



The Diamond

If one were to draw three lines (representing the 3 directions of space, Up-Down, North-South, East-West) that cross each other at right angles in the zero-point (*Laya Point*) center of the primal or first manifest field — those same lines crossing at the center of a diamond (or octahedron shape) will pass through all 6 apexes.

This indicates that a diamond is the first geometric shape (with its 2 pyramids, 3 axes, 8 triangular sides, 12 edges and 6 apexes) that represent the inner potential dimensional spatial aspects of spin on three equally opposing right angle axes of the pre-Cosmic zero-point, as well as representing those aspects of the first initial and all subsequent manifest fields of Brahma.

Thus the diamond is the primary symbol of Cosmic origin, and viewed from different angles, its defining lines, along with the point in its center, can picture in 2 dimensions most of the mystical symbols, such as the cross, the swastika, the Seal of Solomon, etc.

The diamond also represents, symbolically, the structure of the carbon crystal (diamond) as well as the benzene ring, formed of 6 carbon atoms -- which are the primary building blocks around which all organic life-forms in our Solar System are constructed. Thus, "as above, so below" can also mean, as within, so without.

LHM



PI AND THE LENGTH OF RIVERS

From [Fermat's Enigma](#), by Simon Singh

"Professor Hans-Henrik Stolum, an earth scientist at Cambridge University has calculated the ratio between the actual length of rivers from source to mouth and their direct length as the crow flies. Although the ratio varies from river to river, the average value is slightly greater than 3, that is to say that the actual length is roughly three times greater than the direct distance. In fact the ratio is approximately 3.14, which is close to the value of the number pi... The ratio of pi is most commonly found for rivers flowing across very gently sloping planes, such as those found in Brazil or the Siberian tundra."

One man's definition of pi (from [Godling's Glossary](#), by Dave Krieger):

Pi.

1. The Greek letter P or p, corresponding to the roman *p*.
2. A number, represented by said letter, expressing the ratio of the circumference of a perfect circle to its diameter. The value of pi has been calculated to

TABLE OF CONTENTS

The Diamond	1
Pi and the Length of Rivers	1
The Big Blue Umbrella	2
Point out the Way — #1	2
Dnyaneshvari — #1	7
Mysteries of Matter	9
Can We Love Without Attachment?	12
The Divine Passive Law	14
Quantum Theory	15

many millions of decimal places, to no readily apparent purpose: no perfect circles or spheres exist in nature, since matter is composed of atoms and therefore lumpy, not smooth.

Nature herself sometimes takes to rounding off the more extreme decimals of numbers when they get sufficiently small, as Prof. Heisenberg has pointed out. However, the continued extension of pi provides a harmless exercise of computer power which would otherwise be misused playing Quake or surfing pointless web sites.

Pi and Atmospheric Pressure

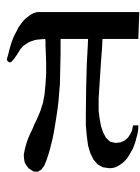
Jonathan Bradshaw points out that standard atmospheric pressure is defined to be $P = 0.101325$ MPa (This is a human-defined value, which is approximately the average pressure at sea level.) Curiously, if you take the square root of this number and then divide 1 by the result (the reciprocal of the value), you get 3.14153.

The record has been broken!

In September, 1999, Dr. Kanada of the University of Tokyo calculated [206,158,430,000](#) decimal digits of pi (approx. $3 \cdot 2^{36}$).

"Probably no symbol in mathematics has evoked as much mystery, romanticism, misconception and human interest as the number pi (π)."

— William L. Schaaf, *Nature and History of Pi*



THE BIG BLUE UMBRELLA

The sky and our aspiring ideations give each of us a *big blue umbrella*. No two are alike, so it is truly "Unity in Diversity." This column has echoes from that great expanse: the *three fundamentals*—

Zero-ana, is the Chackra or circle of Vishnu, the mysterious emblem which is, according to the definition of a mystic, "a curve of such a nature that as to any, the least possible part thereof, if the curve be protracted either way it will proceed and finally re-enter upon itself, and form one and the same curve—or that which we call the circle." No better definition could thus be given of the natural symbol and the evident nature of Deity, which having its circumference everywhere (the boundless) has, therefore, its central point also everywhere; in other words, is in every point of the Universe. The invisible Deity is thus also the Dhyani Chohans, or the Rishis, the primitive seven, and the nine, without, and ten, including, their synthetical unit; from which IT steps into Man. Returning to the Commentary (4) of Stanza IV. the reader will understand why, while the trans-Himalayan Chackra has inscribed within it $\Delta | \square | \star$ (triangle, first line, cube, second line, and a pentacle with a dot in the center thus: \star , and some other variations), the Kabalistic circle of the Elohim reveals, when the letters of the word (Alhim or Elohim) are numerically read, the famous numerals 13514, or by anagram 31415—the astronomical (pi) number, or the hidden meaning of Dhyani-Buddhas, of the Gebers, the Geborim, the Kabeiri, and the Elohim, all signifying "great men," "Titans," "Heavenly Men," and, on earth, "the giants." [S.D.I,114]

