

Astrology and the New Physics

Integrating Sacred and Secular Sciences

by William Keepin, Ph.D.

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Following is a presentation given by physicist William Keepin at the Cycles and Symbols Conference sponsored by Isis Institute, October 8-10, 1994 in San Rafael, California. In his talk, he elucidates how recent theories in physics, particularly David Bohm's work, offer a potential understanding of astrology's processes. He also envisions astrology becoming a co-creator with the physical sciences in a grand synthesis that is "a much more profound science than we have today."

Introduction by Rob Hand

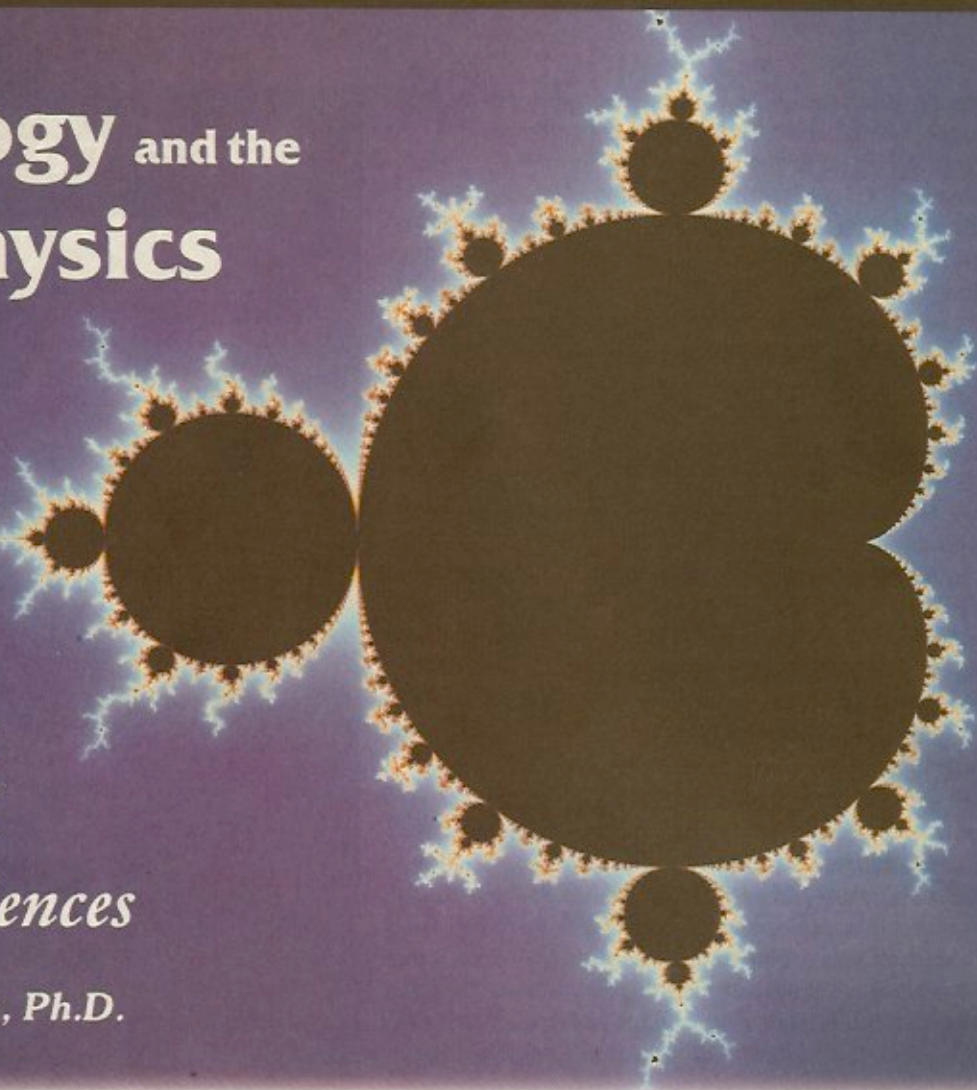
Our first speaker this morning is Will Keepin, whom I personally had the pleasure of talking with back at Astro-labe a couple of years ago, for — what

was it? — a day or a day-and-a-half? something like that. It was one of the most impressive conversations I've ever had with anybody. Basically, what we have here is a convert. Will is a Ph.D. in physics and has made a number of important contributions to the study of modern physics. He is, in other words, not a Ph.D. in physics who, having not quite made it in physics, decided to go into metaphysics. He is a Ph.D. in physics who, having made it in physics, decided that it was necessary to go into metaphysics and is now involved in relationships between environmental concerns and spirituality. This is not exactly something they teach in graduate school physics departments these days, although modern-day physics is getting sufficiently weird so that it kind of points in this direction. And Will is one of the first of a number of people who have crossed the line and joined us weird people at the periphery of modern civilization. So, now I'll turn it over to Will.

