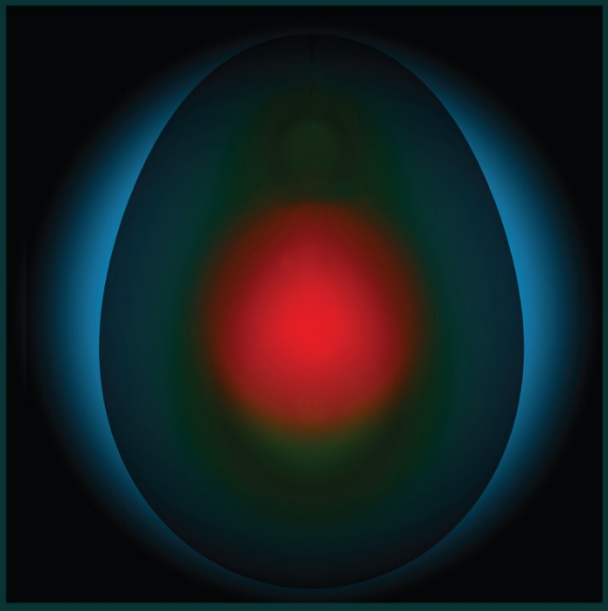
The Holistic Approach in Astrology and Science



by Dr. Theodor Landscheidt

THE HOLISTIC APPROACH TO ASTROLOGY AND SCIENCE

By Theodor Landscheidt

With an Introduction by

Michael Erlewine

INTRODUCTION

This is not intended to be a finely produced book, but rather a readable document for those who are interested in astrology and a few other topics. These blogs were from the Fall of 2019 posted on Facebook.

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Here are some other links to more books, articles, and videos on these topics:

Main Browsing Site:
http://SpiritGrooves.net/

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INTRODUCTION BY MICHAEL ERLEWINE

As many of my friends here on Facebook are my fellow astrologers, I had an issue come up while sorting through thousands of papers in an attempt to organize what I need to attend to as regards my various careers documentation.

In 2018, in Chicago at UAC, the United Astrology Conference, totally to my surprise, I was awarded a Lifetime Achievement Award. I was at the conference awards dinner, but had already gone to bed while the festivities in the large ballroom were still going on. In fact, so I am told, I received a long standing ovation by some 1500 astrologers, while I was upstairs busy snoozing away. Finally, they had to wake me up and I received the award in pajamas in my hotel room. How exactly like me. I had no idea. 😊

Anyway, my point here is that most of what that award was about is the fact that I very much changed the face of astrology by computerizing astrology in the early 1970s, and in particular in 1977. There were others interested in computers, but no one else I know of who openly shared, at first my programs for free, and later publishing a book (1979) of the algorithms, include computer code (“Manual of Computer Programming for Astrologers,” so that all astrologers could have them.

That’s a whole story in itself, but what I want to get to here is not about me, but about a very important paper on the future of astrology

written by the astrologer that most influenced me, Dr. Theodor Landscheidt, who was an astrologer and also one of the supreme court justices of Germany. And, here I should back up and expand a bit.

I did some 24 audio interviews of important astrologers (and published them on YouTube) while I was at UAC 2018. And I was interviewed myself. One very bright young astrologer was shocked (and basically called me a liar) when I told him that I had not been influenced in my astrology by many other astrologers. He called me out on it and did not believe what I told him. LOL.

I love astrology and astrologers. Not only that, but I assembled what is probably the largest astrological library on the planet, which I not so long ago donated to the University of Illinois as part of their permanent collection. It took a full-sized moving van (and a UPS-sized) truck to haul it all away, along with my papers and collaterals. I mention this to explain that I have had access (and had read) a great deal of the works that exist on astrology. And, of course, I could appreciate what astrological work went before me.

However, I was not exaggerating to this young interviewer when I said that I have been very little influenced by the astrologers I have met or read. And I have met a great many. I am told that one of my companies, Matrix Software, had 30,000 or so customers over the years, so I had the opportunity to meet my share of astrologers.

And I say this, not to put them down, which I don't, but to truthfully tell that most of my astrology came from my own mind, with one exception.

If I had to pick that one astrologer who actually was so future oriented as to influence me, that would be Dr. Theodor Landscheidt, and in particular his seminal book "Cosmic Cyberetics." In fact. Dr. Landschiedt and I because good friends. He came to our center and taught, as so on. I was able to send him a home computer, early on (1978), before they were available in Germany, upon which he did (or so he told me) important research. And, yes, I am slowly getting to the point of this article.

In the early and mid-1970s, I was programming astrology, first on small calculators, then on programmables, and finally on the home computers that appeared on the scene in 1977. Yet, I was not doing this in a vacuum. I drew around me some of the brightest technical astrologers I could find and began to publish a small journal. At first, I called it "Matrix Magazine," and later "Matrix Journal." It was a periodical, in that it was published periodically. There were some 14 or so issues over the years; I include their covers here, so that you can read the contents and see what we were up to.

And my respect for Dr. Lanscheidt's vision of astrology was so great that I funded the translation of two very important of his books from German to English. In fact, my dear friend

Robert Schmidt, who was living at our center for a year or so (and who was fluent in German), personally translated an important book that has not been released in English, and (if I remember right) this particular article, which is quite long, that I am about to tell you about.

The article I am going to point out here is titled “The Holistic Approach in Astrology and Science.” I had it translated and published in Matrix Journal in the summer of 1992. Anyway, today I came across a printed version of this article, fell into re-reading it, and realized how important this article is to astrologers and to astrology. And here it was languishing in a file cabinet some 28 years later.

And then, I realized that I no longer knew where a digitized version of the article was, a copy in Microsoft Word or something. Of course, that set me off on a long sidebar o time trying to find one. I could not. It must have been lost a few generations of computers back. I realized what a shame this was that unless someone could resurrect it to an editable form, it would be lost. And although I found the article referenced in various footnotes on the web, very few people in the whole world would have a copy of that spiral-bound Matrix Journal from 1992.

