds for reproaching the greater part of contemporary philosophy as I have just done—I feel called upon to notice only those theories which presumably might be adapted to impress free young minds not yet bound or wrongly directed by partisanship, to corrupt these by the apparent cogency of their arguments and to constrain them into discipleship. I can permit myself to pass by in silence those doctrines regarding

which it is at once obvious, to a mind thirsting for true knowledge, that they foster only a pretentious art of concepts, that they lose themselves in formalisms, that they have lost the sound and simple guidance of feeling for "true" and "false," that indeed they even look two ways at once, and strive with more or less avowed virtuosity toward the goal of turning out phrases about the deepest problems of mankind —according to circumstances, the extreme of abstruse and distinguished expression or the extreme of easy popular style—but in any event committing them to nothing.

Making a selection with this in mind, I think I ought to analyze and criticize the following anti-metaphysical doctrines.

1. That movement in thought, directly relying on Kant, but still departing from the details of his system, which distinguishes between problems of *experience* and problems of *transcendence,* and cuts short all metaphysical strivings with the axiom: the human mind is utterly incapable of going beyond the bounds of sensible experience in its knowledge.

In criticizing this movement, it is advantageous to keep in mind that the distinction between experience and transcendence (which Kant had taken over directly from David Hume) is really nothing else than a philosophical version of something known and discussed for centuries in the Christian religion and the philosophies based on it—the antithesis between "this life" and "the life to come"; between the earthly and the heavenly (or hellish) worlds. The philosophical distinction, too, between a world of experience and a world of transcendence can, like the religious one, be characterized most clearly, if at all, by reference to a purely spiritual life—conceivable, even if not affirmed—after physical death. Among the hypotheses which relate to the world of experience, we must then include all those which can rationally be expected to undergo a direct confirmation or a direct refutation in the psycho-physical earthly life of man, in the present or a succeeding generation. On the other hand, we shall have to regard as "transcendent" all assertions regarding which such a direct confirmation or refutation is not to be expected in the psycho-physical

earthly life of man. Accordingly, all assertions about the world as a whole, its limitation or non-limitation in space and time, all assertions about the existence or non-existence of a God, about the mortality or immortality of the human soul, in short about everything which the Christian religion and the philosophy based on it has already included in the concept of "divine" as opposed to "human" things—are transcendental.

Understood in this sense, the idea, that the human mind is restricted in its faculties simply to the world of experience, possesses great power to attract and—with a limiting modification—a logical foundation too. But formulated and thought as an affirmation, this thesis contradicts itself. For, according to its own definition, it oversteps the bounds of all possible experience. About the absence or presence of a human faculty for judging of divine things, we shall never in this earthly life receive direct proofs. This would indeed be possible only by the miracle of a direct revelation of divine things—in a positive or negative sense—but in any case, in the psycho-physical realm of human experience. The assertion that the realm of transcendence is closed to us human beings—this assertion is therefore itself transcendent and contradicts itself like the saying: "There is no truth."

Consequently the metaphysical skeptic has to proceed more modestly. Instead of himself asserting that the kingdom of transcendence is closed to us, he has to content himself with a silent doubt directed toward every assertion about the transcendental. And this doubt has (this should not and may not be contested here) its logical justification, but of course only in the sense of lessening the degree of certainty. That after physical death, we shall experience (if anything at all) overpowering, staggering intellectual surprises, reaching into the very depths—who that may be called a philosopher could close his mind against these expectations? Let us think of a being, hitherto capable only of perceiving plane dimensions and plane figures, suddenly awaking to understanding of the three-dimensionality of spatial structures and of their forms; let us imagine for the living child in the mother's womb the power of clearly conscious thought and logical

framing of hypotheses about the nature of the universe, and share its astonishment when it first opens its eyes after birth—and perhaps we shall have just a faint similitude of that which awaits us after physical death. Everything thought and held true in the psycho-physical life may then seem to us a crooked, distorted, ridiculously biased and marred projection of reality. Beyond doubt! But *just* because of that, as a projection of *reality*.

The world of experience and the transcendence which perhaps awaits us are therefore still parts of one and the same universe. For if there are real relations between these parts, there must also be something common to them—common laws of activity. We have not only a logical right, but actually a logical duty, to assume an analogy of relation between the reality of the life to come and its projection in this life. And as Christopher Columbus found himself rewarded for his confidence in the objective validity of rational inferences, when, in spite of appearance and of the promptings of instinct, he sailed westward into the seemingly endless ocean that he might reach the eastward-lying land of his desire,—so may we hope for like reward, if with like confidence we prepare ourselves for the still more hazardous journey (if this were a hazard and not a compulsion) into the life to come.

So much about this first and—as ought to be said at once in advance—most influential argument of the anti-metaphysical movement. (All attempts that would renounce the fundamental antithesis of the life to come and this life, in characterizing transcendence as compared with the world of experience, lead to confusion and contradiction, and can give no help toward the rejection of metaphysical pretensions.)

2. I must analyze and criticize the fundamental doctrine of *phenomenalism*: "The separation of subject and object, of psychical and physical, is not something primary, existing in our pure experience, but something first introduced by reflection, and erroneously. It is the command of disciplined thinking that we free ourselves from this separation and return to pure experience. When that is done we

find that there is no sense in distinguishing between representation and represented; or expressed in other words, that I, as something here-existing, have the same right to identify myself with the object of my representation, for instance the wood a kilometer away, that I have to separate myself from it."

Refutation: There can be no doubt that my present recollection of the past, of what I have myself experienced, exists and is a datum of "pure experience." Here the primary separation of representing subject and represented object cannot be ignored. For here the representing subject is something in the present, the represented object something in the past. That it would be senseless to assume that I myself am past because I call up the past must be plain to any one who does not willfully shut his eyes. But if in this case the primary, existing separation of subject and object, given in pure experience, is recognized, it can no longer be denied in other cases too. What is the origin of this existing separation, how it is to be explained—that is a mystery, as in general the fact of knowledge is and must remain a mystery to knowledge. To try to make the logician responsible for clearing up this mystery—to require this of him, before he may be permitted to refer to the distinction of subject and object—would be the extreme of "rationalistic prejudice."

3. The main thesis of *subjectivism*: "There is no objective truth, but only subjective. When I declare that something is objectively true, I mean nothing more by it and can think of nothing more, than that I am subjectively convinced of its existence."

Refutation: If subjective truth alone were thinkable, there could no error. For an error is the being convinced of something false. Of course that could never happen, if truth were necessarily implied in the subjective conviction. But if error were not possible at all, we should not need to beware of it; there would be no sense in any scientific criticism, any striving toward correct and exact thinking; there would be no difference in value between the discoveries of a Newton and the hallucinations of some raving hole-and-corner prophet. It is surely not necessary to dwell longer on this way of thinking,

or rather of "not thinking," regarding the subjectivity of all truth. Of course other refutations too could be thought of, as e. g., the question whether the subjectivist seriously believes that it can be "true" for Hans that the morning express from Prague to Vienna leaves at 7.35, and for Peter that it leaves at 8.53. Both "truths" are supposedly merely subjective and, as such, of equal value.

4. The main thesis of *pragmatism* (which is allied to subjectivism): "Truth is nothing but subjective usefulness. I have a true conviction, means nothing more than, I have a conviction which is biologically useful to me."

Refutation: There are many convictions which are neither useful nor harmful to the subject who cherishes them, as e. g., for the majority of human beings, most historical pronouncements, most of the pronouncements of natural science, of physics, of chemistry, of astronomy, of Greek and Indian and Semitic and Chinese philology, etc. All these tenets, then, could not be either true or false as regards that of which they treat. Further, there are many convictions which for him who cherishes them are useful in one connection, harmful in another: as e.g., the fundamental doctrine of fatalism, or an extravagant estimate of one's own strength, or blind confidence in authority. All convictions of this kind would then have to be true as well as false. If for usefulness to the individual we substitute usefulness to the whole, we certainly make the realm of "neither true nor false" considerably smaller, but we reach a point of view which only reveals still more plainly the circle which, along with the demonstrated contradictions, is implied in the definition. Whether a certain conviction is predominantly useful or harmful to the whole can be determined, in any event, only on the basis of extensive investigations. But the results of these investigations must be "true," if the usefulness of the conviction in question for the whole is actually to retain validity. The criterion for the truth of these results cannot possibly be obtained from the general usefulness or general harmfulness—which is just the question—of the very conviction involved. Usefulness cannot possibly function as a criterion of truth. But if we look around for

a criterion of truth, we find nothing but proof. And this proof shows that the content of the concept of truth is something other than usefulness: that general usefulness, even if it is extended to the widest conceivable circle of all that is living or physical, is merely a derivative, which perhaps, even probably, belongs to all true judgments; not as essential determination, however, but only as secondary attribute.

5. The main thesis of *relativity*: "There are no absolute determinations, but only relative ones. Existence itself is only a relative determination. When I say 'In the next room stands (exists) a cupboard,' what I mean by that is not, and cannot be, anything but 'If I go into the next room, I can see or touch a cupboard—can produce that content of consciousness which I call cupboard.' "

Refutation: This idea is only an apparent discarding of the absolute from the concept of existence. For it merely substitutes for the absolute existence an absolute possibility. "I *can* see or take hold of the cupboard, if I go into the next room." That really means only: "The possibility of this exists." This possibility must be assumed to be absolute, or, if we try to dissolve it, like existence, in relativity, we shall find ourselves in an infinite regress. Besides, I must at least assume that I myself exist, in order to be able to grasp the idea, "If I go into the next room." Hence, the relativistic definition of the concept of existence contains a twofold circle—truly a perfect example of bungling amateurish concept-formation.

I almost feel that I should apologize to readers trained in philosophy for here saying anything at all about such obvious matters. But the wide diffusion of phenomenalistic, subjectivistic, pragmatic, relativistic tendencies and inclinations in contemporary thought justifies my procedure. These tendencies have in fact all been summed up under the respectable title of "positivism" in a "system" which, if the right and reasonable thing were done, ought rather to be called "illusionism." Then it cannot be cause for astonishment that with such performances going on, all traditions of exact thinking bid fair to decay, knowledge of the most elementary logic is vanishing, and the "philosophers" who have grown up in that "school" reveal themselves, at a closer glance,

to be incapable of distinguishing an apodictic from an assertory judgment, innate concepts from *a priori* knowledge, or even certainty-inferences from probability-inferences.

Nonsensical and absurd as their conceptual basis are also the practical expectations of the school. For if it were correct that we were not able to think of truth as anything but conviction or usefulness, and of existence as anything but what can be perceived—well then, Plato and Aristotle, Descartes and Leibniz, and even the scholastics of the darkest Middle Ages, too, could not have interpreted those concepts otherwise than as positivism or pragmatism would like to permit us to do. Then those thinkers too were by no means on the wrong paths. Then—taking the pragmatic point of view, for instance—the scholastic inquiry into the question, how many angels can stand on the point of a needle, was just as much an inquiry concerned with biological usefulness as the work of a commission against adulteration of food. Then all hope of the new doctrine for a radical revolution of our thinking is idle and chimerical. But this hope—the exclusion of all "unfruitful problems" and the concentration of all our mental powers on the cherishing of "that alone which is useful, biologically speaking," is the driving impulse of the whole movement.

6. So those extreme positivists and pragmatists, who get lost themselves in their queer metaphysical speculations, are not to be considered dangerous and taken seriously; but not so with the others, the moderate, thoughtful faction of the spiritually revolutionary movement hostile to all metaphysics, in which we find ourselves—the *positivists of action,* as I might call them, whose way of thinking may be characterized in the following sentences.