William Keepin

Well, thank you, Rob, for that glowing introduction. It's wonderful to be introduced as a convert. Actually, up until about six years ago, the last thing I ever would have thought I would find myself doing would be speaking either about astrology or *at* an astrological conference. I was trained as a scientist in mathematical physics. And while I was open to certain things, such as consciousness expansion and Buddhist concepts of nirvana and shunyata, the *absolute* last straw for a rigorous scientist is astrology. And it's a very interesting thing, because I now feel that it is precisely in the area of astrology where science may have one of its greatest openings in the next few decades to centuries, depending on how much resistance there is.

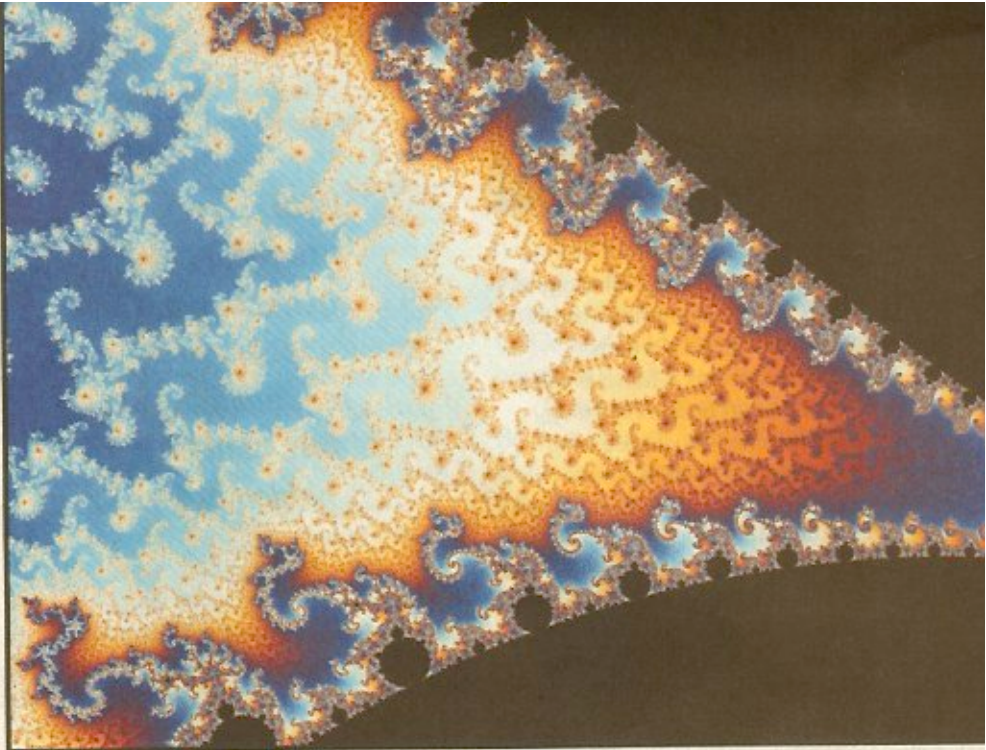
What I want to do today is outline an intimation of that possibility. Let me say a little about my background in astrology, which is fairly limited. I had



the great fortune of studying with Stan Grof for about three years, and during the course of that time, Rick Tarnas came for a week and made a series of presentations on astrology. After that, I began to study my own chart, looking particularly at aspects and transits, and also the charts of family members. To make a long story short, I was guided with great thoughtfulness and care by Rick. And I'm very grateful to him for that, because my opening into astrology really came through Rick Tarnas.

The key "moment," my initial moment of transformation, came when I was looking at the chart of a family member who is very close to me. Several years earlier, she had had a psychotic break in which she was diagnosed schizophrenic, and there was a whole period of her being in and out of the mental hospital. She eventually came through it. She had in her natal chart a Mars-Uranus conjunction square to Neptune, and her Neptune was also trine to a Mercury-Venus conjunction. At the time of her difficulty, she had transiting Pluto conjoining her Neptune, so it was basically lighting up that challenging aspect of the Mars-Uranus square to Neptune. Then, in November of 1982, precisely in the month that she had the break and went into the hospital, Saturn came and conjoined Pluto. So, she had transiting Saturn and transiting Pluto conjunct her Neptune, which is clearly a once-in-a-lifetime transit, and she certainly had a once-in-a-lifetime kind of experience. That was a very profound opening for me, and it led me to really begin an inquiry into astrology, which continues to this day.

So, I want to say that it's a great honor and privilege to be here. I have to tell one more little story, though, which is that, when I went to meet Rob Hand, Rick and I went together. And as Rob said, it was one of the most fascinating discussions I've ever had, also. We covered a wide range of topics, and afterward Rick and I went to a conference. I don't think I've ever told Rick this, but flying home on the airplane back to San Francisco, as Rick and I were talking, I suddenly got the profundity, at least at some level, of what this was all about. I had this very distinct feeling that the back half of my head had been opened



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up and removed. And I had the sense of *feeling* the cosmos back behind my head in very direct communication or communion — it was quite a palpable physical sensation. At the time, I just thought, "Well, that's interesting," but in retrospect, I realize it was a very important moment.