And so, although I have a ton of things I needed to do, instead I spent many hours getting that 25 page article digitized and back into a form that can be easily shared. I managed to do it, but it took most of a day. And so, I want to share it with you astrologers here, as quoted from Matrix

Journal, Volume 1, Number 2, back in 1992.

It is very difficult to read, and somewhat technical, even for me, so I don't expect any of my fellow astrologers just to sail through it without thinking. What I am asking a few of you to do, is download it and pass it on, so that it stays in print and available.

And thank you Dr. Theodor Landscheidt for being the tip of the speak (at least for me) of modern astrology!

THE HOLISTIC APPROACH IN ASTROLOGY AND SCIENCE

BY Dr. Theodor Landscheidt

According to a fundamental astrological thesis, the world presents itself as a holistic structure in which everything from the largest to the smallest is connected to everything else, and everything interacts with everything else irrespective of whether it belongs to the microcosm or the macrocosm. Analogous formulations are already found in the Corpus Hermeticum, which is attributed to Hermes Trimegistos. This is the later Greek name of Thoth, the Egyptian god of learning, who is supposed to have invented writing. The writings collected together in the Corpus Hermeticum were probably composed from the middle of the first century up to the third century. The first texts were primarily of an astrological nature. Later, medical and alchemical texts were added to them. One of these texts, the Tabula Smaragdina, begins in Latin translation with the following words: "Quod est inferius, est sicut quod est superius. Et quod est superius, est sicut quod est inferius, ad perpetranda miracula rei unius." The table itself, around which many legends have crept up, has never been found. However, in the 1820's two papyri were discovered containing the text of the Tabula Smaragdina. They have been called the

Leyden and the Stockholm papyri after the places where they were later preserved.

In most textbooks of astrology, the fundamental astrological thesis of the dynamical unity of the universe is not explicitly invoked in the form of a [definition?]. It is, however, the implicit foundation of the astrological worldview, even if it is only occasionally addressed as such. It is what Paracelsus said in the idiom of the sixteenth century: "The astrological interconnection extends to the whole of nature. Man influences the celestial bodies, which in return influence man, because nature is an undivided totality whose parts are intimately bound together." Or: "One firmament, one star, one nature, one being." In our time the astrologer Thomas Ring, who has made a name for himself as an artist, has said the same thing in a modern formulation: "Order is always concerned with a whole, and thus we will base our understanding of component phenomena only upon the holistic cohesiveness of the living being and of the star system as well...It is the whole acting upon the whole." This whole, the solar system, within which life processes and constellations of cosmic bodies develop in elemental resonance, is according to Thomas Ring an organism, whose development follows the laws that hold for integrated wholes: "The organic whole is an active system of mutually determining parts or subsytems;

at the same time this system is harmonically attuned. To the extent that this whole is the sum of its parts, we can observe the processes in it individually, detached from the cohesiveness that interrelates them, and see them run their course causally. However, to the extent that this whole is greater than the sum of its parts, namely a determinate...correlated cohesiveness, it is based on a purposiveness in the interrelationship of the processes belonging to it. Considered analytically in the first way, we find nothing in the organism besides laws and forces of matter...Considered synthetically in the second way, we preserve the autonomy of life through forces of the correlated organic cohesiveness; we find the appearances combined according to elements of the holistic behavior." Even non-astrologers see this to be the case. According to Ernst Cassirer, astrology never looses sight of the unity of the universe, the structure of the world whole. Every perception of form is fused into the perception of content; this content is not represented by unrelated individuals, but is regarded as an expression of the holistic form of the universe, which as an indivisible unity puts the stamp of the whole on every particular part. In an exposition of the essence of astrology, Hermann Keyserling speaks of an "indissoluble synthesis" of man and cosmic environment: "At every moment, universe and man find

themselves in a unitary cosmic situation. As such, man with his free will is at the same an expression of cosmic becoming; at every instant, he is both fulfiller and originator."

The fundamental thesis we have cited of the cosmos as a holistic process that takes in everything the universe encompasses may hereafter be considered the "fundamental principle of astrology". According to the astronomer Bok, this thesis is not compatible with modern concepts of natural science. In the second half of the 19th century, it would have been justifiable to declare such an incompatibility by the state of knowledge at that time. Mechanistic materialism, which at that time was upheld by the leading scientists and today determines the worldview and life-style of the bulk of mankind, stands in irresolvable opposition to the fundamental astrological principle of the universe as a holistic structure. A world that consists of nothing more than a meaningless agglomeration of matter, which drifts toward the heat death of the universe in an uncoordinated motion dictated by chance, has nothing in common with a cosmos whose structural cells at both the microcosmic and macroscopic level are interwoven with one another as a process occurs. According to the conception of the

mechanistic materialist, the cosmos is supposed to be represented by a machine. And it is also true of a machine that it is only a whole in so far as every single one of its parts is a constituent part; otherwise the mechanism would not function in a frictionless manner. But a machine is no more than the sum of its parts. A machine can be shut down at any time, and still resume its mechanistic function without any further ado after a removal and reinstallation of its parts. Unlike an organic whole, it can undergo a fractionation without damage.

However, the mechanistic materialism of the second half of the **19th** century has been out of date for quite some time, even though it still completely dominates the worldview of the inert masses in the second half of the 20th century. The avantgarde scientists and artists of our century have pushed forward to knowledge and artforms that are completely incompatible with the mechanistic conception of the world. The physicist David Bohm makes this antithesis clear through his illuminating critique of the obsolete reductionist worldview: It is a matter of splitting things up in a subjective and inappropriate manner, that is, when we consider the "parts" that surface in our thinking to be primary and independent building blocks of the whole of reality inclusive of ourselves. **"A** worldview such as mechanism,