POINT OUT THE WAY

Point out the Way is subtitled: "The Three Fundamentals and Questions Answered at an informal Ocean Class." John Garrigues conducted this class in the early 1930's at the U.L.T. in Los Angeles. It was taken down stenographically and published by *The Theosophical Movement*, Mumbai, India. The series ran from January, 1951 through July, 1954.

The First Fundamental

Question: Is it possible for a great intellect to understand *The Secret Doctrine*?

Answer: The Three Fundamental Propositions are a part of *The Secret Doctrine*. So, if we understood *The Secret Doctrine*, we would understand the Three Fundamental Propositions. But, in any event, let us examine the term "intellect." We habitually use it to mean that our intellect exists apart from other intellects, and apart from the other elements in our nature. Certainly, any ordinary man of average intelligence, of good intellectual comprehension, could follow clearly everything that H.P.B. has written.

But it would do good only so far. He would derive merely an intellectual benefit from it, because intellect was the only one of the elements in him that he had exercised. He might see that all *The Secret Doctrine* statements are correct. There are very able men in the Theosophical field, and always have been — able men in our sense of the word — who know *The Secret Doctrine* intellectually.

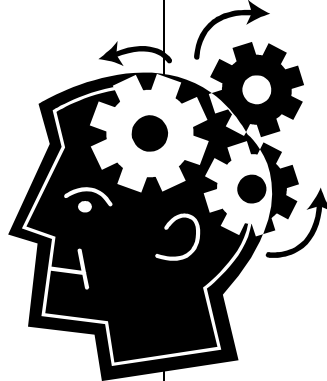
What is the matter with them? They have forgotten a more important element than the intellect — the Will.

What is the good of all the knowledge in the world, without the Will to apply what we see, what we know? *Theosophy is devoted primarily not only to the education of our minds, but to the arousal of the will. The Will cannot be aroused from outside; the intellect can.*

Question: If our knowledge commences with manifestation, does this mean that our knowledge can never include the Unmanifested?

Answer: This question ought to bring us back to what we understand. What picture is raised in our minds by the word "knowledge"? We can't know anything as object or as subject, save and except to the extent that it manifests itself. What do I know of any of you? Nothing whatever, except what I perceive. Your body, your expression, your words, your acts, all that I ever can see is what I can know; all that I can see and know is your *manifestation*, not you. So the word "knowledge" always means duality: the knower — yourself, myself, any other self — and what is known. What is known is always what is manifest.

Take another term altogether, which should raise in us the picture that H. P. Blavatsky tries to draw, particularly in the First Fundamental Proposition. What do we mean when we use the compound word "self-knowledge"? In the use of the word "knowledge," I know by means of the five senses, by means of the mental inferences or deductions that I make, and by the pictures afforded through



the five senses; and I know by comparison of the pictures that I take with the pictures that you take. Self-knowledge has nothing to do with the five senses. Self-knowledge has nothing whatever to do with the mind. Our self-consciousness is not the product of our body, or of our sense, or of our mind. What is it? Why, it is the coming to live — to the consciousness of Self here in this body and in these circumstances — of that which eternally has been here but has been asleep to Self. However much it may have been awake to pictures or mental images, it has been asleep as the Self.

Take what to us is a convenient word to represent the beginning of matter and the essence of form — call it an atom. The First Fundamental proposes that what we call an atom is just as much Life as that which we call a Mahatma. Both are identical in their origin, in their substantial or real nature; both are identical with the One Principle of life, and yet the gulf between an atom and a Mahatma is the gulf between unconsciousness and consciousness, imperfection and perfection, *beginning and end of any cycle*. H.P.B. says that every atom has in it the potentiality of self-consciousness. The Mahatma is aware of that self-consciousness; it is active and universal in him; but in the atom it is asleep; it is not yet awake.

Question: How far does the “substance” of Spinoza’s conception agree with the First Fundamental?