"I do not dispute the absolute existence of things outside myself, the primitive separation of objective and subjective in my experience, the stability of an objective truth. I do not venture, either, to assert that the nature of things in their absolute existence, and objective truth, will forever be hidden from us human beings. I limit myself merely to taking this stand: that these problems do not occupy or interest me at all. Nothing interests me except the course of my sensations which

is to be expected in the future" (so runs the official expression in the language of the school, which those trained in psychology will readily be able to translate into their terminology: for by it is meant all phenomena of our consciousness). "To foresee my sensations is my one intellectual desire. And that too only with the object of thus being better able to determine them in advance (that is, to produce them) as consequences of those phenomena which we call volitional acts. I weigh the value of all scientific hypotheses . . . I take into consideration all attempts to explain objective reality, from one point of view only: their greater or less fitness for the predetermining of my sensations. The hypotheses and attempts of science to explain may or may not penetrate to the absolute being of things; to me that is a matter of complete indifference; I do not inquire about that at all. To me that hypothesis is always to be preferred which enables me to predetermine the course of my sensations with greater accuracy and with less demand on my psychical energy. If of two hypotheses, A and B, under consideration, I knew that the first is objectively correct, the second objectively wrong, but if the hypothesis B would yield me, in the predetermining of my sensations, only the smallest saving in expenditure of energy—I would without hesitation give the preference to hypothesis B; I would, in spite of knowing its objective falsity, train myself to regard the world in accordance with its suppositions, and not in accordance with those of the objectively correct hypothesis A. I am of course far from wishing to impose on others this my intellectual and emotional attitude. But I am well persuaded that by taking this attitude, with the abilities which make me capable of taking it, I represent the best-organized type of the genus man, that is, the fittest for the struggle for existence: the type that must necessarily, in the progress of evolution, carry off the victory from all others, and outdo them in the competition for the necessities of life. For in the battle for these same necessities of life, that organism always conquers which obtains the same biologically useful result with the least expenditure of energy. The one useful result, biologically speaking, of the intellectual abilities of an individual consists in the pre-

determining of his own sensations. The type of human being who obtains this useful result with the least expenditure of energy will be the victorious one, the only one surviving in the struggle for existence. But obviously he is the one who does not concern himself at all with any other problems—who does not strive at all toward any other intellectual goal than this one biologically useful result. Metaphysical problems, questions about God and immortality and the absolute being of an external world may or may not admit of solution, the reflections to which they have so far given rise may or may not possess objective truth; in any event, they do not give us 'eternal truth' in the sense of truths which mankind will preserve and cherish throughout the future. It is rather the future of mankind to cast off, like a cumbersome garment, together with all metaphysical needs, all apperception and all treasuring of these truths. For metaphysical needs are themselves luxury-forms, biologically without purpose, like the antlers of the giant deer, or the spreading tail of the strutting peacock, whose existence will soon be prolonged only in our pens for fowl. Nature, it is true, produces such fantastic things, but only to stride on over them before long. Light and slender, graceful and yet powerful, the *economical type of the fit triumphs* over all the extraordinary offshoots which are capable only of arousing an atavistic sentiment of beauty. This light, slender, graceful and yet powerful human type is however on the intellectual side a practical positivist, a positivist of action, who neither disputes nor denies all metaphysics, but lacking any taste for, and any need of, its gifts and promises, leaves it to one side, ignored and discarded with the rubbish of the past."

Thus the moderate positivist, whose intellectual attitude belongs to quite another category than the foolishness of the extremists. For this program has plan and purpose, and the force of inherent logical sequence. From the general carrying out of this program a profound spiritual revolution, the actual end of all metaphysics on earth, might certainly be expected, and according to the temper of him who expects, be hoped for or dreaded.

Refutation: The program of the "positivist of action" contains two theses: first, a personal confession of intellectual and emotional nature, resembling somewhat the declarations: "Of all studies, only mathematics interests me," "of all games, only chess," or, in another field, "of all types of music, I love only the strictly contrapuntal in the style of Bach." At first glance, there appears no scientific approach for testing the correctness of this subjective confession. Second, the program contains the assertion: "With this my intellectual and emotional equipment (native or acquired) I represent the biologically best-organized type of the genus man, the type of whom it can be predicted that he must conquer all others in the struggle for existence." This thesis is one directly open to scientific criticism, indeed challenging it.

The thesis would be incontestable, if fitness for self-preservation of the individual were the one and only standard according to which the survival of organic types in the struggle for existence is decided. But the decisive factor is the fitness of the individuals for the preservation of themselves and *of their kind,* which means fitness for the preservation of the special ego of every individual and also of his posterity and—in organic species living socially like man—of his fellow-beings. And here vanishes the conclusiveness of the biological argument for the positivistic way of thinking.

It is not true that the predetermining of one's own sensations represents the only function of man's intellectual equipment which need be biologically considered. Just as important for him who promotes the welfare of posterity and fellow-beings chiefly by means of goal-conscious volitional activities, are the performances of his intellect by which alone he is made capable of such volitional activities. But these performances are—to use the language of the positivists—predeterminings of the "sensations" of other human beings, not of "mine." In order to be able to determine these sensations in advance, I must first and foremost be convinced of the real and true existence of those other human beings, really and truly, simply and honestly, genuinely and in the depths of my being. If I had actually brought myself to the point of rating the hypothesis of the existence of my

son as nothing but relatively the most suitable fiction for predetermining my own sensations, I could never summon up willingness to make the sacrifices required of a father in caring for the "sensations" which will take place in him at a time after my physical death has occurred. But in order to be convinced of the existence of these future sensations of my son, I must simply and truly regard his physical existence in the present as real and actual. For we have no other way of "determining the sensations" of other human beings than the roundabout way through establishing their physical existence. But I cannot simply and truly regard the physical existence of my son as real and actual, if I do not at the same time simply and truly regard as real and actual the material external world also, in which my son lives, breathes, and moves. This means that I cannot seriously care for my son at all if I do not permit myself to ask myself of what nature the material world external to me and independent of my seeing, touching, hearing, smelling—of what nature the material world is in itself. Of course it is not necessary to solve all the problems which present themselves in following out this question. Practically it is enough to find an approximately correct answer for a small—a very small part of them. But it is indispensable—and that is what matters here—in practical, goal-conscious provision for other fellow-members of human society, first and foremost to undertake to solve problems of that category which the positivist is at pains to banish fundamentally and completely from our thinking, which he stigmatizes as "metaphysical," and with this thinks he has shown their utter biological futility.

Thus his second thesis is refuted. For it is clear that a human type without the ability to make goal-conscious provision for posterity and for fellow-beings would have an organization utterly unfitted for the competitive struggle for existence.

To what has been said, still more might be added: the practical, social contributions of metaphysical convictions can be further traced in many directions. Finally we should come to the question whether a religion based on metaphysical convictions is not an indispensable preliminary condition for the continuing ability of a people to produce

and bring up unselfish patriots and death-defying warriors; whether religion based on metaphysics is not indispensable to guarantee to the individual a psychical equilibrium (again so important in social life) in the face of the inescapable destiny of death. But these questions would call for very extended inquiry and still would not lead to any incontestable results. On the other hand, there is no disputing the biological indispensability of the conviction of the absolute existence of one's fellows, and therefore of a material external world too for human beings. With this we have reviewed the problems excluded by the positivists and have disposed of the possibility of banishing utterly, by a separation which reality justifies, metaphysical problems of any and every kind from the realm of what is admissible in scientific discussion.

And now a critical glance may be permitted at the first of the two theses of moderate positivism. When any one assures me that of all studies he is interested only in mathematics, of all games only in chess, of all kinds of music he likes only the strictly contrapuntal in the style of Bach—I have no reason to doubt the truth of these assertions. But I certainly should have such reason if he were to assure me that in the extreme of hunger he experienced no discomfort, that he always rejoiced over the failure of his own plans, and that he felt perfectly indifferent with regard to the fulfilment of a wish of his own. In this case I could maintain with certainty that his statements were either untrue or based on profound self-deception. But a similar situation exists with regard to the supposed emotional confession of the positivists. It is true that lying, that is, intentional untruth, is here excluded, but so much the less are excluded prejudice and self-deception in favor of the theory. What the positivists assert about their own intellectual and emotional equipment and what they deny about it is, beyond a doubt, not true. A human being who really is interested only in his own experiences does not exist. No man has so mean and miserable a soul that he is not concerned with the psychical experience of others, not only by the roundabout way of his own knowledge of it, but directly; even if sometimes this is in a bad sense, so that he feels

delight on ascertaining the pain of another, and discomfort himself from another's pleasure. The complete egoist would be not only a type of human being biologically utterly wrong and unfit; he is, in addition, the figment of a muddled theory. Both theses of moderate positivism are wrong.

But there is still a second argument—perhaps even better calculated to win acceptance—for the positivistic holding aloof from all metaphysics: the argument which has reference to the history of science and to the historical process by which hypotheses in turn supplant one another.

In the physical theory of light, for example, at first the emission-theory was considered objectively correct. Later, and especially on the ground of the startling prediction of Fresnel's mirror experiment, all physicists swore to the absolute correctness of the wave-theory and the objective existence of the world-ether. At present, on the ground of knowledge gained from new experience, the correctness of this theory is already more than questioned.

Such a shifting of hypotheses, each of which sufficed for the range of scientific experience at the time, has already come to pass more than once in different fields. These historical facts are taken by the positivist as occasion for considering his own way of thinking justified. "It would be extreme naivete,"—thus he argues—"childish self-conceit and prejudice, if we sons of the twentieth century were to fancy that the scientific hypotheses which we have just thought out were proof against a similar fate; that we had by their means come to know the one objective, absolute, eternal and unchangeable truth. In future generations, it will fare with our hypotheses no otherwise than with the hypotheses of our predecessors, in the present generation. They will be replaced by better ones and will be laid aside *ad acta*. Therefore—let us be as well-taught by experience as the burnt child who dreads the fire. Let us spare our posterity the spectacle of the intellectual overthrow of earnest scientific workers. Let us at once, as a matter of course, put from us that unattainable thing—the absolute truth. Let us content ourselves with the humanly possible. For my part, I will

never give expression to a scientific theory in the expectation that with it I have attained ultimate rightness, objective truth. That with which I must content myself, that which is all any one who judges critically may strive for in science, is this: to furnish scientific working-hypotheses, assumptions which give us the greatest power to order phenomena according to law: which therefore means" (and here again everything ends in the fundamental positivistic formula) "from the individual's point of view, hypotheses as well fitted as possible for predetermining my sensations."

Refutation: Historical experience of change in successive hypotheses does not drive us to such excessive caution as the positivist advocates. It is sufficient to provide every newly set up "better" hypothesis with a note to the effect that even if it should not have attained absolute truth, still in all probability it comes closer to it, is more like the absolute truth, than were its predecessors. If we follow the formation of hypotheses in a field in which it has passed through a large number of separate phases, e.g., in the field of astronomy, we are able to follow clearly and in detail that step-by-step approximation to absolute truth—it being assumed at the outset that this is represented by the last phase. But even when we provide the last phase too with that limiting clause, there need be no change in our attitude as a whole.

Approximation to the objective truth is itself an objective relation, independent of our knowing or mistaking, of our knowledge or lack of knowledge. So it is not true that a critical estimate of the course taken by science in historical development requires a forsaking of the objective point of view, a returning to the subjective position. The limitation is sufficient: "If not absolutely true, nevertheless closer to absolute truth."

Is this limitation necessary everywhere, too? Has it been shown, by consideration of change in hypotheses generally, to be a requirement of scientific criticism in every individual case, even in view of the convincing force of special proofs? I believe I can confidently dispute this, particularly with reference to the last named example, the course of development taken by astronomy. I regard it as impos-

sible that our present hypotheses (even if in many details they may require correction, yes, even if the law of gravitation should show itself to be applicable only in a revised form, and it is my conviction that it will so show itself). . . . I regard it as impossible that in this field a change of hypotheses should ever again become necessary equaling, or even approximating in scope that which seems marked by the step from the emission-theory to the wave-theory of light. I regard this as impossible, not on the ground of general epistemological or logical considerations (to demand these here and now would be rationalistic prejudice); I regard it as impossible, rather, from a calm, unprejudiced, critical evaluation of particular, practical grounds of proof. And I believe that every competent judge who is not absolutely committed to the positivistic way of thinking will agree with me.

The ideal nature of space, that is to say the assumption of a reality-topoid (cf. p. 93), must of course be kept in mind. But in other respects we are here already so close to objective truth that only slight additional modifications of our way of looking at things are to be expected. Even for a possible life after physical death, I venture to maintain this assertion. We shall then—if anything—perceive or know the sun with its planets, and the stars of heaven, in a projection fundamentally different from our present one; but we shall know them in relations of size and change analogous to those which they display to us now, according to our present and in essentials objectively correct theory.

We find—no matter where we look—no rational ground of any kind which compels us to call in question, in essentials, the possibility of gaining new metaphysical principles or the logical valency of those already gained.

4. *The Dogmas.*

The inquiry to which this book is devoted having been carried thus far, those of its results which could serve as fundamental principles

of a new religious world-view may be summed up in the following propositions, each of which shall now be stated in turn, with an indication of the arguments supporting it and with a brief backward glance at its historical development.

The First Dogma

The world is the joint product of two opposite principles: of a unitary primal source of all active influencing, of all inner necessity, of all order and form; and of the absolutely groundless, of eternal infinite chaos, in whose nature inheres not active influencing, but only passive resistance.

The arguments for this dogma are found in two experience-complexes, altogether independent of each other: in the cosmic physiognomy to which the paradox of reversal called our critical attention; and in the real existence of rational presumption and of the logical comparative, i.e., of insight into the relative preferability of a hypothesis, which however need not therefore be correct. Both of these fact-complexes can be satisfactorily explained only by the presupposition of the first dogma.