which considers the whole of existence to be compounded from such 'elementary' particles, is a strong support for this fragmentary mode of consideration. Reciprocally, this tendency finds expression in further thoughts that serve to bolster up and develop such a worldview. As a consequence of this general attitude, man begins to see and experience himself and his world as though everything consisted only of separate and independently existing elementary particles. If man allows himself to be guided by this point of view, he endeavors in his dealings to split up himself and the world in such a way that everything seems to correspond to his thinking. He strongly desires a plausible proof of the correctness of his fragmentary conception of the world and does not notice that it is he himself who has effected that splitting by acting true to his thought scheme, a condition which henceforth seems to have an autonomous existence independently of his will and wishes. This fragmentation is consequently a spiritual attitude that brings with it quite generally the readiness to split things up in an irrelevant and inappropriate way. In like manner, it is an attitude in which elements that do not really stand in a close relationship to one another are falsely bound together and united, as though they were parts of a whole. These two ways of proceeding are in fact two sides of a single process, wherein the attempt to bring things together in an erroneous fashion leads additionally, in the same breath, to a

splitting up of the whole to which they actually belong...This splitting, which is absolute through and through, can today be described as the principal feature of our social and psychological reality. As long as man thinks of himself in such a fragmentary manner, he cannot ernestly see himself as inherently connected to humanity as a whole, and consequently not to other men. In a similar manner he will attempt to separate himself from nature, his soul from his body, and so forth ad infinitum. This is not beneficial to either his physical or his mental health...This fragmentary thinking prepares the ground for a reality that constantly splits up into unordered, unharmonious and [absolute particular activities]."

After an analysis of quantum theory and the theory of relativity, David Bohm comes to the conclusion that only the representation of the universe as a whole comes as close to reality as is possible at present: ["]From the point of view of the quantum theory, we can no longer maintain a separation between observer and observed in the manner postulated by the atomistic view, which conceives both to be atomic masses separate from one another. Observer and observed are much rather coalescing and reciprocally interpenetrating aspects of a single whole reality that is indivisible and indissoluble. The theory of relativity leads us to a way of observing the world which is is

equivalent to this in many decisive respects. From the fact that in Einstein's view there can be no signal faster than light there follows the collapse of the concept of a rigid body. However, this concept holds a key position in classical atomic theory, because this theory must deal with small, indivisible objects as the ultimate constituent parts of the universe if every part of such an object is to be rigidly connected to all the other parts. In a relativistic theory it is necessary to completely drop the representation of the world as composed of fundamental objects or 'building blocks'. It is preferable to regard the world as a universal flow of events and processes...Thus the theory of relativity and the quantum theory agree on the necessity of viewing the world as an undivided whole, in which all parts of the universe including the observer and his instruments merge and unite into a single totality...We can perhaps best designate this as an 'undivided wholeness in flowing motion'...In this flow, mind and matter are not two substances divided from one another, but much rather different aspects of a single, whole and unbroken motion. In this way we can regard all phenomenal forms of existence as undivided from one another, and thereby put an end to fragmentation."

At this point it should be noted that if these conclusions of a physicist standing at the forefront

of research are grasped in their entire import, they already include the result that the so-called matter as an inseparable constituent part of the "single motion" of the "undivided wholeness" can influence the so-called mind, which likewise belongs to this dynamical cosmic totality. There is no longer an insuperable discrepancy between this position, and the influence of a dynamical cosmic constellation of matter on the "psychic motion" of a living creature, as astrology postulates it. There is no longer such a yawning chasm as there was between the conception of the world held by a scientist sworn to the mechanistic materialism of the 19th century, and an astrological conception in the spirit of Kepler.

Even readers who have no knowledge of physics will have no difficulty in coming to the conclusion that the fundamental astrological thesis of the universe as an integrated whole is at least compatible with the presentations of David Bohm. Through his persisent efforts to give quantum theory an objective interpretation with the help of the so-called hidden variables, this physicist has gained international recognition. In order to avoid any misunderstanding, let it be stressed that we are not here attempting to prove the reality of astrological interdependencies. We only mean to point out that the adduced principle is by no means incompatible with progressive physical thought.

The qualitative affinity of fundamentally different modes of being such as mind and matter, which is an essential property of the conceptual world of the physicist Bohm, corresponds in many respects to the concept of the causa formalis, the formal cause as developed by Aristotle. Aristotle, who regarded the universe as a single organism in whose development the parts acted on the whole just as much as the whole acted on the parts, made no distinction between the causa formalis that acted upon human consciousness and the one that took effect in the macrocosm. David Bohm sees here connections with his physical presentations and stresses how important is is to forge ahead in this direction. Accordingly, astrology's emphasis on qualitative elements seems to be not so backward as [blinder-critics] think. It will be established more fully in another context that astrology, with its qualitative elements of a chiefly geometrical nature, goes directly along with the trend of the most recent scientific development. Especially complex problems can only be approached with qualitative solutions, and this has led to a rebirth of geometry. David Bohm does not stand alone in physics. **J.** Bub has likewise developed a theory that proceeds from hidden variables. Bub writes: "The deep intention that is at the bottom of theories concerning hidden variables is the realization of a 'nature philosopy' that includes a concept of 'wholeness' as a new 'ontological thesis'." Kurt

Hubner, who has subjected these efforts to an ongoing critique, considers the results of Bohm and Bub to be consistent.

The S-Matrix-Theory developed by Geoffrey Chew and his colleagues, which serves as the basis for the description of the strong interaction between elementary particles, likewise comes to the conclusion that the universe is not composed out of fractional basic units like a machine, but instead constitutes a dynamical process that can only be properly grasped as wholeness. According to the formulation of the physicist Fritjof Capra, the bootstrap philosophy that stands behind these initial steps "not only relinquishes the thought of fundamental building blocks of matter, but in general accepts no fundamental unities of any kind...The universe is observed as a dynamical web of events bound up with one another. None of the properties of any part of the web is fundamental; all result from the properties of the other parts; and the overall logical coherence of their interrelations determines the structure of the whole web."