Answer: Turn to Volume I of *The Secret Doctrine*, to the section on “Gods, Monads and Atoms,”

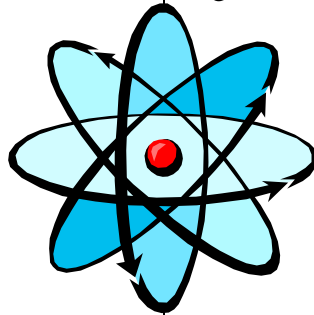
beginning about page 610. H.P.B. gives the fundamental idea of Spinoza and goes quite at length into the fundamental ideas of Leibnitz, showing that between the two is the esoteric doctrine. Leibnitz conceived of the universe as an infinitude of living centers of action, each one of them a kind of spiritual being; but he had to account for their origin. This he did by postulating some kind of supernal extra-cosmic deity of which all living things are the children. We can see the anthropomorphism that governed his perception of the infinitude of purely monadic beings.

Spinoza conceived of an infinite and changeless divine substance that never had a beginning, can never die; but he could not account for the fact that there are *beings* in the world. There was a gap between the simplicity of substance and the multiplicity of beings.

Now if we take the First Fundamental, which represents Spinoza’s conception, and the Third, which represents that of Leibnitz, and unite them by means of the Second Fundamental, we have the true esoteric teaching.

Question: It is said that everything which we see is seen inwardly. But how is it possible that objects visible to the naked eye can be seen within?

Answer: Well, isn’t there more than one kind of seeing? One may be on the outside of a thing and see it as within oneself. This is the process that we partly know and use and call “feeling,” “memory,” “thought,” and refer to as “faith” and “hope” and

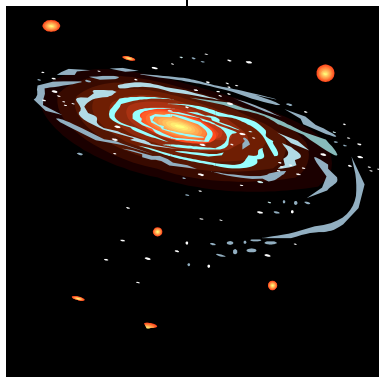


“aspiration,” and by many other terms. In other words, there is a mental or metaphysical universe: it is life regarded as internal to ourselves. Then there is the identically the same life regarded as external to the form we occupy, and that life regarded as external is what we call space and matter and the stars and planets.

Very, very difficult it is for us to grasp the reality. Once H.P.B. used an expression something after this fashion. It must be about page 75, in the first volume of *The Secret Doctrine*, and it is repeated in other places. It is to the effect that the same initial difficulty confronts us all — the apparent multitude of objects and their diversity. But that exists *in our consciousness* and nowhere else. Change our state of consciousness, and all the conceptions that we now take to be realities cease to be. We are there, Life is there, and behold, we begin to perceive another state of impressions. What was there in the beginning? Why, in the beginning there was Life, and Life was full of impressions, and Life was busy with those impressions. What is there after death? The same Life, and we, busy with our impressions. But these impressions change with the nature of the being, and that is again our Third Fundamental.

It ought to be simple enough for us to see that our perception of Space is founded upon sense perception, whether in this world or in another. If you can see, there is Space wherever you go; also if you can't

see, there is Space wherever you go. Or take our conceptions, which we all locate in time — last year, last week, last month. The sense of time is due to a change of the state of consciousness. H.P.B. says that time is an illusion produced by the changes or succession of the states of our consciousness as we travel through eternal duration. If a man is happy, 100 per cent happy, there is no time; if a man is 100 per cent unhappy, there is no time. Time, therefore, is due to the contrast of sight and sound in every case; the contrast of the two senses gives us the mental sense of time. Time is a mental sense of action, a mental sense of objects.



All this universe was once subjective; that is, internal to our consciousness. It now is internal to the consciousness of the Mahatmas — it is not an external universe to Them. In their consciousness this universe is subjective; it is Their mind; it is Their intelligence; it is Their knowledge; it is Their wisdom. When the Three Fundamentals are seen, the universe entire is internal to ourselves; the universe entire is external to ourselves; the universe is part internal and part external; the universe ceases to be altogether internal and external, as we think it. What else could it be to be a Mahatma? It is hard to realize that *duality* and *multiplicity* exist in the perceiving consciousness and nowhere else, but *The Secret Doctrine* and its three basic propositions exist to help us toward this realization.

Question: Should we not make a distinction between limited space and the Space of the First Fundamental?