The main force of the proof is, now as before, in the first argument, in the cosmic physiognomy. Still, the second has an essential significance, especially because this argument, coming from a field of experience so completely disparate, totally unconnected otherwise with the foundation of the first, nevertheless leads to the same result. It is therefore of great importance to protect the second argument too against any possible doubt. So it must not escape mention that such a doubt might perhaps be created by the last discussion itself, about the increase of successive hypotheses in approximation-value as evolution progresses.

Is there not here an intellectual means of justifying the logical comparative from the standpoint of rationalism too? If of two hypotheses A and B, B comes nearer to absolute truth, B can not only be recog-

nized with probability as the preferable, but could also be so recognized with absolute certainty. And yet this recognition would not exclude the possibility that still a third hypothesis C might be found, which would immediately be perceived, with absolute certainty, to stand in turn a step nearer to the absolute truth than B itself. The hypothesis C could then be better than B, and B still better than A. A conjecture does not seem at all indispensable here; the logical comparative seems to have been brought back to a rationalistic foundation.

This way of thinking commits an error analogous to that which he would commit who should think that by means of the law of large numbers he could base probability on certainty. The law of large numbers itself is, in turn, not absolute certainty, but an *a priori* probability-proposition, and also an "experience-proposition," which as such possesses not certainty, but only probability. The like holds good for the proposition that we come closer to the absolute truth by preferring the hypotheses most probable at the moment. This proposition itself is in turn only an *a priori* probability-proposition, and also an experience-proposition, but not an absolute certainty which could not possibly have an exception. Just as little as the law of large numbers excludes the possibility that, in playing roulette, red can turn up 100 times in succession (63 times in succession has already been observed at Monte Carlo)—just so little does that proposition about approximation to truth exclude the possibility that the "better" hypothesis, the one rationally preferable, might, by way of exception, lead us again a step away from the truth. If, for instance, we should be forced— as many are already suspecting today—to return permanently to the emission-theory in optics, then the wave-theory would be such an exceptional case. Likewise every logically justified erroneous sentence pronounced by a judge is such a case. At first the judge doubted whether N. N. was the culprit. He actually is not. An unhappy trick of chance in circumstantial evidence has however brought with it the conclusion that the hypothesis, "N. N. is the culprit," is actually the better. The judge's final persuasion, therefore, is not closer to the absolute truth, but is much further from it, than was the doubt which

was its point of departure. Hence it is not true that we may expect with absolute certainty that the "better hypothesis" will bring us closer to the absolute truth. We may expect that only in the great majority of cases, and in these only with very great probability and not with absolute certainty.

So, the exclusive right of consistent dualism—of our first dogma—to be the justifier of the logical comparative is not shaken by pointing out that hypotheses usually increase in approximation-value.

Any one who turns back to the presentation of the two arguments in this work will find that they compose by far the greater part of its contents. Actually, in them—in the creation of the new discipline of "cosmic physiognomy," and in the theory of rational conjecture based upon the doctrine of absolute chance, as also in the doctrine of chance itself and the characterization of absolute chaos thus made possible—in them lies what is distinctive in the world-view here set forth, what justifies the author, in fact obliges him as a duty, to sum it up in statements of principles under the title of a *new* dogmatics.

All the following dogmas presuppose the first, and along with it also the proofs of the first dogma, as an indispensable foundation. All the following dogmas, if the first one's convincing force were lacking, might be stated only as vague conjectures and not as scientifically exact knowledge. And therefore they all share in the novelty of the first dogma. But as vague conjectures, or provided with untenable pseudo-arguments, in forms ill-defined or only incidentally coinciding with them or similar—not only all of them, but the first dogma too, have already often been expressed: in the history of science, and still more in the history of thought at a time when there was as yet no separate science, when religion was based on popular hypotheses framed to explain natural phenomena.

All so-called nature-religions are essentially dualistic. (The name of this work, *Cosmogony,* was chosen with reference to the first metaphysical beginnings of Greek literature, which split off from religion—expositions which presupposed the dualistic fundamental view as a matter of course.) The first monotheist among Greek philos-

ophers, Anaxagoras, is at the same time the representative of that inconsistent dualism rejected in the first chapters of this work—inconsistent, but still dualism—which assigns to the one God only the function of the orderer, as opposed to a primal matter existing from eternity. Plato's conception of the world is dualistic; whether Aristotle's is too, is a disputed historical question which I will not presume to decide. The conception of the world in the Old Testament is dualistic. "The spirit of God hovered over the waters of the deep and spoke: Let there be light." A more striking metaphor than this for the fundamental dualistic concept can scarcely be imagined. It is true that other words precede those quoted: "In the beginning God created the heaven and the earth." But many expositors regard these words as merely the heading of the first chapter. And however that may be: the original dualistic conception is evident from Genesis as a whole just as unmistakably as from the succeeding parts of the Old and New Testaments. The belief of the Manichaeans was dualistic, dualistic in essence, like Plato, and so too Neo-Platonism. No unprejudiced person can fail to recognize that the living Christian faith of the people in the Middle Ages and post-Middle Ages, in despite of official dogma, was dualistic: that the devil was not regarded and felt as a created being, but as an adversary, not as an enemy whom God suffered, but one against whom God fought; that living Christianity really existed only so long as this way of representing and feeling maintained itself (Cf. Ernest Horneffer, *Der tragische Gott,* in the magazine *Die Tat,* June 1910.)

Not until Catholic dogma appeared was monism elevated to the place of guiding principle in philosophy—if we understand by that name a metaphysics which attempts to explain the whole cosmos by means of the activity of a single principle (here of the free almighty creator of the world, in no way dependent or conditioned, who is supposed to have produced the world "out of nothing").

It is worthy of note, and could be regarded—the correctness of the dualism here advocated being granted—as a counter-proof against the theory of "step-by-step approach to the absolute truth," that every-

where metaphysics began with an essentially correct conception of the universe, only then, in its subsequent development, to wander off into monistic world-hypotheses, and consequently to stray farther from the absolute truth. Even if the rule does not pretend to strictly universal validity, still such important exceptions might have a suspicious appearance.

But, as against this, it must be remembered that predominating approximation to the absolute truth was asserted only for the succession of hypotheses each in turn "better," not for every actual course of development in the history of science. For secondary influences, overwhelmingly powerful at the time, may require that science, in certain fields and in certain sometimes extensive phases, shall not advance to logically better, but to logically less valuable formation of hypotheses. But such a process—from the logical point of view not an ascent, but a temporary descent—seems to me to have occurred in the transition from dualistic to monistic conceptions of the world. This transition—most pronounced in the philosophical system of the deists, and also in the cry, now still general and serving as a catchword, for "monism"—seems to me to be nothing but a phenomenon appearing in the philosophical field as a mistaken correlate of the actual scientific advances in special fields: a consequent over-estimation of reason by itself: rationalistic prejudice. (This appears most plainly in Lēibniz's *Monadologie*: the philosophical whim of a gifted mathematician, which, were it not protected by the magic of its author's name, would long since have fallen into oblivion, as an absurd monstrosity.)

But although the previous forms given to dualism must be rated as rational hypotheses and are therefore to be considered scientifically, still they have never reached the stage which we may label "scientific exactness" and esteem as a notable point in the ascending continuum of logical valencies. In the course of development of human thought thus far, scientific exactness has not yet been attained by any dualistic conception of the world, and obviously not by any monistic one, and

therefore by none at all—not even in the most recent times.[1] Only with the foundation here laid in the first dogma formulated above, has metaphysics entered upon the phase of scientific exactness.

Personal motives do not influence me to make this assertion. The assertion had to be made in order to justify the expectation that the first dogma will function, in the evolution of the future, as the foundation-pillars of a religious world-view erected on a scientific basis.

The Second Dogma

The world has had a beginning, but will never end. The world is in constant, eternal process of growth—that is, in it order and form are constantly, eternally making progress.

This dogma is nothing but a necessary consequence of the first, and therefore rests on just as secure a foundation.

Historically it seems to have been introduced by the appearance in science of the idea of evolution.

[1]This is also true of the passing remark, advocating a dualistic conception of the world, made by John Stuart Mill in his *Logic,* as also of the world-view, set forth in more detail, of Ernst Horneffer (cf. *Die künftige Religion* and *Am Webstuhl der Zeit).* Horneffer has in fact the courage to oppose the general contemporary trend toward monism, and clearly and definitely to profess a dualistic conception of the world. It has occurred to him, too, that giving form is what is essential in the creative process. However, he regards as the creative principle a *will craving to give form to itself, and nothing else*—an absurdity, and anthropomorphic besides. For a will that desires nothing else than itself, or its own power, form, extension—in short, a will that does not go beyond itself, is just as impossible as a reason that knows only itself, a shell that encloses only itself, and the like. As *antagonistic principle,* however, Horneffer places opposite the will, not chaos or chaotic primal matter, but—time! Time, that which is contained in itself, without which nothing can happen—therefore no willing either—and which in its very essence must be regarded as henogenic, as God-created, as the very earliest emanation of the unitary principle—if indeed it might be regarded as an emanation, as something dependent or having become. Hence Horneffer's dualism is not able to attain any clearness and exactness. Nevertheless, he reveals many glimpses of the light, such as, in particular, the emphasis on an evolution of God and on a suffering in him, and the combination of this doctrine with an essentially optimistic, life-affirming conception of the world.

The Third Dogma

The unitary principle is incorporeal in nature. Its inner states and processes are either purely psychical in nature, or else human phenomena of consciousness are in their essence but little different from it.

The psychoidal or purely psychical non-dimensional nature of the unitary principle follows from this: first, that it is incapable of any limitation of whatever kind; second, that it must be of such nature that there is the possibility of an infinite chaos existing outside it, and of a world of the amphigenic developing to infinity.

The historical agreements with this dogma are the most numerous, and go far beyond the distribution of dualistic conceptions of the world. All creationist monotheism, too, has held that God, so to speak as a matter of course, cannot possibly be anything but "pure spirit."

The Fourth Dogma

The eternal progress of the world arises from an eternal process of development within the unitary principle.

A direct inference from the first dogma.

Franz Brentano too has drawn from his rationalistic theism inferences similar to those expressed in the second and fourth dogmas.[1]

The Fifth Dogma

The present world, organic life included, is not the work of goal-conscious willing, but a product of purposeless form-giving. Goal-conscious willing, as it has developed in human beings, is a late cosmic flowering.

Since the achievements of Darwinism, this proposition is dictated by the maxim of economy in formation of hypotheses. Purposeless

[1]Likewise Horneffer; cf. the last note.

form-giving supplies us with what we need. Consequently there is no reason to assume in the unitary principle—i.e. in its course of development up to the present—a goal-conscious willing.

Besides, the fifth dogma is a necessary consequence of a conception of the world which sees in the principle of all order and form likewise the principle of all good, and is therefore compelled to bring the existence of evil in the world into harmony with this conception. The identification of the unitary principle with the principle of all good has indeed not been asserted in this work, nor has it been rejected either, but, after all that has been presented, still remains an open question. However, here once more let it be noted that the transition from the monistic-theistic to the dualistic-theistic conception does not mean "theodicy"—the vindication of God in view of the evil of this world. Even if we grant that since the beginning God has been and will be hindered in his creating and forming by the resistances of absolute chaos, the existence of all the evil in the world still remains inexplicable, provided we adhere to the goal-conscious foresight of God in all his doings. (The discussion on p. 45 ff. requires a supplementary correction on this point.)[1] Only by presupposing a purposeless forming can we understand how, out of the primal source of all good, organic forms could proceed such as the tapeworm or the bacillus of syphilis. This explanation of course demands as a necessary corollary the assumption of a profound agitation taking place in God, as soon as he became aware of these and similar fruits of his purposeless forming: while at the same time the power of goal-conscious, foreseeing willing awoke in him. No other way out seems to be open than the further hypothesis that this profound agitation of God, the transition to a new cosmic phase, is taking place at present, in human history and perhaps too in the history of analogous psycho-physical beings on other planets, during those hundreds and thousands of years which measured by divine standards doubtless mean no more

[1]The present work, because of the disturbances of the Great War, had its origin in several periods of research, of which the last has a more advanced point of view than the first.

than—in anthropomorphic metaphor—a day, or indeed only a moment.

The hypothesis, that a psychical primal principle of the world struggled up to the light of knowledge and of goal-conscious willing only in the course of a cosmic process of development, originated of course with Schopenhauer and was further elaborated by E. von Hartmann[1] (still, like Schopenhauer, under the spell of the pessimistic interpretation).

The Sixth Dogma

We human beings—at all events, with at least a part of our consciousness—are parts of the divine inner life and therefore co-laborers with God in his works.

The foundation of this dogma is first of all found in the achievements of the latest biology and psychology, which point out in man himself a relation, similar to that here asserted between God and the human soul, between his over-consciousness and the inferior consciousnesses of his organism; and thus refute the main objection brought by the substantialist persuasion against the possibility of real relations of that sort. For the actual existence of that which is thus shown to be possible, we have the evidence of the Kantian argument developed in the last chapter but one. Here the confession must be made, that in convincing force this argument falls below those adduced for the other dogmas, and the last of the axioms here stated cannot therefore be expressed with as great confidence as the preceding ones.