What I'm going to offer today, rather than a presentation, is more of a meditation. I want to give you some of the ideas and inquiries and contemplations I have had in the last six years as I have grappled with this question of "How could astrology possibly be valid?" It seems so contradictory to what orthodox science tells us. I'd like to begin by making the point that mainstream science has no credible case against astrology. The two usual arguments given in science are that there is no evidence for astrology, and there is no mechanism that could possibly explain it.

The "no evidence" is simply false, primarily because of the work of Michel Gauquelin. I'm sure you're all familiar

with the statistical work that Gauquelin did. I'm not going into that today, because I really want to go into the deeper theoretical understandings. As valid and important as that work is, it is based on statistics. And I think some of what we're going to be seeing in the next decade or so is that statistics itself will be coming into serious question as a valid scientific epistemology. In any case, there is scientific evidence for astrology.

The second point, on the business of "no mechanism," relies on offhand order-of-magnitude arguments, such as: The gravitational effect of the doctor on the baby was greater than the gravitational effect of Pluto at the time of birth. Therefore, if the doctor had nothing to do with the baby's psyche, how could Pluto have anything to do with it? The argument is, in a narrow sense, valid, but all it shows is that astrology does not work by gravity. One can make similar arguments about electromagnetic interactions and even nuclear interactions. One comes up with the same conclusion. It's valid as far as it goes, but it doesn't begin to touch upon the true nature of the phenomena. And it doesn't preclude alternative explanations.

Astrology in no way contradicts any of the *facts* of science as we understand them. It is at variance with unjustified *extrapolation* from those facts, with a worldview that is assumed to be proven by mainstream orthodox scientists but

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that, in fact, is a set of assumptions about the nature of reality. Astrology is at odds with those assumptions but not with any of the established facts.

In 1975, there was a famous astronomical declaration against astrology signed by 186 scientists. Those who signed on, generally, actually knew either nothing or very little about astrology. But it was interesting to hear some of the tales about those who did not sign, such as Freeman Dyson at the Institute for Advanced Study at Princeton. He refused to sign because he simply didn't know. And Carl Sagan, whom you all know as a man with great insight into the billions of stars in the cosmos, I believe, also refused to sign. I'm not totally sure about that, but he did give the following statement about astrology. It's a nice dismissal of this whole business of astrology not being valid because we don't understand how it could possibly work. Sagan says: "That we can think of no mechanism for astrology is relevant but unconvincing. No mechanism was known, for example, for continental drift when it was proposed by Wegener. Nevertheless, we see that Wegener was right, and those who objected on the grounds of unavailable mechanism were wrong." Basically, Sagan should be credited with acknowledging this fact that astrology cannot be dismissed simply because it's not understood how it might work.

You may be familiar with some of the work of Percy Seymour, who's written a couple of books on science and astrology, such as *The Scientific Basis of Astrology*.² I'm not intimately familiar with his work, but I have read a good bit of it. And the essence of what he's proposing is that astrology works by some kind of magnetic field interaction.

What I'm offering here is a very different understanding. In my view, astrology is actually much more profound than any process that takes place in the physical realm. It involves something that is beyond the physical realm, for which we are now gaining increasing evidence in some of the new developments in modern science. And that is

With reference to reality in general, what appears to be random may, in fact, contain a hidden order.

what I really want to speak about today. Those developments that I'm referring to are the theoretical work of David Bohm and the emerging fields of *nonlinear dynamics* and *chaos theory* and, in particular, *fractal geometry*. I'll be giving an example in a moment.

I'd like to begin with David Bohm's work in theoretical physics. David Bohm was born in 1917. He was a young, brilliant physicist who studied at Berkeley under Robert Oppenheimer. He then went to Princeton and became a colleague of Albert Einstein. And in fact, he and Einstein had very intensive discussions about the meaning of quantum theory. David Bohm wrote a book on quantum theory that was published in 1951, which Einstein said was the clearest exposition of quantum theory he had ever seen. The two became very close, and then there was a very curious development. Bohm was called to testify against Oppenheimer during the McCarthy era, and he refused. Although Oppenheimer was acquitted, Bohm lost his job at Princeton and had to leave the country. Thus his association with Einstein was effectively terminated. So, Bohm went to Brazil, then Israel, and then ended up at the University of London, where he did most of his work.

His basic contribution to physics, and to science generally, is still greatly under-recognized, and I submit that it's nothing less than a completely new understanding of what science means and what science is. I want to briefly summarize his contributions.

First, a comment on the way that Bohm worked. He had these burning

passionate quests for deep understanding of the nature of reality and existence, and this carried him quite beyond the bounds of physics. As many of you may know, he carried on a 20-year dialogue with the Indian mystic and sage, Krishnamurti. He also had extensive dialogues with other spiritual masters, including the Dalai Lama. And he ended up developing a theoretical understanding of modern physics that is actually consistent with spiritual teachings down through the ages. And it's quite rich and complex. What I'm going to do today is merely outline some of the fundamentals of his understanding.