Critics may object that Bohm, Buber and Chew cannot be numbered among those very great physicists who have been honored for their services with a Nobel prize. Apart from the fact that

posterity will be the final judge on these matters--for example, Einstein was not awarded the Nobel prize for his theory of relativity--the Nobel prize laureate Heisenberg, co-founder of the quantum theory, has expressed himself in the same vein as Bohm, Buber and Chew: "Thus the world appears as a complicated web of processes in which very different kinds of bonds alternate, overlap, and cooperate, and in this way and in this manner finally determine the structure of the whole web." The agreement of this definition with the fundamental astrological thesis of a holistic universe is unmistakable. Max Plank, the discoverer of the quantum of action, also stresses that only a holistic mode of consideration will do justice to reality: "In the new mechanics, purely local relations suffice just as little for the formulation of the laws of motion as, say, the microscopic investigation of all the individual parts of a painting serves for the understanding of its meaning. One can only, then, attain to a serviceable representation of lawfullness if he considers the physical structure as a whole." Such assessments are not the product of free philosophical speculation; they have an empirical basis in our physical experiences with the world of "elementary particles" as incorporated into the quantum theory in the first decades of the 20th century. The knowledge gained in this contact with the microcosm also has a bearing on the macrocosm. According to a formulation of the

physicist **H.** Stapp, quantum mechanics does not represent the universe as a whole "as a structure that

is built up out of analyzable entities existing independently from one another, but rather as a web of relationships between elements whose meaning proceeds entirely out of their relationship to the whole." This could stand just as written in the introduction to a [pretentious] textbook of astrology. Carl **F.** von Weizsacker has said the same thing as Stapp in other words: "Properly speaking, the description of any object in the world as an isolated 'one' is always illegitimate. The object would not be an object in the world if it were not bound up with it through interactions. Then, strictly speaking, it can no longer be an object. If there could be something that qualified as a quantum-theoretical object in the strict sense, [it would have to be the whole world]."

The philosophical inclinations of the cited physicists are well known. One could get the impression from this that their remarks may be attributed to a bias for speculative philosophy more than to results grounded in physical inquiry. However, here we are dealing with a consistent series of inferences from quantum

mechanics, as it was formulated at the 5th Solvay Congress in Brussels in 1927. This generally accepted interpretation is called the "Copenhagen interpretation", and refers of course to the dominating influence of the physicist Niels Bohr and his school of thought. From youth on Niels Bohr was interested in philosophical and

epistemological questions. His study of Kierkegaard seems to have influenced his physical conceptions. The principle of complementarily, which is an essential constituent of the Copenhagen interpretation, cannot disclaim its kinship with basic ideas of Kierkegaard. Hence, critics could maintain that speculative elements have intruded into quantum mechanics through this cross-link with philosophy. These are reflected in the holistic conception of physicists who lean more toward philosophy than is healthy for a natural scientist.

It is not a cogent argument against this objection that the predictions of quantum mechanics have been continually confirmed. It is true that the illustrations of this reliable theory range from the behavior of subatomic particles to transistor, laser and stellar

energies, and in its relativistic version it stands in accord with Einstein's special theory of relativity; even Newtonian theory may be exactly derived from it. Nevertheless, all this could not have entirely excluded the possibility that the conclusions drawn from the Copenhagen interpretation regarding the holistic structure of the universe would subsequently turn out to be unfounded.

However, since the experimental proof of the criterion of Bell's theorem in 1972, it is certain, according to the overwhelming opinion of competent physicists, that quantum mechanics is not compatible with a world that can be resolved into separable elements of reality. According to the words of the physicist Henry Stapp, this proves "that the world is either fundamentally lawless or fundamentally indivisible." Microscopic and macroscopic bodies and systems that seem separated from one another must form an immediate coherent whole at a deeper level that is still closed off to inquiry. In a probing essay, Martin Gardner, who has distinguished himself by his especially critical contributions to the history of science, has characterized this natural realm that still awaits discovery as the "subquantum field". The physicist David Finkelstein, who has made important

contributions to quantum logic, proceeds in his "quantum topology" from the assumption that the fundmental processes in question take place outside of the categories that appear to men as space and time; he considers space, time, mass and energy to be secondary properties whose roots reach down into a stratum that the physicist Rudolf Tomaschek (already cited) has named "primal ground". Although Henry Stapp already wrote in 1975, "Bell's theorem is the most momentous discovery of scientific history", the significance of the experimental confirmation of this theorem has up till now only been recognized by a few contemporaries. There are even many physicists who have never heard of Bell's inequality. Accordingly, an outline of the development and argumentation shall be set out, so that the reader can form a picture for himself.

Albert Einstein did not receive the Nobel prize for his theory of relativity, but instead for his ground-laying contribution to the development of the quantum theory. After the discovery of the quantum of action by Max Planck, he took the decisive second step when he showed the quantum nature of light and thereby shattered the prevailing conception of the wave nature of light. This led to the

recognition of the duality of waves and particles as an essential presupposition for the development of quantum mechanics. In spite of his role as midwife to quantum mechanics, Einstein struggled against its far-reaching consequences for his entire life and never accepted the principle of complementarity lying at its basis. While quantum mechanics, in opposition to the causal principle that ruled without restriction at that time, proceeded from the supposition that microevents such as radioactive decay took place without recognizable causes and were only subject to probabilistic laws, Einstein judged the upsetting of the causal principle to be a temporary difficulty of a still insufficiently developed

theory, and said in reply to Bohr: "God does not play dice." More particularly, Einstein offered resistance to the existence of the non-local connections inherent in quantum mechanics. Einstein's research contributions were directed at eliminating obscure actions-at-a-distance from physics and setting in their place local theories which obeyed the principle of local causes and made possible an exact description of physical processes in space and time as the result of proximate actions. Quantum mechanics, however, was

characterized by those very non-local connections that Einstein was struggling against. This went against Einstein's conviction "that physics ought to represent a reality in space and time, without ghostlike actions-at-a-distance".

In the course of his interchanges with the proponents of the Copenhagen interpretation of quantum mechanics, Albert Einstein conceived of a thought experiment which he published in 1935 along with Boris Podolsky and Nathan Rosen under the title "Can the quantum-mechanical description of objective reality be regarded as complete?" (EPR-experiment). In the original version it revolved around the position and the momentum of elementary particles. The argumentation was very abstract and could really

only be followed by specialists who were versed in quantum mechanics. In 1952 David Bohm devised a form of the thought experiment that can be more easily explained. In this the spin of an elementary particle plays an essential role.