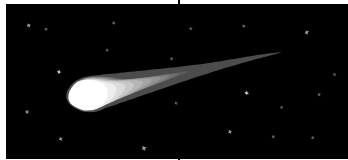
Answer: Yes; Space is given to us as the perfect symbol of the One Self, the One Reality. Why? Because it is that in which all things live and move and have their being; it is that which is the background of consciousness, the field of perception and the arena of action for any and every being of every description. So when we get the spiritual conception of Space, we can appreciate what H.P.B. said in another place. She said, "I have tried my best to convey to Theosophists, to arouse in them, the perception that there is but one Reality; that It is omnipresent; that It neither was nor will be; **It eternally is.**" She said she had tried in vain to arouse them to see that. "Now," she said, "once that is seen, that we came from That, that we exist in That, and that sooner or later we must return to That — all the rest becomes easy."

Question: The First Proposition of Theosophy states that all is Life, whether in form or out of form. Why, then, should we worry as to man's using an animal form? Since the consciousness that is using the animal form will some day extend to the human form, in previous periods of evolution this humanity of today must have used animal forms.

Answer: Let us get H.P.B.'s definition of "animal;" she is speaking in terms of consciousness when she says "animal;" she is speaking in terms of consciousness when she says "Buddhi;" she is speaking in terms of consciousness

when she says "Manas," or "Atma," or "Buddhi;" but in our reading of these terms, we translate them into terms of form and action as experienced by us here and now through our physical senses. What is an animal, according to Theosophy? It is the germ of awakening consciousness, the germ, exactly as the embryo is the germ of a human being. And what is human consciousness? It is the next stage beyond the germ stage: that is, human consciousness stands in the same relation to the consciousness of Manas — Egoic self-consciousness — as the foetus stands in relation to the body after it is born. First, the embryo; then the foetus; then the body that is born. First, the germ of consciousness; then the unification, through experience, of those germs until a stage is reached where a contact point is set up with a higher form, and that is the so-called "mindless" man; then we have the human stage, and there the same struggle begins over again in order for the individual to reach Egoic self-consciousness or regain it — just as the mass in the kingdoms below struggled to reach human self-consciousness.

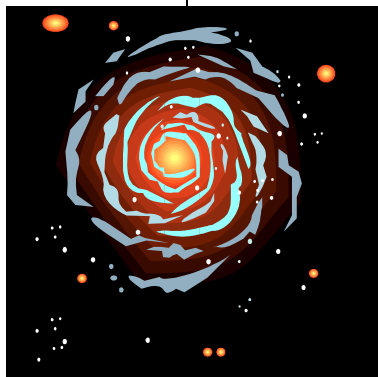
Human self-consciousness never was germinal self-consciousness; the baby body never was the foetus; the foetus never was an embryo. What do the three words represent? Three stages in the evolution of a human form. Apply that, then, to the mineral, vegetable and animal kingdoms. To make the category complete, three elemental stages; then the mineral stage, the vegetable stage and the animal stage of consciousness. That



is all part of developing the germs of experience which constitute an individual entity; then occurs the lighting up of Manas, or the reflection of Self, in that combination of germs, and we call that “human” consciousness. Now, looking at it from the stand-point of stages in the journey of consciousness, we can see that while it is one and the same Monad or Spark, or Soul, these words — elemental, mineral, vegetable, animal, and human — are by us interpreted in terms of **form**, while their meaning is **stages in the awakening of consciousness**. The man was never an animal any more than Devachan was ever Kama-Loka. The various kingdoms represent stages or states through which one and the same **Perceiver** passes.

Question: If the First Fundamental transcends human conception and expression, how can that be regarded as a practical basis for thought and action?

Answer: The statement of the First Fundamental Proposition is that there is a center in each one of us on which everything else turns; that center is no “place” — it is a center of consciousness. Now, we know that nothing exists for us unless we are conscious of it, or unless we are aware of it. So, can’t we see at once that **consciousness** is the reality to us, and that existence has no place whatever except for that reality? Let us extend the idea; bring it home to ourselves. We are limited, but the only limitation is our own conception and perception. Extend that idea — it



is true of all others; it is true of all life. No existence is apart from That. There is the principle and basis for all experience of every kind.