The basic nature of reality, according to David Bohm, was what he called a *holomovement* — *holo*, meaning holographic-like, and *movement*, suggesting dynamism and process. To use his words, the nature of reality is "a single unbroken wholeness in flowing movement." So, everything is connected and everything is in dynamic flux. Now, in this term "holomovement," *holo* refers to holographic structure, meaning that each part of the flow, in some way, contains the entire flow. We'll be looking at some examples of what that might mean. And the *movement* part of the holomovement is that the whole flow is in a continual process of change. Bohm developed this out of his reinterpretation of quantum physics. Many of you may have read some of the famous works by Fritjof Capra and Gary Zukov and that whole beautiful opening, which happened in the late 1970s and early '80s, into essentially the mystical implications of modern physics.

What Bohm did was something that I think is at least as important but has not been recognized as such. He began with the Schrödinger equation, which is the central equation of quantum theory, and partitioned it mathematically into two parts. The first part was essentially a recapitulation of classical Newtonian physics, and the second part was a wave-like information field. The Schrödinger equation is an equation for the movement of the electron and offers insight into questions such as, "How does the electron behave?" and "What is the nature of the electron?" Bohm postulated that the electron behaves just like an ordinary classical particle, con-

trary to the whole complementary wave-particle duality theory of Neils Bohr and the "Copenhagen" school of interpretation. Bohm was saying that the electron does behave like a particle *but* with access to information about the rest of the universe.

This is the part that physicists have a hard time accepting, as you might imagine, because the electron is essentially acting with a kind of *awareness about* the rest of the universe. That awareness comes in this second term, which Bohm called the **quantum potential** — a wave-like information field that *gives the electron access* to information about the rest of the physical universe. Bohm was able to show that the influence of this quantum potential depended only on the form and not on the magnitude of this wave-form. And because it didn't depend on the magnitude, it was independent of separation in space. Therefore, *every* point in space had a contribution to make to the electron's awareness.

If that makes any sense, the essence is that the electron is a kind of guided particle. In fact, Bohm used the analogy of a Boeing 747 flying over an ocean. It's guided by radio waves. The radio waves themselves do not have the energy to actually cause the airplane to turn and make a change in course, but they provide information that the airliner then responds to and adjusts its course according to the information supplied in these radio waves. So, the radio waves themselves contain much less energy than the airliner, in a physical sense. But the information that they contain enables the airliner to guide and direct its own energy. Essentially, it's the same kind of understanding that Bohm had about the electron.

Bohm further proposed that the holomovement I mentioned consists of two parts — an **explicate order** and an **implicate order**. I will clarify this difference with an example that Bohm himself developed.

Imagine a jar filled with a thick, transparent fluid like glycerin, a highly viscous fluid. In the center of the jar is a cylinder rod with a handle so you can turn the rod. You add a drop of ink into the glycerin, and the ink just sits there. But when you turn the inner cylinder

around, it pulls this drop of ink and stretches it out. If you continue turning, the ink is drawn out into longer, ever finer and fainter lines. Eventually, if you keep doing this, the ink actually disappears completely. You can no longer see it.

At this point, it's very tempting to conclude that the order that was originally present in the drop has now been rendered completely random and chaotic by thorough mixing of the ink into the glycerin — so much so that you can no longer even see the ink. However, if you now reverse the direction of rotation, what you find is that this thin, long line of ink will begin to reappear. And as you continue the reverse rotation, it will continue to get thicker and more clearly defined, and eventually it will completely reconstruct itself.

Now, this is a mechanical metaphor for what Bohm talks about. What it tells us is that *a hidden order may be present in what appears to be random*. That's a very important insight that Bohm had, so I'd like to repeat it. With reference to this example and with reference to reality in general, what appears to be random may, in fact, contain a hidden order. And unless your epistemological net is sufficiently fine, or sufficiently broad, you may miss that hidden order.

Bohm called this order the *implicate order*, because although the ink is

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dispersed to the point of not being visible, its order has, in some way, been preserved. Or, I should rather say that it's been transformed into a different form, but it has not been destroyed. And it can then move from being implicate into what Bohm would call the *explicate order*, where the order has been made visible and made manifest. So, we then have this ink dot reappearing.

When the ink drop disappears, Bohm would say that its order is **enfolded** in the glycerin. When the ink droplet reappears, its order is **unfolded** back into the explicate order. I am going to be using these terms, so I want you to become familiar with them.

The whole relationship between the explicate and the implicate order is quite a complex one, and I'll just say a few things about it. If you're struggling for a way to get your mind around it, a very simple way of understanding it is that the explicate order is the manifest realm; it is the physical space-time universe in which we live. Then, the implicate order is the unseen, or the unmanifest realm.