Still there is evidence for it not only in the great popularity among scholars of the fundamental idea of the "Critique of Pure Reason," but also in numerous and widely diffused ideas of religious and specifically philosophical origin, ideas allied to this, or, in this one point, absolutely identical with it. To these belong, as is obvious, all pantheistic doctrines which enlarge the scope of divine identity to include

[1]Cf. also the note on p. 177.

the whole cosmos. The view represented by the sixth dogma could, with reference to this, be called a "pantheism of the psychical." To these belong the mystical views of the ontological relations of the individual soul to God. To these belong the "Tat twam asi" of the Indian philosophy and Schopenhauer's version of it: through sympathy—the source of all morality—there dawns upon the originally blind world-will the knowledge of the identity of being in all its illusory objectifications: "that—all this—art thou."

But the sixth dogma not only removes the antecedent incredibility from the fact of the existence of synthetic judgments *a priori*—it also does the like for presumption-proofs. Since these cannot be logically justified except by reference to a futuring which is projected back to a past immemorial to man, futuring seems likewise to be explicable only by a supra-human origin of these proofs, going beyond the bounds of individual psychology and extending into a divine consciousness, or rather springing from it.

Therefore the scope of the sixth dogma takes in primarily only all human consciousnesses, or more generally (if we take into consideration the very probable dwellers on other stars) all rational consciousnesses of the cosmos. But if we weigh the close kinship of human with animal souls on the one hand, the deep gulf between all that is psychical and the material on the other hand, we cannot help extending "divine being" to all that is psychical in the cosmos.

To the declaration of Emil Dubois-Reymonds, that he would believe in a world-consciousness when, and only when, a world-brain was exhibited to him, reply could then be made by pointing to the totality of organic functions, or of their material possessors, which serve as the basis for all cosmic phenomena in any way psychical. These taken all together are the "brain of God." Only narrow-minded bias for human physiological concepts could find a difficulty in the fact that the individual cells of this brain, among which with others the cerebra of all human beings are to be reckoned, are not in material connection with one another—do not form a single so-called "stable body." But it is true that this view does not relieve us of the

necessity of assuming in God an inner activity also, taking place without correlated material phenomena, which began aeons before the appearance of the organic world and at present still accompanies his human-like phenomena. This inner activity forms a whole with the human-like inner experiences of God, but is nevertheless probably not clearly conceivable to us, and to be apprehended only symbolically by a surmise.

He who is convinced of and maintains the sixth dogma will not be able to think of physical death as anything but a turning of the soul to sojourn with God. That such a prospect will necessarily conduce to the joy and bliss of ethically advanced individuals, and to the dread and horror of ethically degenerate ones, is an obvious conclusion, which makes the doctrines of positive religions concerning reward and punishment in the after-life seem adumbrations of the truth. However, our metaphysical knowledge at present does not yet permit the formation of more exact hypotheses about the nature of that "life after death"—indeed, not even an answer to the question whether, in the turning to sojourn with God, the individuality of the separate souls will be retained, and a remembrance of earthly experiences as "mine" can be assumed. Consequently, that nothing psychical will perish can be deduced from the sixth dogma, but not an "immortality of the soul."

* * *

On the other hand, it must now be pointed out that with the setting up here of the six dogmas aforesaid, no claim is implied to the erection of a complete structure of religious doctrine. For that, much that is important, indeed essential, is still lacking. Kant, it is true, out of the deepest and purest religious consciousness drew his three postulates of practical reason: "God, freedom, and immortality." Of these three, up to now, only the first seems rationally assured (and this only with exclusion of questions of value); on the third a little light is just beginning to be shed; the second is still completely dark. Much labor is yet to be performed, before even the intellectual foundation of the coming religion will be laid. On the basis of scientific convic-

tion the structures of surmising intuition will arise: after the "cosmogony" must come a "theogony," which will illuminate the present phase of world-activity from within. From the enlightenment thus obtained must spring the new ethical ideal for which humanity longs. And this ideal must produce its outward and visible cult. Only then will the "future religion" have become a present one.

Nevertheless the dogmas which have been stated contain immeasurably much that is uplifting and comforting to the philosophically gifted who react with strong lively feelings to very abstract convictions. No metaphysical skeptic or agnostic, in hours of heightened ability to perceive the terrors of existence, is able to ward off that suffocating anguish, that terrible shuddering fear of being absolutely forsaken and lost in the infinite universe. And then too when mind and heart become tired of exhausting themselves in the attempt to master the incomprehensible, no protecting refuge opens to the unbeliever, no warming glow penetrates the silence of the night; brazen and dumb remains the countenance of the world.

"Forsaken of God arches the sky above me,
cold gleams the light of the stars
and alien, in my searching eyes."

These words sprang from the author's heart, in the agnostic middle phase of his life, as the theme of a poem ("The Struggle of Prometheus") in which unconquerable metaphysical longing drove him to bring before his soul the forms of his Christian faith once more, for the last time, if only in similitude.

And now—how all this even now has turned to good! What a blessed sense of belonging unites me even now with the primal cause of the world, me who am through and through persuaded of the truth of the six dogmas I have stated!

Since we human beings, with our human longing and striving toward high degree of form, are co-workers with God, the fear is baseless that this longing and this striving could flare up in the universe only as a will-o'-the-wisp and die out again. We have rational

grounds for metaphysical confidence in the future victory of our striving.

If we human beings—infinitesimally tiny particles of organic substance on the surface of our earth, itself in turn an infinitesimally tiny particle in the universe—measure our powers against the might of the cosmic resistances, of course we fall into error, become a prey to unnecessary pessimism or yield ourselves up to uncritical fantasies, so long as we turn our gaze and hope solely upon the outward physical effects of our striving. The terrestrial psycho-physical life-process is attached to certain inorganic conditions which seem threatened by cosmic perils: loss of the earth's atmosphere through dispersion into world-space, chilling of the earth, fall of the earth into the sun, finally the universal extinction of heat. Now is it conceivable that we human beings would be in a position, through never so bold an upward leap of our technical sovereignty over nature, to ward off these dangers permanently, and to realize on the foundation thus assured an all-embracing symbiosis, a superorganization of all life not only of the earth but of the cosmos? Is it conceivable that we can cling to the timid "perhaps" which may be given in answer to this question—and that too scarcely in earnest—as an anchor-rope in the stormy nights of metaphysical doubts and despairs? Certainly not!

But the physical and physically mediated results of our deeds and experiences are not their only results. As integral parts of the shaper of all, our inner processes are his experiences too. A human deed, a conception of our mind, of our fancy, to which was not allotted its completion on earth, which here means the calling of any homologous form-sequences into life, was still "seen by God"—in its psychical part is a part of his experience and there empowered to go on forever.

The thought that we human beings could ever succeed in traversing space to another planet, in the projectile of a giant cannon, in an ether-boat, or by some means or other of transportation, and in adapting ourselves, alive, to the utterly different conditions of life there, is, and will probably remain too, an absurd Utopian dream. But we are more closely joined with the inhabitants of Mars or those of

the planets of Sirius, by an inner path, than by the medium of the world-ether. And it is more than a vague possibility that, through the medium of the divine inner life, human psychical germs of form may become directly fruitful on Mars, by the path of psychical begetting; just as a machine examined in America, without transportation of a single one of its physical particles, is able to call forth in Europe legions of offspring. In like manner we may hope that our human longing for eternity is at the same time a divine longing, and as such will awake the primal force of the all-shaper to new emanations, to conquest of the threatening rigidity in the realm even of inorganic matter, or to removal of the highest cosmic form hitherto, that of psychical life, into a topoid of *n*-dimensions, in other realms of the universe, which we are able to conceive only negatively.

And this scientifically justified hope does not act as a moral opiate, does not mislead us into dissipation of powers in play or into actionless quietism, as the consistent rationalist is misled by his belief in the "best of all possible worlds," predetermined with absolute necessity from eternity. Of the future destiny of the world so much is certain: that it must involve an infinite development into ever higher forms. The particular nature of these forms is however more and more obscure, the remoter is the future into which we questioningly look forward. And doubtful too is likewise the time-measure of the world-advance toward those dim heights. The time-measure of cosmic development is also dependent upon our most individual, personal decisions in concrete cases of ethical determination and ethical expenditure of energy. One loss of opportunity in this direction can never again be made good, not in all eternity. He who has failed to take one step upward that he could have taken, bears the responsibility for the whole world's remaining in its future development, irreparably and forever, this one step below that height to which once it could have attained.

The terrible, soul-destroying dogma of eternal punishment in hell finds in this reflection not only its psychological explanation, but even a kind of symbolical justification. However much the ordaining

of eternal torments for however guilty an individual being contradicts the fundamental idea of cosmic development; however confidently, with a quiet smile, we relegate the frightful ghost of the old doctrine of retaliation to the depths of his own hell—still we must undoubtedly recognize in it an image of the truth: of the eternal irremediability of ethical negligence, of the objective ineradicability of ethical guilt.

If in addition we permit ourselves to be penetrated by the consciousness of the cosmic range of our ethical determinations, of the possibility that by divine mediation the fruits of a moral act unseen on earth—yes, of one performed only in the depths of the consciousness—will come to light in the planetary regions of the farthest nebula of fixed stars in heaven's vault, we shall arrive at the certainty: no world-view is able, like that founded by our six dogmas, to combine the most assured confidence in the world with the most lively feeling of responsibility; none is able, like it, to bring peace to its followers in the depths of their souls and yet at the same time to spur them on to the greatest ethical achievements.

FURTHER PROSPECTS

In the preceding inquiries no more has been asserted than could also be proved, using the medium of expression in language. Such restriction has been observed in the interest of scientific exactness, and it will always remain the rule, that between knowing capable of proof and knowing incapable of proof a sharp line is to be drawn.

Nevertheless, it would be utterly wrong for the investigator himself to restrict within the limits of the provable the realm of that which he holds to be true, and to try, as it were, forcibly to keep himself from hearty agreement with any assumption for which he could not—or not yet—produce proof that would stand against all criticism. All scientific productivity would be cut short and stifled by following a rule of that sort, for new developments in knowledge are almost never wont to emerge into consciousness immediately provided with their logically impeccable proof, but usually only as mere surmises and previsions, which do not offer us their proof until they have first gained our assent.

So then if, in the inner workings of his mind, the investigator is constantly obliged to go beyond the limits of the provable in order to maintain his productivity, it becomes his privilege—and depending on circumstances, may become his duty—to share his speculations with others and to admit them to his intellectual hopes and expectations. Especially in case he has shown by a good piece of work in furnishing proof that he is not unacquainted with true scientific method; and in case the matter in question is one that is much too extensive and complicated to admit of being mastered by the powers at any one individual's command.

With this in mind, let me be permitted to give expression here to a number of ideas, regarding which I am well aware that, although they spring from strictly proved and provable assumptions, still they gradually forsake this field and venture forth into the realm of surmises and anticipations.

In doing this, I shall first be concerned with pointing out those

particular fields and particular questions of science in which the metaphysical doctrine of consistent dualism here set forth might function as a "heuristic principle."

Then the train of thought will gradually lead to preparations for the "theogony" and to the provisional formulation of a seventh dogma.

* * *

If what has been set forth in the last section but one is correct, if it really has disclosed the long-sought logical basis for probability-calculation, then this provides an example of something not often found in the history of human thought: the direct efficacy of a metaphysical doctrine in producing results in a special field of science. But in other respects also, consistent dualism contains various germs capable of producing knowledge, predetermination and influencing of the course of nature.

Our doctrine affects least of all the view held of *inorganic nature;* at least if we take the point of view here advocated, according to which all inorganic nature is to be regarded as a realm of extinct emanations, which are in the phase between "emission" and "rigidity." New acts of creation are, therefore, no longer to be expected in this realm. In periods of time which may have to be measured in billions of years, that which was emanated in previous aeons sinks steadily toward stagnation in absolute chaos. Nevertheless, this view involves several methodologically important consequences for research, with reference to the past as well as to the future.

With reference to the past, it involves the problem of a *history of the creation of inorganic nature.* Present inorganic nature, according to this view, is to be compared to a huge battlefield strewn with the corpses of once budding life—a battle-field on which still, through millions of years, once-living forces expend themselves in interplay become meaningless, yet determined, and thus furnish the foundation for the new, at present actual, emanation of the organic world. To reproduce in the mind, from the surviving "deposits" heaped one

upon the other, the emanation-sequences of a past cosmic phase; to substitute an inorganic world-history for the stupid hypothesis of the eternity of matter—is the first demand with which consistent dualism approaches "positive science."