Imagine a railroad station, a few minutes before train time. Looking at the whirling mass of humanity, all the people moving, full of excitement, did you ever think that there must be something permanent somewhere? We can watch our own reactions; every time someone passes in front of us, we think about it; we have some feeling about it; and people are passing all the time. Our own reactions are like that — changing — first one thing, and then another, first one color, and then another. All of a sudden it may come

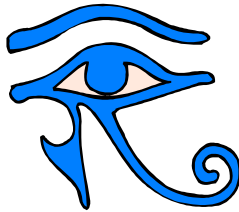
home to us: **We** don’t change at all. We have these thoughts, and they change; we have these feelings, and they change; but we are the beings who have them. We have not changed with any of the feelings and thoughts, and we can

relate, say, **one change to another**. We could not if we were any of the passing impressions. Thus, there must be something permanent in us.

All down the ages, people have been trying to find God, and they have erected all sorts of mental images. Usually reflections of themselves and carrying human virtues to the nth degree, and also displaying a great many human defects. They have placed this God in some impossible heaven somewhere — no two heavens alike, no two Gods alike, either. The real

Spiritual Teacher on whose teachings the religions afterwards were founded never taught any outside God like that; They all taught the God within, this changeless something which everyone is. Theosophists call it a Principle; they don't call it a God because people make a *being* of a god. Theosophists say that there is one changeless essence — a Principle, not a person, which is the sustainer of all, the source of all. Interesting? Yes, isn't it? It is ennobling, too, because it makes of every man a god, and why not? All that any man can know of God is what he knows in himself, through himself and by himself.

TO BE CONTINUED

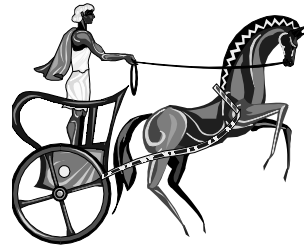


DNYANESHVARI

[The *Dnyaneshvari* is mentioned many times by Madame Blavatsky, always in glowing terms. The following rendition is extracted from Manu Subedar's translation. The great Sage, Dnaneshwara Maharaj sang this work to his people when he was quite young. He did it in their native language, Marathi, about 700 years ago. It is his commentary on the *Bhagavad Gita*.]

[The epic of the Maha-Bharata or the Great War deals with the story of the conflict between Duryodhana, the head of the Kauravas, and the five Pandava brothers, of whom Arjuna is the principal warrior. Bhishma, the common grand uncle of both sides, is pledged to service on the side of the Kauravas. Drona, the common teacher of both

sections, who instructed them in the art of warfare, is also fighting for the Kauravas. The Kauravas are "de Facto" rulers, who have got hold of the sovereignty wrongfully and who are unwilling to restore the whole or any fraction of the kingdom to the Pandavas.]



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The army of the Pandavas was spread out in a magnificent array of every description of fighting unit, but Duryodhana was not afraid. Approaching Drona, the common preceptor, he complained that the arrangement of the army was fixed by one of his pupils and contained so many super fighters such as [— then follows along list of symbolic names, all carrying a story in themselves.]

In surveying the army of his adversary, **Arjuna** saw there his uncles and grand-uncles, his preceptor, the relations of his mother, his cousins and their children and grand-children and those that had been his erstwhile friends. He saw the relations on his wife's side and the companions of his youth. He was then overcome by compassion and regret.... And declared to Krishna:

"I cannot stand her for a moment more. The very idea of killing these men makes me tremble. I cannot see any good in this fighting. I do not want triumph in war. Nor do I want a kingdom. What is the use of a throne with all its amenities or of life itself, when, those for whom we should exert, are dead? I shall not raise my hand against them even for an empire. I consider it sinful to kill my cousins. How can happiness be reached through the infliction of death?"....

With these words, Arjuna jumped out of the chariot and threw away his

weapons and stood in the middle of the battlefield, a broken man and a pitiable figure, like a swan stuck in the mud.

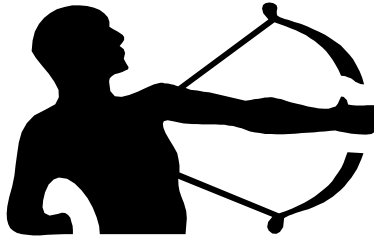
Chapter Two

Krishna replied:

What is the matter with you? Why have you lost courage? You are a great hero and a model Kshatriya with an unsullied name. You conquered (the god) Shankara in battle and you wiped out the race of Niwat and Kawache, showing incomparable valour. Your attitude at the call of battle is as incomprehensible as darkness covering the sun, nectar meeting with death, wood absorbing fire, salt dissolving water, the frog swallowing the serpent, or the fox defying the lion. You are a sensible man. Wake up. Take courage. War is not made with rose water. Live up to your reputation and get rid of these silly ideas. Kindness towards opponents in battle is misplaced. What is the use of thinking who your opponents are at this moment? Did you not know hitherto that the Kauravas were your kinsmen? You should have thought of all of that before. Nor is fighting a novelty to you in your life. It is an old standing quarrel and this eleventh hour compassionate timidity will destroy your good name as well as your happiness. Retreat in battle for a warrior is as bad as death.