The concept of spin is tied to the angular momentum of a body rotating around its axis. Every subatomic particle has a fixed angular momentum ascribed to

it. However this may not be understood in its macroscopic sense. As Max Born expressed it, spin originates in the conception of a rotation "without there being anything existent thing which rotates". At any rate, subatomic particles behave as if they had an angular momentum which assumes a fixed value characteristic of it. As with everything in the quantum theory, spin is quantized. To the spin of a photon, a particle of light, the physicist assigns the quantity 1. Lepton and baryons, like electrons, positrons, protons and neutrons have a spin of 112. So just as according to the quantum theory subatomic particles have a tendency to exist in a determinate place, they also display a tendency to orient their "rotation" along a determinate axis. However, this tendency is first realized at the moment an observer takes a measurement. Particles that form a system "rotate" around axes that are oriented parallel or antiparallel. These directions are designated as " + " and "-" or "up" and "down".

The point of departure of the thought experiment is a pair of particles which through interaction has come into contact in such a way that it forms a system with the collective spin of zero. However the particles are aligned, their spin is always equally great and the "axes of rotation" point in opposite directions. The equally great positive and negative spin values reciprocally cancel one another out. If

the two particles are constrained to separate from one another and to fly off in opposite directions, then they form as before a system with zero spin and and the tendency for the "axes of rotation" to orient themselves in an antiparallel manner. According to quantum mechanics, this also holds for for macroscopic distances. In theory, the particles could be removed from one another a by light-year without anything changing with respect to the holistic structure of their direction potentials. If one of the particles is measured after it has already become quite far distant from the other, then, according to quantum mechanics, the wave function that represents the possibilities of the system collapses together, and realizes one of these possibilities. As there are only two possibilities for the axis orientation with equal probability, one of them will be realized. In the same moment the other particle realizes the opposite axis orientation. If the measurement is repeated after a little while, the second particle again orients its axis in an antiparallel manner, even if the first particle has changed its first orientation after the measurement. This takes place without any time lapse. Since no form of energy and no information [whatever form it takes] can be propagated with a velocity faster than that of light, it is impossible that a signal in Einstein's sense is involved. Hence Einstein asked how the second particle knew in each case which axis orientation was correct so that the total spin could remain

zero, and opined that there must be a hitherto unknown causal bond between the two particles. He concluded from this that quantum mechanics was incomplete; in addition, from the violation of the principle of local causes, he inferred that the theory had to contain a grave error. In conclusion he remarked: "One can only avoid this inference by assuming that the measurement...changes (telepathically)...the real state, or by in general denying an independent real state for things that are spatially separate from one another". The answer of Niels Bohr was not long in coming; fewer than four months after the publication of the EPR-thought experiment, it was in the hands of the editor of the journal "Physical Review" which had

published Einstein's work. Bohr pointed out that the paradox proposed by Einstein and his young colleagues "only revealed that the customary views of natural philosophy were unsuited for the apt description of the physical phenomena with which quantum mechanics was concerned." Furthermore, he pleaded for a "final rejection of the classical idea of causality" and a "radical revision of our attitude toward the problem of physical reality." In the final analysis the standpoints of the antagonists and their adherents were incompatible, because Einstein, who set out from the reality of spatially detached objects, held fast to the principle of local causes and rejected "action-

at-a-distance", while Bohr accepted non-local connections because material particles in isolation were incompatible with observations in the subatomic realm. Most physicists were not unsettled by the EPRexperiment, because they took it for a somewhat eccentric mental creation far removed from the practicable, leading to controversies between people who were less physicists than philosophers.

This situation changed fundamentally when the physicist John S. Bell, who was active in European nuclear research, published his sensational mathematical proof, today known as Bell's theorem. This proof opened up for the first time the possibility of testing the EPR-assertion with concrete experimentation, and of settling the dispute over the existence of non-local connections and the principle of local causes. It has the following peculiarity: The spin of elementary particles (already described) can be represented by a vector. Thereby one can imagine an arrow assigned to the elementary particle, which is tied to the direction of the "rotation axis" of the particle. Through projection in three dimensional space, the vector can be resolved into three spin components A, B and C, whose direction is fixed through the respective component axes. Here also there exists the two possibilities of a parallel or antiparallel orientation, which are designated by + and -.

Thus altogether there result the following combinations: A+, A-, B+, B-, C +, C-. For a single subatomic particle, it is alway only possible on quantum-mechanical grounds to measure just one of the spin components along one of the axes A, B or C. If, as in the EPR-experiment, only a pair of particles is allowed, which form a system because they have come into close interaction, then a measurement that produces A + establishes at the same time that the companion particle is characterized by A-. However, sufficient information about all the axes may only be gathered if we have at our disposal a sufficiently large random sample of particle pairs which, despite the restriction that for every pair of particles only the spin component along one of the three axes can be determined, makes possible measurement data about all the axes to an extent that permits statistical evaluation. If by chance these same components of the pairs have been measured, a combination cannot result in any new information, as long as the cases (AA, BB, CC) are excluded. For the remaining pairs there are produced the combinations AB, AC and BC, with the additional variations due to a parallel or antiparallel orientation: A +B+, A +B-, A-B+ etc. The number of such pairs can be designated by n(A +6+) etc., respectively. Now it is of interest whether these numbers

produce any informative relationships. This is in fact the case, as John S. Bell has discovered. If we postulate with Einstein that there exist cosmic objects separate from one another which appear as separable elements of reality (separability) and obey the principle of local causes, then in the described measurement and enumeration of particle pairs that form a system at any given time, there result determinate boundary values for the correlation of the number of respective particle pairs with a determinate combination of axis orientation. The number of pairs A + B+ cannot exceed the sum of the number of pairs A +C+ and B+ C + . This may be expressed in the form of an inequality that is named after Bell:

$$n(A+B+) <= n(A+C+) + n(B+C+).$$

Further inequalities of the same structure may be derived for other combinations of axis orientations. Rigorous set-theoretic arguments prove the correctness of these inequalities.