A consequence of marked importance in judging of the past, as also in particular of the future, is that, since in all reality a chaotic element is contained, there can be no absolutely pure—mathematically exact—law of nature, but that every law (the law of inertia too cannot be allowed as an exception) persists in reality only as the modification of an exact law, which in its purity is found only in our conceptual thinking. Still, this consequence—we might almost say "unfortunately"—has no value for deduction, therefore cannot possibly be contradicted, and as a result lacks force as empirical proof; and this for the reason that it cannot be asserted that the chaotic-real modifications of the pure ideal laws must reach the threshold of present human perception. On the other hand, in an infinite future the summation of the always-present modifications must finally pass beyond all measures of perception. Just as deterministic physics predicts the extinction of heat, consistent dualism predicts, as an inescapable fate, the passing into absolute rigidity of all movements—even of heat-vibrations; and in this contests the absolute validity of the law of conservation of energy. Of course, in this connection, the possibility is open that the unfounded all-shaper may, in a future phase of creation, animate with new forces the matter emitted aeons before.

For the practical business of physics and chemistry, there emerges from all this the possibility that framing of hypotheses about the history of the inorganic world's origin would also be methodologically advantageous in understanding the present. Also, the possibility of friction-forms being correlated with chaotic resistances against primary emanations (cf. p. 34) includes the further possibility of framing a hypothesis about the nature of the world-ether and of radio-activity.

The way indicated (in Section IV) as leading to incontrovertible working-out of the conceptions of the spatial relativity-theory, may

perhaps acquire great significance practically, but has no necessary connection with a dualistic cosmogony.

According to the view here represented, the world of *living organisms* is to be regarded in its physical shapes as an emanation of form, not of creation, superposed on an inorganic deposit, and having a present actual existence. Out of the materials of inorganic atoms and molecules, dynamic systems have been shaped which bear the stamp of new forms upon them. Psychical experience seems to have an inseparable connection with organic form-process. (Whoever has watched the cinematographic abbreviation and resulting demonstration of the growth of a plant-bulb; whoever has looked on, seeing how the root-threads are stretched out in the earth like groping fingers, how they twine and twist in the search for nutritious soil, turn around when disappointed, and continue the search in another direction, until at last they find what they want; and how at the same time, above the earth, the shoot, opening wide its arms, so to speak, spreads out toward the blessed light—such a one will no longer doubt the possession of souls by the vegetable branch of the organic world.) But the nature of the connection between organic and psychical life is for us still veiled in absolute darkness, just as is the detailed method of the organically-shaping emanation; whether this occurs in an ingenious way without infraction of the law of energy (cf. p. 69), or with measurable development of energy, or with consumption of energy. The cosmological hypothesis here represented does not, it is true, make any move toward dispelling this darkness, but it permits our ignorance in this respect to be understood as probably necessary. For, to an active principle of form-giving as to a knowing reason, complete self-knowledge is impossible, and on analogous grounds. Now, if psychical experience is in causal connection with organic form-giving process, and it is a question whether God himself understands this part of his nature, we human beings need not be surprised at our ignorance on this point.

Our hypothesis furnishes (as has already been stated, p. 77 f.)

the missing link to complete the chain of thought in the Darwinian theory of evolution, since it traces back the phylogenetic appearance of new organic types to the creative activities of the unitary principle. Without any side-glances or aspirations in the direction of dualism, the most recent biology has established an antithesis in types of variation which seems unmistakably to postulate the dualistic interpretation: the antithesis of "fluctuating variations," which are to be understood as chaotic attritions, of the type of friction-forms, and "mutation leaps," which are to be understood as impulsive forms.

Since new emanations are released by the (absolutely fortuitous) chaotic "propositions," the future path of organic development cannot be foreseen in detail, according to the view here represented. But in general the prediction may be made, with a probability practically equivalent to certainty, that always new stimuli of some kind for form-giving will present themselves, and that therefore the upward trend of organic evolution, perhaps even beyond man, will continue its advance intc the infinite; so long as the creative power of the unitary principle does not turn to an entirely new category of forms, and the world of living organisms does not fall prey to stagnation or "emission."

* * *

Consistent dualism opens new vistas of a possible human immanence in the realm of organic derivatives, which so far has been considered only in its connection with the organic world, without any description at all being given of its physiognomy. This is now to be undertaken. But it is necessary first to examine more closely, in its psychical structure too, the realm of the organic world, which hitherto has received attention only in its physical forms.

Here, first of all, a circumstance must astonish us, as seemingly paradoxical. The psychical experiences of the organic world are always causally and ontologically nearer to the unitary principle than are their physical bodies with their physiological processes. Nevertheless, the psychical, as compared with its physical correlates, exhibits such a vast excess of categorical manifoldness. (cf. p. 67 f.) How is this

to be explained? Should we not expect the exact opposite? Greater simplicity of all amphigenic forms the closer they are akin to the unitary principle, greater differentiation and categorical manifoldness the farther they push their way into infinite manifold chaos? This conclusion would be mistaken. The psychical in our world of experience is a part of the creative inner process aroused in the unitary principle by the resistances which its form-giving meets from without. Matter, however, and the material bodies of organisms, are direct emanations of the unitary principle. It is not paradoxical, but natural, that the unitary trait of its being should attain stronger expression in these active form-givings than in the more passive, receptive inner process brought about by reaction to its impulsive activity.

In physiognomy, the psychical in the organic world shows in general a complete agreement with the physical. Only the psychical, when it departs from our world of experience, leaves no sort of homogeneous static forms behind. The concept of the kineto-static tendency is therefore inapplicable to the psychical. When we deduce past psychical life *a posteriori* from remaining traces, it is always material forms from which in the first place we deduce the physical life-process in the past, underlying the psychical. The psychical in our world of experience propagates itself, too, only through the medium of physiological begetting. In so far, therefore, the tendency to propagation and the kineto-static tendency appears in the psychical in modified form. But all other tendencies—the tendencies to qualitative and quantitative branching into the future, to blind endings and to the dominance of causation right over causation rule—make themselves felt in the realm of psychical natural products (so far as they fall within our range of experience) in a way analogous to that in the physical forms of the organic world.

Now, if we turn first of all to the consideration of physical organic derivatives, we recognize these to be superposed forms which (in their most important aspect, which is what will be chiefly considered here), as human artefacts, use for their material both inorganic objects and also substances from once living organisms or even the organisms them-

selves (as e.g., in fields planted for cultivation and gardens laid out according to plan). In a living organism, as compared with inorganic natural products, a certain superficiality of form is at once observable. The atoms of the chemical elements, at least, and many molecular combinations also, are in all probability not altered in any way in their inner make-up by entering into the body of a living organism. Even much more superficial is the form given by human artefacts to their material. For example, in an allée planted in a straight line, every separate tree remains an organic individual, intact as in free nature; only the spatial arrangement of the trees is the work of men. And still the whole thing bears upon it in such unmistakable fashion the stamp of the artefact!

Though here the artefacts, compared with living organisms, show the characteristics of the superposed emanation in heightened degree, in other respects they are essentially and antithetically different from them. The superposed forms of the organic world, without exception, immeasurably surpass their material in height of form. The exact opposite is predominantly true of human artefacts. The lowest forms of all are those which man puts into nature, with his penchant for drawing straight lines and ruling staves, for the right-angled and the circular. The only exception to this is human artefacts specially aiming at high degree of form, or beauty—for beauty is nothing but high degree and purity of form. The purely useful artefacts of man are models of poverty in form. And hence it comes about that man can hate no sight in the world so much as that of his own works.

Now, if we compare the characteristics of human artefacts with the characteristics, determined by the cosmic physiognomy, of forms in our experienced world, notable peculiarities appear, in fact, deviations.

The law of descent holds good for artefacts, inasmuch as they all originate in organisms. But there is also a law of descent applicable to artefacts only, if we consider the world of living organisms—in particular of human ones—as their soil in which they can sprout, propagate themselves, and grow luxuriantly, as if they had a life of their own, and spring up in profusion like wild mushrooms on a bed of humus, and multiply themselves incredibly in a short time. In

America a man invents a new machine, for example the gramophone. Within a short time this machine, planted in the soil of civilized humanity, begets a legion of offspring like itself, through much more subtle means of begetting than sperm and ovum in a living organism. For the setting free of a physical particle, from the machine first constructed, is not necessary for propagation. It is sufficient to have principles of construction communicated by means of words and drawings, indeed often merely by the medium of the telegraphic spark; or it is sufficient that a man should have examined the machine intelligently in America, in order that, returning to Europe, he may then reproduce it many thousandfold. In the soil of humanity, the "quantitative branching out into the future" of artefacts proceeds in an incomparably freer and easier manner than that of organisms in the soil of inorganic nature. The chaotic element of resistance seems to be better overcome in the artefacts. And the same appears with regard to qualitative branching. For it is true that the qualitatively different variations of any type of human product—for instance of the scissors or the pen—are scarcely more numerous than those of types of organic species; but the "variation leaps" and differences in form are greater and depend less on chance than on adaptation to different purposes.

A survey of human artefacts would however be incomplete if it were limited to tangible corporeal objects. Scientific knowledge always has just as much to do with human art-products (of course "art" understood in the broadest sense) as technical instruments have. Skills and arts themselves, too, (for example, carpentering, tailoring, stenography, military drill) belong in the class of artefacts. To this belong not only tangible works of the fine arts, but also mythical and artistic forms of fancy (the figures of the Greek gods, the Iliad, the Nibelungenlied, the Ninth Symphony, the Tristan, German music, Gothic architecture, the Renaissance). Finally, to the realm of artefacts belong social institutions and instruments (the different forms of government, monogamy, private property, money). The line between the products of nature and those of art cannot always be sharply

drawn. Thus, for instance, there is difference of opinion regarding language, whether and to what extent it is to be understood as a product of nature or of art, or as a resultant of both components. But, in any case, language belongs to the organic derivatives.

In non-corporeal organic derivatives there also appear tendencies to propagation and to qualitative and quantitative branching out into the future (in so far as the latter concept is applicable here), analogous to those of corporeal ones: that is, compared with living organisms, they show a marked decrease in chaotic components.

The law of "blind endings" governs corporeal artefacts, whose duration, however, as is well known, often exceeds by a great deal that of organic individuals. Many non-corporeal artefacts, too, come under this law. So long as their soil, rational humanity, endures, many however (scientific knowledge most completely) seem to be proof against the chaotic influences which deform and ultimately arrest the "form-sequence."

The "kineto-static" tendency can be listed only in corporeal artefacts, since here alone can the distinction between static and kinetic forms be sharply drawn. The kineto-static tendency here manifests itself to the same extent as in the organic realm. Only, in contrast to it, as has already been mentioned, is the stasigenic origin of all kinetic artefacts, their production originally from purely static forms.

The dominance of causation-right over causation-rule exists in the realm of artefacts; however, corresponding to the decrease in chaotic components, in less degree than in natural products.

There is, though, a factor in which the form-physiognomy of artefacts shows an essential difference from that of natural products: the tendency to divergence in form, so powerfully dominating in natural products, and essential to artefacts too, in the latter works against an opposite principle, which appears in the realm of natural products only in trends of minor importance. In artefacts, in the course of the history of human civilization, there is manifest with increasing force a *tendency to convergence of form,* to the construction of unitary higher forms out of manifold lower ones. Consider, for instance, the

form of Cologne Cathedral, and follow back into the past the many thousandfold artistic, technical, scientific, social impulses to form-creation which, proceeding from many thousands of human individuals, converge in this unitary form! Something similar is true of every work of art, even when nominally it is the work of one person, who in truth always "stands on the shoulders of his predecessors." Something similar is also true of the great works of human technology (the Cologne railway station near the Cologne Cathedral, a factory, a battleship). Something similar is also true of the great social structures of man; of the individual forms of government; of the business intercourse and exchange of ideas, which, at present, embrace almost all mankind.

We find convergence of form, it is true, in inorganic nature: in the shaping of raindrops out of the condensing water-vapor of the air, in crystallization; the convergence of socialization appears in many examples from the vegetable and animal kingdoms; we find convergence of many artefacts, held in common, in the comb-building of bees and the nest-building of the weaver-bird. Convergence in form is nothing peculiar to human products of art. But nowhere, in the world known to us, does convergence of form as opposed to divergence attain such force and significance as in the realm of man's works. Man is preparing, by the domestication of all non-human organic species, to organize the whole organic world of the earth in a comprehensive symbiosis: to create a unitary organization which will embrace all organic life of the earth and at the same time transform in a characteristic manner the appearance of the earth's surface. Man is about to put into effect a *superorganization of the organic world,* constantly increasing in inner coherence and correlation. In the realm of human artefacts, convergence of form seems to desire to elevate itself into a powerful cosmic factor.