Arjuna speaks:

Please bear with me a little. It seems to me that this is not war but damnation. It will lead us into sin and will compel us to raise our hands against senior members of the family, whom we should really serve and obey at all times. Sages, who should be held in respect and worshipped, must not be slandered and



defamed by harsh words. Similarly I find in the enemy's ranks those to whom I owe a debt of gratitude, who have brought me up and taught me what I know. How can I return this obligation by causing their death? There is my preceptor, whose kindness is comparable with the calmness and depth of the sea. I think of the firmness of his mind, of the limitless affection and of the immeasurable greatness of Drona, my great teacher. Even the throne of an empire would not make me raise my hand against him and I would sooner seek the seclusion of a mountain cave than fight him. I am not looking for enjoyment soaked in the blood of these men. Pleasures resulting from victory here have no charm for me. I do not, therefore, agree with what you say about fighting. I am saying what comes to my mind. I am puzzled. Please show me a better way, if there is any. I want to take the right course which is not repugnant to the path of duty (Dharma). You have been on previous occasions a source of solace and guidance. I seek this from you. My mind is oppressed with a feeling of grief....

[To be continued]

MYSTERIES OF MATTER

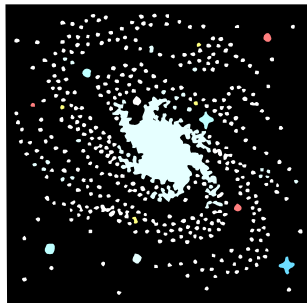


Newton's law of gravity predicts that planets on the edge of our solar system, like Pluto, orbit at speeds slower than those planets that are close to the Sun, like Mercury. This law was shown to be correct, because Mercury orbits the Sun at a velocity about 10 times faster than Pluto does. According

to the theory, the same should be true for spiral galaxies. The more distant a star is from the center of the galaxy, the slower its orbital velocity should be.

As far back as 1950, an astronomer by the name of Vera Rubin tried to persuade fellow astronomers that the stars on the periphery of many galaxies displayed unusual motion. She discovered that the predicted relationship between the speed at which a star traveled and its distance from the center of the galaxy didn't work out. Her results showed that stars at the edges of their galaxies orbited at the same speed as those closer to the center. This result either means that Newton's law of gravity falls at a galactic level or that galaxies have a lot more matter than we can see. Newton's law of gravity and later Einstein's general theory of relativity worked so well at describing observations in our galaxy that no one was willing to believe these laws were different in far away galaxies. So the search for the mysterious missing matter was on.

If you were to look at a galaxy through a telescope, you would see that most of the mass of the galaxy is concentrated



toward the center and that the galaxy becomes less dense as you look out to the edges. But according to Rubin's discovery, which has since been verified by many astronomers, the stars at the periphery move as if they were embedded in a much greater mass — so much mass that it must extend way beyond the edge of the galaxy. If this information is correct, and most astronomers agree with her findings, then the galaxies are not at all what they appear to be. The stars we

see must be swamped in an immense quantity of some kind of invisible mass.

Data was collected on hundreds of galaxies, and they all behaved the same way. This evidence led to the conclusion that the major component of galaxies is *dark matter*. This matter is dark, because it can't be seen. This revelation became an obsession among cosmologists. Some of the questions that they asked were:

- What is dark matter made of?
- How much of it is there?
- How will it impact the fate of the universe?
- What role does it play in the formation of galaxies?
- How does it affect our understanding of the origin of the universe?

For cosmologists, these are some pretty profound questions to ask, and very few of them have been answered. The one thing we know fairly accurately is that what we can see — in other words, all of the mass from the billions of galaxies that have been observed — accounts for only 1 percent of all the mass in the universe. As much as 99 percent of the mass in the universe is dark matter. You can't see it, but it lies at the very heart of how the universe is structured.