However, this expressly holds only when one proceeds from the assumption that the particles in question exist as spatially separated elements of reality subject to the

principle of local causes. Hence, Bell's inequality can be regarded as a prediction about the outcome of an experiment. Now, it is decisive that quantum mechanics, which in opposition to Bell's inequality proceeds from non-local connections, comes to a quite different prediction. According to a quantum mechanical calculation, more pairs of A +8+ are to be expected than pairs of A +C + and B +C + taken together. The two predictions deviate more than 40% from one another. Bell's inequality is thus a very sharp criterion.

In 1964 the relationships and mathematical proofs thought through by Bell relied exclusively on experimental considerations, [which of course plainly called for a real experiment]. In 1972 John Clauser and Stuart Freedman actually carried out this experiment, which was fraught with great technical difficulties, in fact with pairs of photons of low energy. The result, which was awaited with great interest, confirmed the prediction of quantum theory, thus violated Bell's inequality. In the following years the experiment was repeated by different groups of researchers with continually refined technology. Pairs of protons in the singlet state were likewise tested, as were pairs of high energy photons and photons of lower energy. Meanwhile, a full dozen experiments are being discussed, all of which violate Bell's inequality and

agree with the predictions of quantum mechanics. In the newest experiments, which also achieve the greatest range of data and are the most exact, the deviation of the observed values from the inequality comes to more than 13 standard deviations. In addition, the deviations correspond exactly to the predictions of quantum mechanics. The outcome of one experiment with photons, especially subtle in conception, was awaited with particular interest. This experiment was to show that a transmission of "information", if such a thing took place, occurred with a velocity greater than light, even practically without any time lag. This experiment was performed in 1981 by A. Aspect, P. Grangier, and G.Roger. In spite of the exacting experimental conditions, there resulted once again a violation of Bell's inequality and a precise confirmation of the prediction of quantum mechanics. Hence, scientists like Bernard d'Espagnat, Max Jammer, Franco Sellerie, and Franz R. Krueger, who have been carefully taking the results into consideration, agree in the judgment that the local realistic theory, which proceeds from the principle of local action and Einsteinian separability, has not withstood the Bell-test, and even more is inescapably false. Anyone who wants to avoid this inference, would have to accept that physical reality is in no way due to the observed particles and their behavior. However, up to this point no physicist has been able to bring himself to such a view.

The proof of the existence of non-local connections raises serious physical problems. It must be clarified how it is possible to have instantaneous interactions between particles at arbitrarily great distances, even though this violates the spirit of the special theory of relativity. 0. Costa de Beauregard, Hugh Everett and Jack Safatti have already undertaken preliminary experiments, which lead to such unorthodox conceptions as time-reversal, a multiplicity of universes of different kinds existing parallel to one another, and "superliminal transfer of negentropy without signals" (energy-free transmission of information faster than the speed of light). By the way, this shows that the conceptual world of theoretical physics makes no fewer demands on the "normal human understanding" than the ideational world of astrology. There can as yet be no talk of a solution to these newly arisen problems. Nobel prize laureate Paul A. M. Dirac stated in 1974: "It seems obvious to me that we still do not know the fundamental laws of quantum mechanics". However, this does not change the fact that even now sound and far reaching consequences can be drawn from the recent discussion of the EPR-experiment and the experimental test of Bell's inequality. We already called attention to such results at the beginning of our exposition. David Bohm has summed up the new vision of a holistic

universe, one which is not based on speculation but on physical observations and the Bell-test, in a concise formulation: "Parts are seen as standing in a tight nexus, in which their dyamical relationships depend in an irreducible manner on the state of the entire system--and in reality on the state of greater systems of which they are a part, and which finally encompass the entire universe--. Thus we are led to the idea of an uninterrupted whole, which rejects the classical idea of the divisibility of the world into separate and independently existing parts." This is the serene formulation of a physicist. The non-physicist Gary Zukav is less reserved in expressing his amazement over the peculiarities of the Einstein-Podolsky-Rosen-Paradox: Quantum mechanics points to the fact that "subatomic 'particles' apparently make decisions continually. In addition, the decisions that they seem to make depend on decisions that were made somewhere else. Subatomic 'particles' seem to know instantaneously the decisions that were made somewhere else, and this 'somewhere else' can be in another galaxy. The keyword here is instantaneously. How can a subatomic 'particle' here know what decision another particle over there has made, at the same time that the particle here makes its decision?...Quantum physicists recognized in 1920 that the conceptions of the sane human mind did not reach far enough to describe subatomic phenomena. Bell's theorem shows that the conceptions of the sane human

mind do not even reach far enough to describe macroscopic, everyday processes...it projects the irrational aspect of subatomic phenomena into the midst of the macroscopic realm. It says that it is not only processes in the realm of the very small that run their course in a manner that sharply distinguishes them from our view of the world, which is founded on the sane human mind, but that even processes in the world at large, in the world of freeways and sportscars, take place in a manner that is completely different than appears to the workings of the healthy human mind." Even the physicist Henry Stapp has emphasized this aspect: "The most important thing about Bell's theorem is that it imports the dilemma called forth by quantum phenomena into the realm of macroscopic appearances [without limit]. This shows that our usual conceptions of the world are very deficient even at the macroscopic level."

The strange indivisible unity, in which according to quantum mechanics even the measuring instruments and the observer are included, is of course tied to the presupposition that at least once something happens to permit the "particles" and the "aggregates of particles" in question to turn into a system. An "encounter" must take place, "particles" must arise jointly or enter into intensive interaction, a "measurement" must be made, which at the same time amounts to an "action",

etc. However, Bernard d'Espagnat has rightly pointed out that in the long developmental history of the universe, which has probably lasted more than 10 billion years, most "particles" and "aggregates of particles" up to level of galaxies and supergalaxies have "acted" upon one another at some point or other, with the result that all these "objects" form an indivisible unity. Here the thought intrudes whether the birth of a living creature, the moment in which it is first exposed--as a newly structured, independent "aggregate of particles"--to the evolutionary process of the cosmic "objects", which already form an inseparable whole, can be regarded as an "encounter" in the quantum-mechanical sense, one that makes the new "aggregate" a member of the already existing unitary system. As with subatomic "single particles" it would result that, from this moment on, changes in the state of the other "aggregates" could influence the "aggregate" newly introduced into the system independently of causal connections and without energy exchange, whereby it is possible that the initial conditions that obtained at the moment of the "encounter" played an important role. We will not maintain here that this is actually the case. In the present state of our knowledge, an exact proof cannot be forced. But as the remarks up to this point show, there is a logical possibility that it is so. It is totally compatible with the most progressive results of scientific research. The EPR-experiment and Bell's