* * *

In recent times this coming event has been recognized and emphasized in various quarters: by Ernst Horneffer, by Wilhelm Bölsche,

and by Ludwig Klages. It is worth while to note the completely opposite attitudes which Bölsche and Klages take with regard to the evaluation of the recognized phenomenon.

Bölsche explains it in his book, *Der Sieg des Lebens,* as due to the peculiar nature of man, of that being "who for the first time looks out beyond this earth into the cosmos"; the same being "who with his stone knife and before his hearth-fire signalizes the greatest of changes: the change from accommodation to external things to sovereignty over these things, in the sense of an improvement for his consciously envisaged purpose" "What are the stars? What is the All? What is the God-nature? When man questioned thus, life had already played its trump. Surrounded by perils, between the dragon of the ice-age and Typhon, god of the deserts, it had already, out of its final adaptation, borne a being who for the first time struggled for cosmic adaptation. And the being struggled for this in its thought, while at the same time it laid its hand on this whole earth, solved for itself and set aside like child's play all the technical problems with which the life before it had struggled despairingly for millions of years. Man, the absolute adaptation of the earth, lord of his planet through his technique, and this man in thought already wandering through the whole starry system and considering its laws—is not life, with this being, destined to be victorious once again after the lapse of aeons, after fiery desolations and ice-ages, cooling suns and shrinking planets, when in the unimaginable fullness of time a third comes to join thought and desire: the deed?" And the author celebrates this foreseen cosmic change in an artist's metaphor suggested by true inspiration: "Now the kiss of the rising sun is pressed upon the stone statue there, which stretches high above the desert. It is the old statue of Memnon, of which it is said that it rings musically when the sun touches it. The victory of life, too, is only a musical sound from a dark string, on which a sun has played for aeons. We do not see the sun. It lies far below our horizon. But we hear how this musical sound rises, how it becomes ever more and more powerful, how it finds ever higher melodies, yet the string does not break. The

radiolar in the depths of the sea is such a sound. We are one. Our longing is one. One sound produces the first cell in the design. Another reaches about the earth. Another vibrates out into the starry world. It must be a marvellous sun. . . ."

Not so Klages. His imagination, aesthetically receptive rather than creative, is painfully impressed, more than by anything else in that cosmic phenomenon, by the change for the worse in the appearance of the earth's surface, of which the present generation is witness: the crowding out of natural products so much higher in form, i.e. more beautiful, by lower, relatively ugly forms of human utilitarian technique; the destruction besides of so many lovely blossoms of human experience, of the psychical content of ancient and venerable traditions and customs, refined in form through thousands of years—taking place with the violent transformation, at first more destructive than constructive, of technical and social conditions. In his essay, "Mensch und Erde" (from the collection *Freideutsche Jugend,* Jena 1913) he laments in passionate words the destruction wrought by so-called human progress, and then continues: "But the one who fancied he would enrich himself by trampling blossoms in the dust, is, as it now becomes clear, man, the possessor of the rational principle. . . . But everywhere this is the one and same import of that new shaping of things with which history begins: above the soul shall be exalted the mind; above the dream, understanding wakefulness; above living, . . . a doing: the last and decisive move, upon which the evolution, emerging from its merely knowing passivity, now took possession of the will also, and made plain to view what hitherto had been but a dawning presentiment: the irruption of a non-cosmic power into the sphere of life."

In spite of the essential antithesis in their points of view, both authors recognize the phenomenon in its cosmic significance, and trace it back correctly, too, to its proximate cause: to *the mighty uprising of the rational fore-calculating, goal-conscious willing of man.*

What now is the attitude of consistent dualism to this phenomenon? How will its hypothesis affect the views of men regarding knowledge,

predetermination and influencing of this realm of natural process? Simply by this, that for the phenomenon with cosmic significance it has ready a cosmic explanation.

* * *

We can expect new disclosures and outlooks in the indicated direction only when we dare hope to understand the process of creation not only from without: that is, in those of its workings apparent in our world of experience; but to a certain degree, from within also: that is, from the inner states of the all-shaper. Now these inner states, it is true, are certainly in a strict sense unknowable. To wish to comprehend them perfectly would be an undertaking hopeless from the very outset, as if the special consciousness of a cell in our brain assigned itself the task of making clear to itself, completely and truly, our unitary over-consciousness, the consciousness of the whole brain. But still, for all that, the cell-consciousness is an integral part of the whole brain-consciousness, not only akin to it in nature, but partially identical with it. The possibility of images and similes for what is humanly incomprehensible therefore cannot be relegated out of hand to the realm of fable. Clairvoyant visions have played a much too great and influential part in human history to permit of their existence being explained simply as due only to a pathological defect. Akin to clairvoyance is artistic productivity at its greatest height. If we seek to approximate in image and simile the inner activity of the all-shaper, the forms created by the greatest artistic power may well be our guide.

The cosmic history of genesis shows, viewed from without, so far as we have access to it, three specially marked epochs: the beginning of the world; the emergence of life, and bound up with this, of the psychical in the world; and the arising of goal-conscious willing in man and perhaps in analogous inhabitants of other planets. With each phase the cosmos was enriched by a new category of characteristic forms.

Now, if we try to frame for ourselves a symbolic representation of the creative inner activity which produced these three phases,

we are soon aware that the difficulty becomes greater, the farther we struggle back from the present into the past. The state before the world began seems completely incomprehensible, even in an image, since it can have no outlines of any kind whose nature would admit of a gradual shifting. And yet for this state absolute negation would be the most erroneous of images. We should be tempted to reject the problem, and with it the whole cosmogony of "consistent dualism," as being full of contradictions, had not an artistic form-giving force, by sheer overstepping of the limitations of humanity, made the apparently impossible nevertheless accessible to our inward beholding: *Tristan,* Act III.

Kurwenal (to the awakening Tristan)
Now art thou at home,
at home in thy land,
in thy own true land,
in thy native land;
in thy old fields of delight
where the old sun shines bright,
that will heal the deadly wound
till thou shalt be happily sound.

Tristan
This thy thought?
Not so my knowing:
but—to thee I cannot tell it.
Where I awaken
I never dwelt;
but where I dwelt,
to thee I cannot tell it.
The sun I beheld not,
land and people I saw not;
but what I saw,
to thee I cannot tell it.

I was, where I
have ever been,
whither I ever go:
in the wide realm
of the cosmic night.
Only one knowledge
there is our own:
godlike eternal
primal forgetting!

He who is able to make the music of this passage inwardly audible has here revealed to him in retrospect a shadowy glimpse of the positive in the "cosmic night," the state before light and darkness were divided. Kurwenal's native land becomes the image of the cosmos, of our world-home—and through the eyes of the awakening hero of love we glance down into that abyss where nevertheless there is not nothing, but the source of all becoming. In contrast to the billows of life mounting to their utmost height—the sorrows and blisses of love—the artist has here succeeded in grasping that which the thinker is still unable to render in concepts.

In absolute chaos, after an eternity of formless becoming and perishing, the miracle of chance has taken place: the creation of the first form. And after an eternity of imprisonment in itself, the fountain-head of infinite activity replies to the miracle of the form's stimulus—after an eternity, no longer improbable—by the first act of creation, which, in unlimited succession, releases all future ones. Thus arises the inorganic world in the first phase of cosmogony, for us at the present time still immeasurable, but yet not infinite. How now shall we obtain a symbol to represent the inner process which gave this world its being? To this question I can make no better reply than to tell a personal experience.

The first form in which the dualistic hypothesis presented itself to me, when through the discovery of "reversal" I had been metaphysically awakened, was the one handed down since the time of

Anaxagoras, of a God who has not "created the world out of nothing," but has formed it out of a primal chaotic matter existing from eternity. After I had carried this idea about with me for perhaps a year and a half, I nevertheless could not get away from the feeling that the hypothesis was inconsistent, in that it assumed, in the primal stuff existing from eternity, powers of continued existence which were unthinkable as ascribed to chaos. Thus placed in a torturing dilemma, I could not, for a long time, see any way out, and came near to despairing of the possibility of completing the system: when once, as the dilemma again confronted me, suddenly—the prelude to the *Rheingold* began to sound within me; and at the same time the solving of the riddle, as it is set forth in the second section of this book, appeared in conceptual clarity. In the repetitions and variations of that motif of primal genesis from our greatest symphony, which seem unwilling to end, ever springing up again and still ever delightful, I believed I could in a shadowy way feel after him the first creative joys of the all-shaper. "The prelude from the *Rheingold*!" I know of no better answer to the desire for a symbol to represent the inner state of the all-creator, during the aeons-long emanation of the inorganic world.

But why were not these creative joys eternal? Why did the work of creation shape itself into an aggregate which wakened—*scilicet*—"longing" for something else, and then suddenly raised the creation of this something else to an inescapable demand? Is the close (finite and therefore determined by degrees) of the first phase of creation to be explained by the unlimited nature of the creator? No, not by this alone, but very possibly by this nature's reaction within itself to the finitely bounded measure of the first chance-form. Here too the image of the work of art is again the best guide. In the prelude to the *Rheingold* the absolute pitch of the first note strikes us as fortuitous. Why just an E flat? It could just as well be a D flat or any other note. The melodic succession does not strike us as fortuitous, but the peculiar rhythm does, with which the opening motif soars up from this E flat. Everything else is strictly and logically consistent.

The number of unchanged repetitions of the first motif is limited by its rhythm; from the passing beyond this limit arises the melodic condensation of the motif, then the quickening of the tempo; from the correlation of this abbreviated form with the dimensions of the first upward swell, a further subsequent lengthening of the motif, with the surging up and down between the opening and the characteristic closing upswing B, E flat, G; after this again a brief condensation of the form, which now, with the emergence of the runs, struggles to reach out beyond itself, ever more insistent, more peremptory—until at last, with the transition into another—the most closely related—key, the liberating cry of the Rhine-maidens begins. In analogous fashion, we need assume no newly determinative fortuitous urge for the entrance of life into the inorganic world. We may think of this first cosmic change (the first which we can know) after the beginning of the world, as timed by the internally consistent evolution of the first fortuitous form, or its influence on the inner activity of the creator. To this original factor are then added chaotic resistances from without, or the forms which are released by them, which in the continued course of cosmic development modify, determine, constantly gain the upper hand over the after-effects of the first fortuitous form.

The forms of the second emanation period are distinguished from those of the first, in more than one respect, by a marked predominance of the henogenic element. On their physical side, living organisms are not creations, but already-created matter shaped into higher forms. The unitary consciousnesses, however, which emerge with organic life-processes, cannot be counted as creations, but rather, because of their close kinship to the inner activities of the psychoidal originator, as centres of accommodation for him in the matter which he has created. For in these centres the henogenic element dominates to such a degree that they seem "microcosms," miniature copies of the whole cosmos. In dead matter, the henogenic element has prevailed only to the extent of the presence of an effective force which in itself (i.e. apart from chaotic resistances) is eternal; but each organic

individual is in its own right a centre of form-giving, and in this respect directly similar to God.

As the supreme flowering into form of the organic phase of emanation, we now come upon the human phenomena of knowledge and of goal-conscious willing founded on knowledge, which it is not possible for us to regard as anything but divine phenomena. But to the prime source of all form we cannot ascribe knowledge—no, neither of absolute chaos nor of his own creative emanations—from the beginning, any more than goal-conscious willing. The inner activity developing within him was in its first stage merely effect of the chaotic stimulus from without; in its following stages merely reaction to his own creative activity, no more identical with knowledge than cause and effect are generally assumed to be. The flower of knowledge, and with it that of goal-conscious willing, could not open until between the creator and dead matter, in the second phase of emanation, were interpolated the billions of organic microcosms, centres (from the creator's point of view) of a form-production lying on the nearer, not on the farther, side of inorganic matter.

Of course we must not think of the appearing of these two blossoms as if, at the close of the inorganic phase of creation, the longing for knowledge and for goal-conscious willing had sprung up in the creator and introduced the second phase of emanation. For that would mean presupposing these phenomena themselves in order to explain their genesis. To wish to *understand* the genesis of knowledge and of goal-conscious willing would be rationalistic prejudice. We are able only to affirm that the second phase of emanation, compared with the first, shows an immanence as its essential characteristic; and that as the chief results of this immanence, knowledge and goal-conscious willing came into existence.