The issue of what dark matter is made of gets a little more difficult. Scientists can account only for 10 percent of the total amount of what dark matter is. The other 90 percent, and scientists hate to admit this, is some kind of exotic material, and there are only a couple of clues as to what it is. The best clues may come from particle physics. Some theories predict the existence of a particle that has the characteristics that physicists have defined as being required of dark

matter. But more powerful accelerators are needed to artificially create this particle, because its energy content is very high, and our existing accelerators aren't powerful enough. Also, another type of particle, called the axion, may account for a lot of the dark matter. However, axions are even more elusive than the neutrino. Researchers have been looking for just one axion for several years, and have not seen even one!

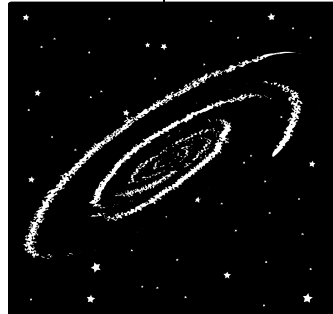
To sum up: Dark matter is an invisible material that constitutes a large percentage of the mass of the universe. It's revealed by gravitational effect on visible matter such as stars and galaxies.

For now, the riddle of dark matter remains unanswered. Another unusual discovery, and a topic of science fiction for years, is the existence of *black holes*. These holes are some of the most difficult objects in space to detect and measure. Their existence was speculated about as far back as the eighteenth century, when scientists imagined the possibility of worlds so massive that nothing could escape their gravitational grip, including light. In 1939, Robert Oppenheimer, the father of the atomic bomb, used Einstein's general theory of relativity to explain how a black hole might form. He showed that a black hole warps space so that not even light can escape.

These holes may inhabit the centers of galaxies including the Milky Way. The center of our galaxy emits intense gamma radiation, which could be the result of stars falling into a black hole. But for several decades, black holes were merely thought to be a mathematical curiosity, because no one thought that it was possible that physical objects could

collapse to the state of extreme density that would be required to make a black hole.

Today it's known that neutron stars are produced when a massive star explodes as a supernova. Black holes are thought to be produced by the same process. If this type of explosion were to take place close to another star, for example when two stars orbit each other, it would strip matter from the other star to form a disc of hot material that would funnel into the black hole. The material would be so hot that it would radiate x-rays, thereby making it detectable. Since the early 1950s, many objects like this have been found. Based on the number that have been detected so far, it is estimated that there are roughly 100 million black holes in our galaxy, which contains about 100 billion visible stars.



Another speculation has suggested the existence of *wormholes*, which are tiny black holes that may form tunnels through the space-time continuum. You can think of a wormhole as a shortcut through the space-time continuum, a sort of cosmic subway that connects two black holes. The other end could be anywhere.

Many scientists have scoffed at the concept of wormholes, but in the 1980s physicists at Caltech showed that they could exist. Using Einstein's general theory of relativity, they found solutions to this equations that theoretically allow for the existence of wormholes. Einstein himself, along with Nathan Rosen at Princeton, discovered certain equations based on his general theory that represented what could be a black hole con-

necting two regions of flat space and time.

The difference between a black hole and a wormhole is simple to understand. A black hole is a one-way ticket. You can get in, but you can't get out. On the other hand, a wormhole allows for two-way traffic.

It's essentially two black holes connected together. The possible existence of naturally occurring wormholes suggests some interesting possibilities to physicists:

- If wormholes exist on the scale of the Planck length, which is the smallest measurement of length that has any meaning, they could provide a sort of foam-like structure of space and time, weaving the very fabric of space and time out of wormhole strands.
- These ultra-subatomic, very, very, very small wormholes could link distant parts of space together and leave the laws of physics to all parts of the universe, thereby assuring that the principles of physics work everywhere
- The small wormholes could also be seen as equivalent to the tiny strings theorized in super string theory. They could help explain the structure of matter on the smallest scale, possibly providing the missing link to the theory of everything.
- Time travel has been the topic of many science fiction stories, but it was never considered possible. In order to travel back in time, it would be necessary to travel faster than the speed of light, and as far as we know that's impossible. Einstein's

theory of relativity states that as an object approaches the speed of light, its mass increased.

- The speed of light is never attainable, because at that speed the mass would become infinitely large, therefore requiring infinite energy to make it accelerate.
- But now, with the theories of wormholes, time travel may become a possibility, using the wormhole as a gateway through time. It's still all just theory, but at least there's nothing in the laws of physics that would prevent it from happening.

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[*Idiot's Guide to Understanding Einstein*, pp. 333-37, by Gary F. Moring; Macmillan, 2000.]

CAN WE LOVE WITHOUT ATTACHMENT?