It's tempting, perhaps, to think of the explicate order as the primary reality, and the implicate order as a subtle secondary reality. For Bohm, precisely the opposite is the case. The fundamental primary reality is the implicate order, and the explicate order is but a set of ripples on the surface of the implicate order. So, that which we can see and feel and touch is merely the waves on the surface of reality, which is a vast ocean of implicate order.

Another way of possibly thinking about this is in terms of the good old television set. The implicate order is essentially all the programming being broadcast at any given time, and the explicate order is what's on the screen at a particular time. So, the explicate order is but a narrow window on what's actually there — a tiny little part that's manifest on a sea of possibility — and the full reality exists in the implicate order.

Another point that Bohm emphasized was that empty space is part of the wholeness — this unbroken flowing movement. Empty space is not just some giant vacuum through which matter moves, but rather, space and matter are intimately interconnected. This is a very important way of reconsidering

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the ontology of so-called empty space. Bohm actually did some calculations showing that each cubic centimeter of "empty" space contains more potential energy than all the manifest energy in the universe. As he put it, space is full, rather than empty.

This gives you some sense of the thinking of David Bohm. What I want to do now is to go into a more concrete example of the holographic structure. To do this, I'll use an example from chaos theory and fractal geometry.

This example is known as the **Mandelbrot set**. Much of what I'm saying is not really going to be new to most of you. As astrologers, you know this intuitively. The main point of my presentation today is to show you how certain directions in science are emerging toward a parallel understanding.

This is called the Mandelbrot set, after the French mathematician, Benoit Mandelbrot. (See **Diagram**, page 36.) It is generated by a nonlinear iterated process. The process itself is incredibly simple. Basically, you begin with a number, and you square that number, then you add a constant to it. That will give you a new number. You then take that new number, square it, and add a constant, which gives you a third number, and you continue repeating this process. If that sequence stays bounded, i.e., if it doesn't blow up to infinity, then the point that you began with is in the Mandelbrot set. It's in the black area. If it does blow up into infinity, then it's outside of the set, in the white area. If you don't understand the mathematics, don't worry. It's not important for the essence of what I want to show you.

Now, let us zoom in on this Mandelbrot set into the order of about a billion times, and you can really see the structure of this set. As we "dive" into it, you can begin to see some quite beautiful regularity of structure and also some patterns that are repeated on different scales. You'll also notice that these little patterns begin to look like parts of the original structure. (See **Diagrams**, pages 37 and 42.)

A given astrological archetypal configuration can result in a variety of different manifestations, depending on the person involved.

[Editor's Note: Space does not permit the display of the visuals that Dr. Keepin used in this part of his speech, but we refer readers to the color plates in the widely available book, Chaos: Making a New Science, by James Gleick (Penguin Books).]

To continue our zooming process, I'd like to go deep down into one of these little white glowing spots, and as you can see, there is quite some intricacy and delicacy and grace and elegance to this structure. Continuing further, if you'll notice in the middle of this, there is another little white spot, so we're now going to zoom right into that, and now you'll begin to see something emerging. If you look closely into the center of that white spot, you'll see the original figure reappearing. So, here we have essentially the same structure replicated on a scale one billion times smaller. In mathematics, this is called self-similar structures or nested sets of self-similar structures. In alchemy and astrology, it is called "As above, so below."

In a sense, science is now beginning to discover, through certain recent developments, some of the ancient wisdom and teachings. I want to say a little bit more about the nature of this. In the Mandelbrot example, recall that we zoomed in about a billion times and found a structure that virtually resembles the whole. However, on very close inspection, it's not identical. It's slightly different, and not only that, if you blow up any one of these other parts of this same structure, you will again find these little Mandelbrot sets embedded within it. There are literally billions of them. In fact, there is an infinity of them, because each of them contains billions within it, and the process of worlds within worlds keeps going. What we have here is a

very profound set of nested self-similar structures. That's how the scientists would put it.

We have here a kind of evidence for the alchemical notion of "As above, so below." Moreover, this reveals the ontological bankruptcy of reductionism. The basic philosophy of reductionism, which prevailed in orthodox science, holds that, if we want to understand a complex system, we must break it apart into pieces to render it much more simple. What we're finding here is that, when we break the whole apart into these pieces, each piece is as complex as the original whole. This is a very different understanding. You can now begin to see what is meant by this idea that each part contains the whole. Because when we zoom in on one of these tiny little Mandelbrot sets, which is one-billionth of the size of the whole, it has the identical structure. The microcosm has all the elements, essentially, of the macrocosm. However, I want to emphasize that each part does contain the whole, not at the **manifest level** but, rather, at the **process level**. The little tiny Mandelbrot bug does not contain the great big one in a physical sense. It's much too small to contain it. But at the level of the process, the two are virtually identical.