The process of development, extending over countless millions of years, in which this becoming came to pass, is shown to us, regarded on its physical side and in its terrestrial part, by the theory of organic evolution. Of the process occurring simultaneously within the creator, we can obtain a shadowy notion by the following experiment: We

are able, descending from man and going backward, to make for ourselves in imagination an approximate representation of the psychical inner life of the beasts of the earth, and likewise of our ancestors too, back to the very beginnings of the organic, and even to include in remote outline the psychical life of plants. Now let us imagine the psychical experiences of all organic beings of the earth, from the beginning on, embraced in an over-consciousness. Let us consider further that conditions for organic life, analogous to those on earth, exist in all probability on other planets, not only of the sun, but of myriads of other systems of fixed stars. When the emanation power of the creator has turned, in any part of the cosmos, to the shaping of the organic, it is to be assumed that this beginning of a new cosmic era has been general in its effects. While for the agnostic the question about the extension of organic life to other planets remains simply open, the consistent dualist answers it affirmatively, provided the inorganic conditions of life may be assumed. Then, if we wish to picture to ourselves the process going on within the creator during the second phase of emanation, we must put together the psychical experiences of all organisms, with their inner over-consciousnesses, not only on the earth, but probably on millions of planets of other solar systems, in their development from the first beginnings of organic life up to the present.

That now, with the arising of goal-conscious willing in man—and in human-like beings of other planets—the divine emanations take another direction and therewith enter upon a new phase, was concluded from the special kind of form in the realm of artefacts and from the dominating tendency there to convergence of form. From this it follows that the new direction of the emanations can consist only of a greater and greater immanence. And that it is exactly the products of human willing in which the new special kind of cosmic forms appears, that simultaneously man, as intellect, soars to a knowledge of the universe and its ultimate principles—indicates that in this new emanation-phase of immanence an active part, the part of co-worker with the all-shaper, falls to man, and to analogous

beings on other stars. From this follow a number of intellectual and practical prospects, problems, demands and expectations.

Our human experiences of knowledge, of goal-conscious willing, and of intuition are at the same time also experiences which are parts of a divine over-consciousness, which through us human beings enters into the phase of goal-conscious form-giving. We may consequently hope and seek, not only to know the goal and direction of this form-giving, but to aid by our own activity in determining it. The way to this is disclosed by the demand for a *metaphysics of human history,* i. e. of an interpretation of human history by means of cosmogonic principles and with reference to cosmogonic goals.

* * *

The beginning of a new cosmic era, which, according to the view here represented, is taking place at present, is a process which does not occur in a moment, at a fixed point of time, but extends over a period of time to which we certainly can ascribe only small dimensions as compared with the duration of the last emanation-phase, but which, nevertheless, measured by human standards, may be of enormous extent. The arising of goal-conscious form-giving has already continued as long as that last period of organic evolution which we call "history of the world," or, more modestly and suitably, history of mankind; it is true that it also reaches back a considerable distance into so-called prehistoric time, and begins with those epochs of human experience in which man's artefacts—both corporeal and non-corporeal—accumulated into an essential factor of his own life-environment. What causes "history" to stand out as a special period of organic evolution is the following: In the beginning, the only determining environment for budding life was inorganic nature. Later, there was added to this the reciprocal living environment of organisms, as an equally important factor in the surroundings. Darwin has already pointed out that it is frequently much more the organic surroundings of species which mark the actual limits of their geographical distribution, than it is their suitability to certain climatic

conditions. And then—and only then—come the artefacts, material and spiritual, and quickly develop into a third factor in formation of environment, which, equally influential with the other two, yet greatly surpasses these in rapidity and radicalness of change, and thus aids in shaping organic evolution in its highest member, man. What has created so very different a life-environment for the man of antiquity, of the Middle Ages, of modern times, and of the present-day era of rapid technical advance, was not changes in his climatic and organic surroundings, but changes in his own products—material and spiritual. And this line of development in particular we call "history."

A "metaphysics of history," then, sets before itself as its goal the representation and understanding from within—i.e. as experience of the creator, so far as this is possible to us—of the process in which we are his co-workers; so that this understanding may guide and enlighten our active cooperation. In doing this, we have to infer the historical process as a whole from the parts of it known as our own experiences. The inference is the reverse of that which we should make if we had to draw a conclusion about the total processes known to us in our own experiences from their mirroring in the individual sub-consciousnesses of our psycho-physical equipment.

In the latter case we should have to analyze everything complex into its simple parts. All the contradictory conditionalities, inhibitions and limitations of psychical urges of which we are inwardly aware in our total consciousness, we should have to translate into an outer conflict of inwardly unconditioned, uninhibited, and unlimited impulses of the different sub-consciousnesses. For instance, let us suppose that a man experiences the inner conflicts of a voluntary profound change in his professional activities. First he is possessed by moods of boredom, dissatisfaction and disgust with what has hitherto been his occupation. Then, as enticing pictures of fancy, the prospects of an activity better suited to his talents come before his mind. Thoughts of practical difficulties, however, combine to form an inhibiting obstacle. A period of doubt and depression follows, which is finally

brought to an end by the longing for new activity. Resolute in mind, yet nevertheless prepared for a possible disappointment, the man, inwardly at peace, takes the decisive step. Now if we inquire into the simultaneous experiences in the sub-consciousnesses of this man, we must keep in mind that certainly much will be contained in them which has no place in the over-consciousness (for instance, the basic elements of "forms"—such as timbre—which give us the erroneous impression of being simple qualities). However, just as certainly, at least the basic elements in the content of the over-consciousness will seem divided up among the sub-consciousnesses. These latter are undoubtedly in a reciprocal relation, partly of furtherance, partly of opposition. And the objects of their rivalry will surely be nothing but the releasing impulses for our voluntary and involuntary movements—more generally, mastery over the centrifugal nerve-paths of our organism. When that inwardly struggling man is tossed back and forth by disgust with his occupation hitherto, by enticing imaginary pictures of a more agreeable activity, and by tormenting doubts about the practical feasibility of a change of profession—then in his psycho-physical organism, sub-consciousnesses will come into competition with one another, which—as the case may be—are possessed wholly and undividedly with hate and disgust, with desire and delight, with inhibiting fear and anxiety. And even when the over-consciousness rouses itself to the decisive step, the sub-consciousnesses will still be divided into two groups: a majority of optimists certain of victory and a minority of reluctant pessimists.

The task of a metaphysics of human history is the exact reverse of the example sketched here, and may therefore be formulated thus, following the well known pattern of the rule of three: What processes X in a unitary over-consciousness have to the totality G of the various and sundry historical experiences assigned to individuals and aggregations, such a relation as in our example the inner struggles K of that chooser of a profession have to the experiences U of his sub-consciousnesses? X:G=K:U.

The task which thus seems to be adumbrated in terms of the reason

can be represented more clearly, and perhaps more fruitfully too, by pointing to certain artistic experiences. For a long time, poetics has made a distinction between two classes of rather short poems in epic style: the *Romanze,* which relates an external happening for its own sake, and the *Ballade,* which relates it for the sake of the mood which it has released in the poet and calls forth in the listener. (The "Diver," the "Fight with the Dragon" as examples of the first; the "Erlking," the "King in Thule" as examples of the second category. Of course there are intermediates of all shades.) These two categories also exist in the field of the drama (Shakespeare's historical plays on the objective side, the "Midsummer Night's Dream," the "Tempest" on the subjective.) The highest achievement in drama is the objective representation of a bit of the external world, which in the poet also arose simultaneously as a lyrical outlet for feeling and can be thus taken by the spectator (like "Hamlet"). For the subjectivistic second category, akin to the *Ballade,* there grew up in the drama a special mode of expression in the underlying orchestral symphony. In the true music-drama it functions as it were as a watchman, so that no feature shall appear in the objective representation which did not also possess its value as feeling in the subjective inner activity of the author and of the hearer. The underlying orchestral symphony of the music-drama gives us in tone-form a copy of this subjective inner activity. And the task of the metaphysics of history can now be characterized by putting the following question: What creative inner activity must an underlying orchestral symphony express which has to the totality of all historical events such a relation as the orchestral symphony of a music-drama (e.g. that of Wagner's mighty world-drama "The Ring of the Nibelungs") has to the doings on the "boards which signify the world"?

* * *

In such fashion and according to such guidance, I have sought to interpret human history, and have thus come to the following

conclusion, which nevertheless I can now only impart unfurnished with scientific arguments, merely as conjecturing prevision:

With the arising of human intellect (and probably with similar processes on other heavenly bodies) consciousness of self awoke in God, and there dawned a phase of immanence in his work.

In and with man, God is seeking for a guiding idea which may be capable of directing his hitherto impulsive form-giving into paths of goal-consciousness.

This idea has not yet been found.

*

APPENDIX

THE DUALISTIC CONFESSION OF FAITH[1]

Oswald Spengler is entirely right, not only in asserting the decline of Western culture, but in pointing out the historical fact that up to now the achievements of all cultures have sprung from the germinating power of their primitive religions, and that consequently the arising of a new culture is to be expected only from the awakening of a new religion of the future. On the other hand, the course of events since the appearance of Spengler's book has given the lie to his hopes for the arising of a new, culturally-creative religion among the Russians. Try as we may to regard what has been happening in Russia since the war as being, in all probability, a superficial wave which will soon pass by, and which has nothing to do with the real vital forces in the soul of the Russian people—even Spengler himself will hardly think now that it is still possible for his prediction to be fulfilled: that on the soil fertilized by Bolshevism a new and even far lovelier variant of Christianity will blossom forth. Rather, if humanity is not to sink permanently into a civilization without culture, something must come to pass which has never yet occurred in the course of human history: the new vital religion of the future must arise from among peoples who have already once passed through the cycle of cultural rise and decline.

Whoever, then, is bold enough to express such hopes, or even to make tentative plans with such an object in view, in so doing encounters, from the great majority of all educated persons, the worst opposition that is possible in such a matter as this: a superior, incredulous smile. It is with him as it was with the planners of dirigible airships up to the beginning of this century. He cannot get his contemporaries to take him seriously. That is, he cannot manage to get people to give his exposition the same degree of attention and effort

[1] *Die Dualistische Glaubensbekenntnis*, by Christian Ehrenfels, published in *Die Wahrheit*, Prague, July 1, 1930, with an editorial note:

"The well-known Prague philosopher offers this, his latest work, for the consideration of the Congress of Religion and Psychology now meeting in Erfurt."

at understanding which, in all other cases, they feel bound in common courtesy to bestow on the pronouncements of one who knows his subject. To make headway against this smile is an impossible thing, no matter how easily and conclusively the reasons can be refuted which are given by these superior skeptics (superior at least in their own estimation) for their behavior.

These reasons, depending on the academic training and the disposition of the person concerned, fall into two categories: either still in line with the Kantian directive (human reason has no validity at all except in the realm of the world of experience); or in accordance with a universal relativity (everything is relative and shifting, truth also; but no religion can be constructed out of relative truths). These so-called "reasons" can be easily and conclusively disposed of. The first is based on Kant's *Critique of Pure Reason.* As early as six years after the appearance of this epoch-making work, it was exposed by Jakobi in its complete internal contradictoriness, and carried out *ad absurdum,* absolutely irrefutably (and hence actually without refutation in the 143 years which have elapsed since then). (Cf. Ueberweg: Outline of the History of Modern Philosophy, Fourth Edition, p. 225.) The second can be dispatched in a few words: "All truth, too, is relative" is tantamount to "for every individual that is true which he believes at the time." Now we also have a word, much in use, which is "error." What is an error, then? Every unprejudiced sensible person, uncorrupted by any sort of theory, will answer: "A man makes an error when he believes something which is not true, but false." Very well—but if (according to the relativists) every individual makes true what he believes, just by believing it, then he absolutely *cannot* believe anything false. For, just by believing it, he has made it the truth (of course subjective truth, for himself—but according to the relativists there is no other kind of truth!) Therefore: inescapable consequence of relativity: There can be no error. Error is a concept in itself absurd, contradictory—as might be "four-cornered triangle" or "pentagon with six diagonals." The proverb, "to err is human," is to be thrown out. No human being can err, for to err is a contradic-

tion. Any one who can make himself believe can thus obtain truth (of course only subjective—but there *is* no other kind!) Now, the opium-smoker believes in the reality of his hallucinations just as the man of science does in the results of his researches. But by smoking opium one can get hallucinations much more quickly and with less effort than one can get positive convictions through scientific research. Therefore: "In the interest of popular education, let us close schools of learning and put up opium-houses instead!" You see the perfect madhouse in which we find ourselves when we make logically unassailable inferences from relativity, concerning truth. But any one who should suppose that by this crystal-clear thinking an end has been made of relativity, would labor under a delusion like that under which Jakobi probably labored when, 143 years ago, by his crystal-clear objection, he refuted Kant's *Critique of Pure Reason.*

Instead, Kant's work, not in the least affected by this refutation, has made a triumphal progress ever since through the minds of the educated. The most recent forms of relativity are, moreover, still the products of the intellectual trend started by the *Critique of Pure Reason.* "But however could such a thing be possible?" It must be possible, because it is a fact. Intellectual movements are guided only in small part by logic and reason—in much greater part by quite different forces, which so far have been very little analyzed by students, but for whose determination the historian of culture and—last but not least—the psychiatrist, should be called upon quite as much as, and often more than the logician and the advocate of pure reason. When Kant's *Critique of Pure Reason* appeared, and in the succeeding decades, a large part of the intellectuals representing Western culture were in such a state of mind that the supposedly conclusive discovery of the narrowly-drawn limits of human reason transported them into a fine ecstasy. The causes are not easy to determine and cannot here be examined more closely. The fact cannot be denied. But in this happy intoxication there was nothing pathological—at least nothing that betrayed itself at once in deleterious results. Just the reverse. At first it functioned socially as an uncommonly effective force in com-

bating a danger which was then preparing in and spreading from the West, threatening before long to overwhelm with its flood the whole civilized world: the French Revolution with all its hostility to order, its socially destructive tendencies. The *Critique of Pure Reason,* by its separation of empiricism and transcendence, created a conceptual world by virtue of which the Prussian State was enabled to oppose to this flood an immovable dam. Kant, by showing human reason its (supposed) limits, made it possible to declare the "Realm of Transcendence" (God, freedom, and immortality—in good Prussian: throne and altar—or better yet: sword, Bible, and spiked helmet) to be sacrosanct and untouchable by the corroding influence of rational criticism. Thereby Kant became a power in history. He fully deserves his world-renown: but only in small part as a philosopher, in far greater part as a political and cultural force. And what he thus built up was based much less on knowledge than on pretentiousness and bombast, and did not stand the test of time, but after not quite a century and a half has collapsed, with the World War. The conceptual pretentiousness and bombast, however, which Kant brought into existence, cannot be disposed of so readily as king's thrones and army cadres. He has thoroughly infected the philosophical thought of the German people, and cannot be done away with except by a patient process of disinfection, directed by reason and clear thinking. No matter! There are still minds that have remained healthy or have recovered. And to them alone is addressed the following exposition, which has as its conscious, avowed object the founding of that religion of the future which must arise, if humanity is not to sink into civilization without culture.