inequality have only been explicated so thoroughly in order to put the reader in the position of forming a judgment for himself as to what extent this is true. In addition, it has become clear that scientists, who in their argument with the foundations of astrology still bring up the principle of local action and demand evidence of causal connections and the macroscopic influence of energy, are still in the second half of the 19th century with their argumentation. As opposed to this, the fundamental idea of astrology, developed many centuries ago, that the cosmos is a holistic process binding together all particular microscopic and macroscopic processes into a unity, turns out to be a progressive concept that is in agreement with the most up-to-date research called forth by quantum phenomena into the realm of macroscopic appearances [without limit]. This shows that our usual conceptions of the world are very deficient even at the macroscopic level."

It is a remarkable, but repeatedly corroborated experience that the same developmental tendencies surface at the same time in fields as different as mathematics, physics, biology, painting, music and literature, leading to the development of similar forms. This also holds for the specification of the ideas of holistic interconnections. Parallel to the discussion of Bell's theorem, the biologist Ludwig von Bertalanffy formulated general systems theory,

which in the meantime has turned into an interdisciplinary field of research that reaches from the interconnections between subatomic particles all the way to the boundaries of the universe, and does not even leave out psychological and sociological phenomena. Thus, the Canadian politician Manning has formulated a political program, at the basis of which is system-theoretical thinking: "There exist reciprocal relationships between all the elements out of which society is built. The essential components of all public affairs and problems, of all political policies and programs must always be viewed--and according dealt with-- as interdependent parts of the whole system." System theory makes precise the traditional insight that the whole must be more than the sum of the parts, and considers systems to be indivisible, dynamical wholes, whose subsystems are interwoven with one another in such a way that their process functions can only be understood within the framework of the overall process of the system. This way of considering things is closer to home than reductionist scientists admit. The physicist and astronomer Arthur Eddington clarified this in an illuminating formulation: "We often believe that when we have studied "one" carefully, we also know everything about "two", because "two" is "one and one". But in this we forget that we must still always consider the "and"." Frederic Vester has made clear with the help of convincing examples how often the true interconnections are

falsified by ignoring the "network" of the individual elements. " What happens in systems even appears to be quite independent of the nature of the things themselves, but all the more dependent on their interactions instead, on the manner in which they are organized, which structures they form." These system laws have "hitherto always escaped scientific notice, because they concern constellations, thus the complex occurrence between things...Fundamentally, the cause of an event is always such a constellation, an overall pattern, and never an individual element that we arbitrarily pick out as a cause." This proposition points in the same direction as the EPR-thought experiment and Bell's theorem, but also agrees with the fundamental astrological thesis of the universe as a framework with a holistic structure. Astrology deals with the constellations and overall patterns of complex networks to which Frederic Vester appeals, in that it includes the whole solar system in its structural investigations and thereby comprehends the "network" of the sun, moon and the planets through geometric bonds which it calls aspects. On the other hand, it remains to be seen whether the meaning claimed by the astrologers befits this relational structure as grasped holistically. However, it can be maintained that the operative view as such is thoroughly compatible with the concepts and results of modern science. That this is so does not speak well for the competence of the 186 leading American scientists

who maintained in their expostion against astrology that the fundamental principles of astrology were incompatible with modern scientific thought. Quantum mechanics and the violation of Bell's inequality prove that the world view which corresponds to the "sound human understanding" falsely interprets fundamental features of reality, not only in the microcosmic realm, but even on the macroscopic level. It is not the "solid substance of separate objects" that is the real and abiding substratum, but rather the form that realizes itself itself in the holistic process of the integrated universe.

Since according to historical experience, the physical law of the inertia of masses seems to be effective even in the sociological and ideological realm, it will be still another century until the new worldview becomes common knowledge. For now, the "belief" in solid, spatially separated objects is an impediment to a deeper insight into what is "real reality". Thus, it is taken to be self-evident that the immediate spatial surroundings have an effect on the development of man. However, anyone who considers it to be possible that the more distant environment like the solar system, or even the Milky Way and yet more distant cosmic bodies and systems have such an influence, is regarded as a dreamer. This is true even for long-familiar physical propositions like Mach's principle,

which proceeds from the assumption that the inertial properties of matter on the earth are determined by the total mass of the universe surrounding us. In a modification of his original formulation of the theory of general relativity, Einstein took Mach's ideas into account. The mathematician and astronomer Hermann Bondi, to whom Mach's principle was obvious, drew out of it far-reaching consequences for the evaluation of "isolated" laboratory experiments: "It appears as if the universe as a whole plays a role in every experiment because ultimately it contributes the inertial properties that bodies have in our experimental arrangements." An effect like this, in which invisible masses exert an influence on earthy events from vast distances, makes our everday understanding uncomfortable. The philosopher Bertrand Russell gave expression to this with the statement that Mach's principle was formally correct, but "smacked of astrology". With that he gets to the heart of the matter. Mach's effect brings up the question of why the relatively close masses of the planets of the solar system should have practically no influence on earthly bodies, when even the masses of cosmic bodies at the edge of the universe have a voice in their behavior through their contribution to the inertia of earthly matter. Raymond Ruyer has graphically portrayed the results of this influence: "Whenever the bus brakes quickly and I take a tumble, this shows that I am not bound to the vehicle, not even

to the earth, but that I am one with the universe." From another angle, Dennis W. Sciama has shown that gravity can itself be regarded as a case of statistical [interactions of inertia]. As for establishing the fundamental meaning of Mach's principle, Arthur Koestler has stressed that it does not only state that the universe as a whole influences local earthly events, but also that local processes act on the universe as a whole, be this influence ever so minimal. This agrees with the message of the Tabula Smaragdina and the above-cited statements of Paracelsus, Thomas Ring, Ernst Cassirer and Hermann Keyseling concerning the fundamental thesis of astrology, that in the universe everything is interconnected to everything else, and everything exerts an influence on everything else.