Now, what does all this mean, and what does it mean for astrology? This is where I want to invite a kind of metaphorical flight of fancy. This is what I meant when I said this was a meditation, because it requires imaginative metaphorical thinking. I'd like to invite you to consider this Mandelbrot set as a kind of model of the cosmos. Let us think of each one of these little Mandelbrot sets as, for example, a human being. Then, if one were to go inward and contemplate the nature of one's existence deeply, one would essentially come into awareness of the process that gave rise to one's existence. In coming into that awareness, one would then apprehend the process of the entire cosmos, because they are one and the same process.

It's like what the Tantric Buddhists say, which is, "If you come to know the human body deeply enough, you come to know the entire cosmos." And they're not talking about a physical knowing. They are talking about a knowing at an energetic level, at the level of process.

In this case, it's represented by Mandelbrot's simple equation, which is the implicate order.

Thus far, these Mandelbrot sets we've been looking at are static structures. They are fixed, unchanging mathematical structures. Now, let us imagine instead that the structures and underlying process are both evolving in time. Imagine that this process — the implicate order — is changing over time and that, therefore, this Mandelbrot structure — the explicate order — is itself changing over time. I actually looked for some videos of this and wasn't able to find any. I don't even know if this has been done mathematically. But basically, the idea would be that, as the process underlying this manifestation unfolds and changes, then this whole structure would also change and evolve as a kind of dynamic fractal. You can then imagine that each one of these little tiny embedded Mandelbrot's changes and evolves in a way that is directly correlated with the evolution of the entire macrocosm. In this way, we begin to understand how there could be correlations between the evolu-

tion of the macrocosm — the motion of the planets, for example — and the evolution of one individual part of that macrocosm, one human being.

This leads to a kind of metaphorical understanding of how astrology might work, and it works in a way that is not mechanistic. This is very important to understand. It's not that Pluto sends rays down to your brain, which acts as a radio receiver, picks them up, and goes and does Plutonic things. And it's not that Pluto is in you, in the sense that the physical Pluto is much too big to be contained in your physical body. *It's that the process that's going on in Pluto is also going on in you.* Literally. So, Pluto is literally contained in you, and in me, but at the process level, not at the manifest level.

In response to an inaudible audience question, Dr. Keepin replies: The Mandelbrot set is actually a two-dimensional object, which exists in the mathematical complex plane. And there's another limitation of this whole metaphor that I want to mention. Basically, what I'm try-

ing to suggest here is that, very loosely, this gives us a model for understanding something about the nature of how astrology works. Which is that we have a generative process, or implicate order, and then we have a manifest realm. And as this process changes over time, it results in an unfolding cosmos that has temporal correlations between the microcosmic and the macrocosmic manifestations. But as you know, a given astrological archetypal configuration can result in a variety of different manifestations, depending on the intentions, the being, and the integrity of the person involved. So, it's really *much* more complex than this. This is really intended only to give a most simplistic glimpse of how some of this might be working.

I want to say just a few more things, and then I am going to stop so that we have some time for questions and answers.

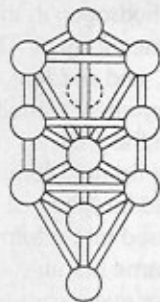
There is a kind of holographic structure to much of astrology, and I'll just mention a few examples. One is the idea of the outer three planets being the

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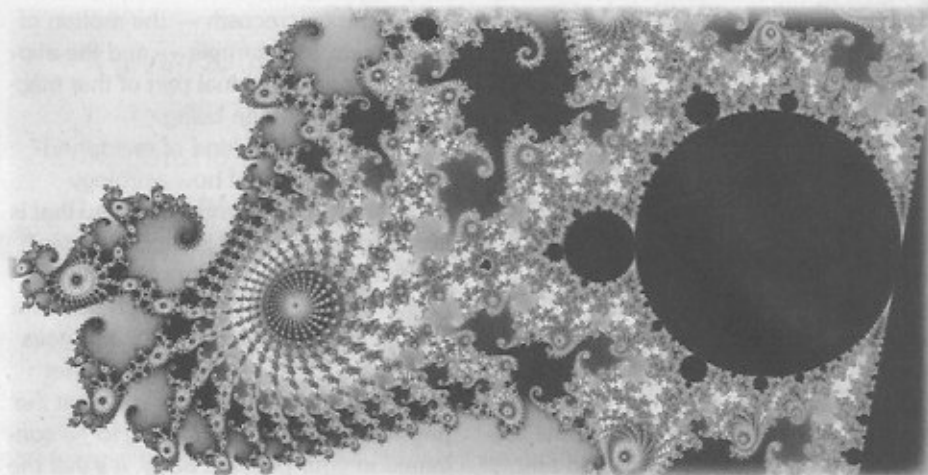
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“higher octaves” of the personal planets: Neptune the higher octave of Venus, and Pluto the higher octave of Mars. To the extent that there is some validity in this — I don’t want to portray it as a literal truth — it reflects a relationship of self-similar structures at different scales.