In this connection one should note, more particularly: Behind the would-be loftiness of the distinction between problems of empiricism, which belong to human reason, and those of religious transcendence, in which all efforts of reason are to be prejudged as futile—there is nothing higher than a reluctance of the average man, essentially just as stupidly commonplace as that which, for example, up to the beginning of this century made him ridicule all attempts to construct a

dirigible airship. There is no category which can actually be set apart as such, in which problems of religious import can be classified and set off from the other problems concerning human beings and dealt with by science. If human reason is considered able to cope with questions such as the origin of organic life on the earth, or the "extinction of heat" threatening the material world, or the question just now hanging over the most advanced physics, whether, in view of entropy *and* the radio-activity of atoms, it is any longer possible to assume that matter has "never become," but exists from eternity; indeed, if we go so far as to consider rationally whether, in the deepest chloroform-induced trance of a sick man, something psychical still goes on—and if so, what it is,—we can no longer reasonably deny to the same human reason the right to grapple with questions such as whether, after the cessation of all physiological functions in man, what was psychical in him has simply vanished from the world, or whether it continues to exist in some form or other—and if so, in what form? or the other question: If the hypothesis of a beginning of matter *should* prove to be inescapable, what then might have been the cause of that beginning? But now we are already in the midst of the realm of "transcendence," from which, by the Kantian decree, pure reason should remain absolutely banished. The prohibition cannot be enforced. The threads of thought run hither and thither. A separation cannot be carried out. This for the information of the kind reader, who otherwise may be taken aback by the strangeness of the title-words which here follow:

The Scientific Hypotheses of Religious Dualism.

Into the eternally causeless and uncontinuing, into the infinite which has neither order nor law, flows the unitary primal source of all necessity and form, of all that is beautiful, true and good in the world. We come nearest to a conceptual representation of it by the idea of a form-creating urge, existing from eternity to eternity, unbounded in might, which we call God. But the infinite something,

in which God works, we can think of only negatively, indirectly, as the opposite of all that characterizes God. We call it Chaos. God and Chaos constitute the world. Everything perceptually conceivable, even the most abstract of things, number, derives from both principles, unites in itself divine "henogenic" and "chaotogenic" contributions. All unity and universality come from God, all manifoldness from Chaos. Without Chaos God would be just as incapable of producing the world, as Chaos without God.

From eternity God is power, knowledge and impulse for higher and higher form-creation. God feels joy in creation, arising from eternal need to create. The world does not exist from eternity. The world had its origin when, after eternal need to create, God received from Chaos the stimulus for the first act of creation. But not "out of Chaos" did God make the world, but "out of himself," against chaotic resistances. All God's works are deformed by chaotic resistances. But out of every deformation of his works God derives the impulse for new form-giving. We need not fear that out of Chaos may arise spontaneously a shape of terror, which would cause the destruction of even a part of our empirical world. That is infinitely improbable, therefore practically the same as impossible. The miracle of chance—the first excitation of God by Chaos—is conceivable only after an eternity of inaction and silence.

God experiences a reaction from each of his acts, and is therefore, as well as the world, engaged in an eternal evolution directed toward the future. In the beginning God had neither awareness of his works nor foreseeing consciousness. Now too he does not possess omniscience, and will never attain to it, even though he approximates it more and more. The world, therefore, has not been made with foresight after an eternal plan, but rather has arisen out of God's reactions to chaotic excitations and resistances. And this insight provides the true "theodicy," by which philosophy means the justification of God in view of the evil of the world, or the understanding which shows how the evil in this world is reconcilable with the nature of God.

Everything psychical in the world is "partially identical" with God;

that is, with a part of its being it is also a part of God. God feels all pain and all joy in the world as his own pain and as his own joy. And God struggles in all and with all his creatures away from pain toward joy.

The preceding articles of belief are to be characterized as "dualistic theism," or simply as dualism. In opposition to them stands "solotheism," the world-view which recognizes God as the one and only world-principle, and culminates in the assertion, repeated again and again for centuries, dumbfounding in its defiant paradox, that "God produced the world out of nothing."

Eternal infinite Chaos is nothing bad, hateful, such as the devil is for devout Christians. Chaos is the epitome of all germs of reality, the prerequisite for a divine upward evolution into infinity, the possibility of surprises without end (for God also), which "eye hath not seen, nor ear heard." Chaos can be loved, and is loved by true dualists, no less than God. And to the solotheist's trust in God ("What God does is well done") corresponds the dualist's trust in the world. "Of the two principles on which the world depends, Chaos is without aim. God's aim, however, is directed toward the good. Therefore the good must conquer the world." What fundamentally makes the world lovable to the dualist is what may be called the "eternal allure," the "A new day beckons to new shores," a day undreamed-of by God himself, and again and again a new day, through all eternity; the "eternal allure" which rouses God himself to ever new creations, for every creative emanation is a venture for God, from which proceed undreamed-of raptures and also undreamed-of sorrows. This eternal venturer, "God," together with the inciter to ventures, "Chaos," can be loved just as much as, and perhaps even more than God the All-powerful, the All-knowing, was ever loved by devout solotheists.

Every psychical individual is an emanation of God, partially identical with God. The return to God of this emanation, with physical death, is a directly credible consequence of this view, and the expectation of this return is an equivalent in emotional life for the belief in immortality.

Dualism knows neither reward nor punishment in the life to come. But again, it is directly credible to the dualist, that the return to God, which confronts every individual, can bring nothing but joy to the good, whose work on earth was in conformity with God's, but that to the bad, who through chaotic forces were turned into ways opposed to God, it can bring only anxiety and grief. It is quite possible that this return to God, by virtue of a law in nature, may take place in a way analogous to that which Oriental religions have for centuries assumed and expounded in the doctrine of transmigration of souls.

To the countless number of all those unkindly dealt with by fate, pushed aside in the struggle for existence, burdened with care, down-trodden, to all the legions of the innocent who suffer, Christianity offers an unspeakable consolation in the doctrine, a seeming paradox to sound reason, that there is a merit in earthly sorrows borne with submission to God, which the Almighty will recompense by so much the greater joys in the life to come. Does the dualistic world-view know an equivalent for this article of belief, too, which perhaps millionfold, like no other, has won, wins and holds adherents to the church of the Crucified? Yes, dualism offers full compensation too for this consolation of the soul, which it had been thought was lost. God, the eternal venturer, foresees well enough that every new act of creation, every emanation which enriches and beautifies the world, is in the last analysis a pushing forward into the chaotic, the uncertain, the unknowable even for God. He foresees that every act of creation must encounter resistance and may involve conflict, out of which will arise unforeseeable pain for the created, and therefore likewise for the creator himself. God has need of daring courage for each new emanation, of inner steeling against pain of every conceivable and inconceivable kind. God: that is, in part, we ourselves; and that is you too, you who are enslaved, down-trodden, rejected by fate. If only you bear your suffering unflinchingly, conscious of your oneness with God, and, in spite of your pain, affirming the world and life, you shall grow strong—no: the daring courage of God himself shall grow

strong in you, and you shall have your share in all the coming miracles of life in this world!

With this awareness, even after the end of Christianity the word of Christ shall still hold good for you: "Come unto me, all ye that are weary and burdened, I will give you strength!" [1]

He who professes himself a dualist, herewith bears witness that he believes the foregoing articles to be true.

But outside of this consensus, dualists may, without coming into conflict with their confession, differ greatly in their religious attitudes; and in these respects:

(a) in cosmological hypotheses;

(b) in moral convictions;

(c) in the practice of religious rites and ceremonies, which at first will attach themselves to the ritual and ceremonial practices of religions already known and existing;

(d) finally, in varying sympathy with intellectual trends having a connection with religious life.

(a) In the realm of cosmology, particular importance here attaches to the hypotheses of over-souls based on humanity. By over-souls are to be understood psychical personalities which form themselves upon many individual human souls, and in range of consciousness, in intellect and power of deduction, and actual effective potentialities excel the individual souls in proportion to the number of these souls, while they also include the sense-impressions and experiences of the individual souls and correspondingly surpass them manyfold in emotional experience and scope of influence. The over-souls can form a totality on which as a base an over-soul of higher rank arises, and in all probability no limit is set to this step-by-step process. What each of us calls his individual consciousness is an over-soul, which is based,

[1]Matthew XI: 28. Luther's translation, used by Ehrenfels, differs from that of the King James version, in which the passage reads: "Come unto me, all ye that labour and are heavy laden, and I will give you rest."—*Translator.*

probably by the mediation of more than one step, on the millions of under-souls of our organism's cells.

It is highly probable that in mankind today the major number of the over-souls of higher rank are in process of coming into being (*in statu nascendi*), who press hard on one another in their respective spheres of influence, and have not yet arrived at any lasting equilibrium. Only conjectures may be made today as to this supra-human process, and hence it is understandable that the opinions even of convinced dualists may here diverge widely.

(b) The morality of mankind is in constant process of evolution. The dualistic creed presupposes as foundation the humanitarian morality of the Western civilized world, without however committing itself as to details. Rather, it is probable that the present-day humanitarian morality is moving toward a radical change in two fields: first in the attitude taken toward the problem of killing oneself (suicide, voluntary death) as opposed to the killing of others (particularly in war), and second in sex-morality.

(c) The ceremonial worship of religious dualism can be developed only gradually, in the course of generations, from germs existing at present in the ceremonial observances of the "positive religions" and in the fine arts. At the beginning, therefore—particularly in view of the division of civilized mankind into "common people," and "educated class"—in order to give expression to their high esteem for religion in general, before the "common people," it will be advisable for the "educated class" to take part passively and actively in the ceremonial worship of some one of the present-day positive religions, after the fashion of the naively devout adherents of the religion concerned.

(d) In such a way the greatest variety in the religious attitudes of dualists can exist, on whose need for expression in words no limit should be imposed. But in this connection let us note the usefulness of the designations "observance" and "inclination." "Observance" as

declaration of the intention of the one concerned, reserving his full conviction of the truth of the dualistic confession of faith, nevertheless to conform to the rites of a certain positive religion, hand in hand with which will generally go belief in the real existence of an over-soul based on the under-souls of those professing that positive religion. And "inclination" as expression of the sympathy of the one concerned with some one of the "trends" existing in the realms of cosmological theory or of practical morality. Accordingly designations such as "dualist of the Catholic, or Lutheran, or Russian-Orthodox, or even (if this might be) Israelitish observance" would be self-explanatory; and also characterizations such as "dualist of Buddhistic or Hellenistic or Old-German inclination," if not precisely standardized, would yet awaken specific ideas.

Religious dualism believes that its dogmas have been scientifically proved, but does not fail to recognize the fact that in the course of scientific evolution much has already been thought proved, which nevertheless later had to be acknowledged as error. Should a like fate be appointed for the dogmatic basis of dualism, no supposed moral obligation will withhold its confessors from giving honor to truth, and adapting their convictions—and even should these be their most sacred ones—to the newly acquired knowledge. In this respect there is an essential difference between religious dualism and all hitherto existing positive religions, in what is called their confession of "faith."