In their declaration against astrology, the 186 leading scientists point to the enormous distances from the earth to the planets and the even more distant fixed stars, and emphasize that with this in mind, the gravitational effects originating in these cosmic bodies and any other effects would be so vanishingly small that they could have no consequences. No more exposition is required to show that in the light of Mach's principle, quantum mechanics, the ERR-experiments and the refutation of the principle of local action through the Bell-test, this claim can no longer be accepted in this

absolute form. But even very ordinary calculations within the framework of classical theory show that we cannot, without any further ado, deprive the planets of the solar system of every possibility of affecting conditions upon the earth.

In comparison to other forces, gravitation is unimaginably weak. The magnetic field of a toy magnet that attracts a nail is stronger than the gravitational field of the earth. Nevertheless, the vanishingly small gravitational force that proceeds from an electron at the edge of the universe makes the motion of an earthly oxygen molecule incalculable from the 56th collision on, while at the same time it must be kept in mind that during one second an oxygen molecule in the atmosphere collides with other molecules a billion times. The mathematician Emile Borel has calculated that if a mass of a gram on Sirius were shifted about a centimeter, it would lead to a change of the gravitational field of the earth of about 10"-100. At first glance this seems to be completely insignificant. However, Borel has proved that this tiny disturbance already has the result that the motion of a gas molecule on the earth can only be calculated for the tiny time period of a millionth of a second; prediction for a longer period of time will be impossible. This restriction on calculability also holds for macroscopic objects

like billiard balls. The disturbance that proceeds from the extremely

weak gravitational field of a spectator who stands next to the billiard table already becomes of importance as soon as a collision with nine balls is to be calculated. In comparison to a single electron at the edge of the universe, a mass of a gram on Sirius, or a man at a billiard table, the planets of the solar system, with 445 times the mass of the earth, represent a powerful potential for disturbance, especially since they move relatively quickly and constantly form other constellations of masses. Hence, the claim of the 186 leading scientists that the planets could not have an effect on the earth is demonstrably false, indeed even when the classical theories of the mechanistic conception of the world are postulated. The physicist and philosopher Carl **F.** von Weizacker, for whom the "unity of nature" is a living reality, has as an expert in quantum theory judged more carefully than those 186 scientists: "As a physicist I would not know what would really have to be the case if astrology were empirically true. Yet on the other hand, I have gotten the impression, simply by working with it, that empirically there is something to it." As opposed to this, scientific critics of astrology who still argue as if the findings of the 20th century did not exist ought to keep in mind what the mathematician Ivar Ekeland has said in the context of an analysis of the celestial

mechanics of Henri Poincare.: "From a narrow, strictly scientific standpoint, one can only acknowledge a single reality, indeed only a single thing: the universe in its totality as perceived by the senses, the sum total of all phenomena since the beginning of time. Strictly speaking, there is no closed system in which the laws of physics could be applied in isolation. The smallest electron at the furthest edge of the known universe exerts an influence upon the earth, and just as much in the Newtonian model (through its gravitational field and its magnetic field) as in quantum mechanics (since its wave function never vanishes). Certainly these actions are minimal; but to maintain that they are negligible amounts to being guilty of a petitio principii." Of course, the fact that the whole cosmic environment, thus also the entire solar system influences behavior on the earth, still does not prove that this happens in just the way that astrology claims. However it can be regarded as proven that the foundations of the astrological conception of the world may be thoroughly reconciled with the findings of modern science.

This holds all the more, since the discussion of von Neumann's theorem favors the view that even quantum mechanics, successful as it has been, is still no complete theory. According to this theorem, there exist things, properties or processes in the real external world which cannot be grasped by

the **theory. Who can rule** out the possibility, at least at the present time, that it is here that the interconnections claimed by astrology belong? Often it is quite simply the still insufficiently advanced technology that stands in the way of proving a proposition, especially the technology of measurement.

Thus the scientist Franz R. Krueger has explained, to the surprise of his colleagues in physics, that in the famous controversy over the theory of color Goethe could easily have refuted Newton if he had had modern lasers and nonlinear optical instruments at his disposal: "Newton supposedly prepared a pure red, since he screened this out by means of a prism and an aperture. He then shows that other prisms do not further resolve this red. With this he is saying something about his prism, by nothing at all about the "red". That is, let us now take our laser-[black box?] in hand and produce a red light, of whose putative "redness" we have convinced ourselves by means of a prism. Now let us not immediately take another prism, but first a crystal of a special kind, on which we focus the light, and after it has passed through this crystal, let us again study it by means of a prism; and see here, it is not only red light that we behold, but also blue, and ultraviolet (made visible by a fluorescent indicator, for example). Now, does the "pure" red light still contain blue and ultraviolet? Newton

would have to accept that. He would indeed find: the more intensive the red light, the more it contains a disproportiately large amount of blue and ultraviolet." Furthermore, with his critique of the Newtonian experimental arrangement, Goethe anticipated the findings of quantum mechanics. As Franz R. Krueger has stressed, he succeeded in finding a feasible paradigm for the observation of nature, one that was free from contradictions, "namely, that of the inseparability of the knower and the known, the measurer and the measured." Something that a short time ago was regarded as a refuted and backwards standpoint, has now turned out to be a leap of thought into the future over a gulf in time of one and three quarters of a century.

To the incompleteness of this most widely developed physical theory, which still leaves room for the inclusion of experience not yet [assimilated], we add the fact that astrology is constantly assailed by its critics with arguments that are grounded on classical logic, even though in 1936 the mathematician John von Neumann had already pointed out, with an example of a trusted macroscopic phenomenon, that it is impossible to describe experience correctly with the help of classical logic, because the real world follows other rules than this restricted form of logic, which must accordingly be replaced with a more comprehensive quantum logic. Hereafter, the reality of astrological

experience may be thoroughly reconciled with a contradiction of the propositions of classical logic.