Similarly, with respect to progressions, a whole year is essentially represented by the Sun’s movement in a single day. There is a way in which time also has this fractal structure. In fact, David Bohm said that each moment in time contains all of the past and all of the future. Time is not a steady flowing stream that is intrinsic to the explicate order. Rather, time is a particular type of explicate order that unfolds as a sequencing of events, with past and future being measures of the depth of implication. Furthermore, time has its own implicate order that Bohm called the **eternal order**, which is beyond manifest time altogether. You can begin to see how every explication has a deeper implication, and it goes on indefinitely, to ever more subtle levels. In the case of astrology, we can see the archetypes as a kind of implicate order, and when they become explicate, those are the actual manifest events. But there could also be a **super-implicate order**, higher than the archetypes, that orders them. So, it gets quite complex, and Bohm did develop the idea of super-implicate order, which I’ll just mention, but I’m not going to dwell on it.

Yet another example of holographic-like structure in astrology is this: You can give an entire reading based on simply which signs the planets are in. The signs really refer to the entire cosmos, since they essentially divide up the universe into twelve sectors. On the other hand, you can also give an entire reading with just the planetary aspects and midpoints themselves. In the latter case, you are only looking at the level of the solar system, not further. You can completely ignore the signs, in fact, and still get a very accurate reading. So, the same information is enfolded at different levels and, in some way, is replicated at the



solar system level, as well as the cosmic level.

Now, there is one final thing I want to mention about David Bohm’s work. It’s very important, and it’s not emphasized in many of the writings about him. Bohm came up with this idea of a kind of tripartite ontology. What he said was that reality consists of matter, energy, and meaning. The usual physical understanding in science is that the universe consists of matter and energy, and Einstein did the glorious equation of the two with $E = mc^2$. What Bohm says, however, is that *meaning* has the same ontological primacy as matter and energy. Let me give you a direct quote. Bohm says, “Energy enfolds matter and meaning, while matter enfolds energy and meaning.” (When you hear this word *enfold*, think of the ink drops disappearing into the glycerin.) “But also, meaning enfolds both matter and energy. So, each of these three basic notions enfolds the other two.”

Here, Bohm is proposing a kind of interpenetration of matter, energy, and meaning. He goes on to say: “This implies, in contrast to the usual view, that meaning is an inherent and essential part of our overall reality, and it is not merely a purely abstract ethereal quality having its existence only in the mind, or to put it differently, in human life. Quite generally, meaning is being. In a way, we could say that we are the totality of our meanings.”

For Bohm, the nature of reality is this interpenetration of matter, energy, and meaning. The matter–energy realm is the explicate order, or manifest realm. The meaning realm is the implicate

order, and there’s an interpenetration between the two.

I want to mention here that this is where I get some of my hope for the possibility of “saving the planet.” Most of my work is in environmental science, and if you look at the objective facts of the environmental crisis, it is very, very disturbing. And if you take the usual scientific view that we have to fix the entire planet incrementally, piece by piece, it is hopeless. But if you imagine that a few of us well-intentioned little Mandelbrot-like beings here can be sufficiently self-aware and tap into the process underlying all of manifest reality, essentially going into the nature of the creative process itself and working at that level — this is what might be called spiritual or love or whatever — we then may be able to affect the very evolution of the process!

I realize this may be a little far-fetched, but in so doing, we then may be able to have an effect way beyond our numbers. And there is precedent for this in cosmology. For example, all of the hydrogen in the universe appeared in one moment. There was no hydrogen, and suddenly, hydrogen appeared everywhere, simultaneously. The same with the galaxies. The galaxies did not exist up until some point, and then all of a sudden, they all crystallized and condensed into a form. Essentially, they became manifest out of the implicate order everywhere at once.

In this same sense, through deeply intentioned action in the world, I think that a few people can potentially make a huge difference. The masses would call this divine intervention. They would see this as an incredible magical thing, but

it is not divine intervention. It's divine architecture. It's the way reality is structured. And knowing that and working at the process level, instead of only at the manifest level, we can begin to tap into that deeper ordering of reality.

So, to close, I want to give a positive vision of the future of science. First, what is science? Science is a kind of pattern recognition, and what it requires, the *sine qua non* for science, is some kind of order. There's a basic order in the material realm, and so we have orthodox science, which results from the study of the order in matter and energy.

By the same token, there is also order in meaning. Meaning is ordered, not arbitrary. There are lots of different examples of this, one example being the beauty of Mozart's music compared with Salieri's, which is an objective fact. But it cannot be measured on laboratory instruments, nor can a microphone pick it up. Nor could Fourier analysis of the wave forms coming from that microfilm ever enable you to distinguish between Mozart's and Salieri's music in terms of the *essential* genius and beauty. But it's there.

Astrology, in a sense, is a science of the order in meaning and of its interpenetration with the physical space-time universe. And this is where I think astrology is so profound. Because, in a sense, all of the esoteric sciences, such as the

I Ching, Tarot, and others, are sciences of the order in meaning. They are essentially models of the implicate order. But what is so profound about astrology is that, by virtue of its connection to planets and stars, it also precisely models the interpenetration between the invisible realms of meaning and the physical space-time universe.

So, what do I foresee, or perhaps pray for, for the future of science? Essentially, a grand synthesis of explicate and implicate sciences. Today's orthodox science would come to be seen as a partial science limited to the explicate order. It focuses on those manifest ripples we see all around us and mistakenly take for the whole of reality. Meanwhile, astrology and the other esoteric sciences are sciences of the implicate order, and rather than contradicting the physical sciences, astrology and physics are two aspects of a much greater whole. This will eventually lead to a grand synthesis of sacred and secular sciences into a much more profound science than we have today. Thank you.

Answers to Audience Questions

(Following are answers to some of the audience questions. Unfortunately, the questions were inaudible on the tape recording of the speech.)

Let me just say that chaos theory, first of all, is not really about chaos, it's about order. So, in a certain way, it's a misnomer, and it came out of certain processes that appeared to be chaotic but, when studied more deeply, were revealed to exhibit order. This is an example of what I was saying earlier about hidden order being present in what appears to be chaotic or random. Chaos theory is a general field in mathematics and nonlinear dynamics, and fractal geometry is a subset of that. The Mandelbrot set is one single example. It's one of the most simple and basic examples of this fractal geometry.

There is a kind of ontological hegemony in science. There's this incredible obsession to have the planets be nothing more than giant dead rocks described by their masses, chemical composition, orbital periodicities, etc. And you know the curious thing about it is that this lifeless ontology is tragically paltry in comparison to astrology. For me, I just want to say, as a physicist, astrology has so much more deeply — I mean, beyond any words I could possibly describe — opened up my whole understanding of reality, the cosmos, and enriched it. It essentially put flesh and bones and life on this rather dry skeletal body of equations and mechanics.



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Astrology and the New Physics

The question is: "Could I say something about the relationship between what I'm speaking about and Jung's concept of synchronicity?" I haven't really thought about this. It's an excellent question. But synchronicity is basically another name for the correlations between what happens in the realm of meaning and what happens in the space-time realm of events. In a sense, it would be a kind of correlation between what happens here in the implicate order and what becomes manifest. It can have that quality of divine intervention, or magic. But again, as I was saying earlier, this isn't really magic. This is, in fact, the architecture of existence.

As I said, this metaphor is quite limited. One of the things I feel that needs to be included is that there's a feedback from the manifest realm back to the creative process, so that these two are in a process of co-evolving, in a certain way. There's a kind of mutual, interdependent causality that is going on, so it's not the case that the process just does its thing, independent of what's being manifest. The two are in a kind of co-creation. And that's why I feel that there's some hope for saving the Earth. Because those of us — all of us in this room and others

— who are working at the implicate order level can potentially affect the very process that gives rise to our manifest reality.

The question is that the description of the Mandelbrot set reminds her of how homeopathy works, and she wanted me to say something about the nature of physics and healing. I agree, basically, and I myself have worked extensively with the holotropic breathwork process that Stan Grof developed, which is a kind of psychic homeopathy, if you will. One of the things that Stan said, after 30 years of working in the realm of consciousness, was that his deepest conviction is that "each of us is everything." By which he meant that, if we go inward, we can find within ourselves every manifest form of consciousness that there is, which is a kind of psychic version of what we're talking about here. I feel this offers great hope, because in the sense that the leaf contains the tree, then in healing, if a leaf heals itself, this has a healing impact on the entire tree. So, if that makes any sense, it is where I derive my hope for healing for the culture and our relationship with the Earth.

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References

1. *Editor's Note*: For further explanation of this scientific argument, as well as a repudiation of it, please see "The Physical Bases of Astrology: The Influence of Gravitational Field Potential," by Ronald Laurence Byrnes, in *The Mountain Astrologer*, April/May 1994 (out of print). In the article, Byrnes explains that "true gravitational influence cannot be measured by simple force or attraction alone: An object is in the grip of gravity until it moves through an escape distance. The energy required to move the object beyond the grip of, say, Mars' gravitational influence is known as Mars' gravitational field potential." Using the formula for gravitational field potential $[-Gm/r]$, even distant Pluto has a stronger gravitational field potential than the doctor. — Geraldine Hatch Hannon
2. Percy Seymour, *The Scientific Basis of Astrology*, St. Martin's Press, 1992.

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William Keepin, Ph.D., is President of the Satyana Institute, which has organized intensive healing and reconciliation programs between women and men in several countries, as documented in the book, *Divine Duality*. A mathematical physicist, he was a whistleblower in nuclear science policy, and his research on global warming influenced international environmental policy. He is co-author of *Women Healing Women (2009)* and co-editor of *Song of the Earth: The Emerging Synthesis of Scientific and Spiritual Worldviews (2009)*. Will has practiced astrology for 20 years. For readings or consultations, please contact: will@satyana.org

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