Is it possible for the average man and woman to love without desire or selfishness? Or is this the privilege of saints and holy people?

Our so-called love is usually conditional. We love our husband or wife if they are faithful to us. We love our children only if they are not disrespectful or rebellious. We love our friends only if they do not betray us.

Can we not love irrespective of the benefit that the loved one gives us? Can we truly love a stranger? Can we love an enemy or one who hates us?

The possibility of altruistic love has been affirmed not merely by great religious founders, but by great thinkers in history.

The essayist Montaigne, for example, wrote: "In true friendship, wherein I am perfect, I more give myself to my friend, than I endeavor to attract him to me. I am . . . better pleased in doing him service than if he conferred a benefit upon me."

But even such altruistic attitude may have a limit. If the friend betrays him, will he still give of himself unselfishly?

To explore this, we have to see whether it is possible to love without desire or attachment. And we have certain experiences common to almost all of us to start with in our exploration.

Have we ever appreciated another person without thought of self-benefit? Most of us have. It can be a simple feeling of admiration towards a good person. It can be the spontaneous affection we have for a child or a baby whom we have seen for the first time. It can even be a compassionate appreciation of a character in a movie.

While these might be just fleeting experiences, we should not disregard them as unimportant. These flashes of selfless attitude are vital hints for a more permanent quality of being which can be applied to everything around us. These are moments when there is spontaneous appreciation untainted by the needs of the self.

Have you ever been engulfed by the beauty of a valley, or a sunset, or a drifting fog? The feeling of enchantment is spontaneous. The experience is positive and final. A moment later it is gone. But it does not matter. The momentary experience had its own value. And we do not grieve at its ending.

The experience of Joanna Field, an English author and analyst, is a typical example of this encounter:

One day I was idly watching some gulls as they soared high overhead. I was not interested, for I recognized them as "just gulls" . . . Then all at once something seemed to have opened. Idle boredom with the familiar became a deep-breathing peace and delight. My whole attention was gripped by the pattern of rhythm of their flight. . . .

If just looking could be so satisfying, why was I always striving to have things or to get things done? . . . I began to wonder whether eyes and ears might not have a wisdom of their own.

It is seeing things and people without a memory, without calculation, without judgment. Such a way of looking is not an indifferent attitude.

There is a spontaneous appreciation of the nature of things and people as they are. And such appreciation is not sterile. It results in action, in compassionate behavior.

Next time we look at our spouse, children or officemate, can we see them as they are, without judgment, without preconception? Can we experience the enjoyment of a child when he plays with dirty soil without our tendency to stop them from becoming "dirty"?

Krishnamurti, whose life-work has been to help people to transform their quality of living, once said:

You really love only when you do not possess, when you are not envious, not greedy, when you are respectful, when you have mercy and compassion, when you have consideration for your wife,



from the first creation got hold of it and being said to have appropriated it for themselves, as in the allegory of Prometheus.

The *Agnishwatta* or Prometheans, devoid of the grosser *creative fire*, hence unable to create physical man, having no *double*, or astral body, to project, since they were without any *form*, are shown in exoteric allegories as Yogis, Kumaras (chaste youths), who became “rebels,” *Asuras*, fighting and opposing gods, etc., etc.

As the allegory shows, the Gods who had no personal merit of their own, dreading the sanctity of those self-striving incarnated Beings who had become *ascetics* and Yogis, and thus threatened to upset the power of the former by their *self-acquired* powers—denounced them.

All this has a deep philosophical meaning and refers to the evolution and acquirement of divine powers through *self-exertion*. Some Rishi-Yogis are shown in the Purânas to be far more powerful than the gods. Secondary gods or temporary powers in Nature (the Forces) are doomed to disappear; it is only the spiritual potentiality in man which can lead him to become one with the INFINITE and the ABSOLUTE.

[Extracted from *S.D.II*, pp. 78-81]

QUANTUM THEORY

Quantum theory is open to different interpretations, and this paper reviews some of the points of contention. The standard interpretation of quantum physics assumes that the quantum world is characterized by absolute indeterminism and that quantum systems exist objectively only when they are being measured or observed.

David Bohm's ontological interpretation of quantum theory rejects both these assumptions. Bohm's theory that quantum events are partly determined by subtler forces operating at deeper levels of reality ties in with John Eccles' theory that our minds exist outside the material world and interact with our brains at the quantum level. Paranormal phenomena indicate that our minds can communicate with other minds and affect distant physical systems by nonordinary means.

Whether such phenomena can be adequately explained in terms of nonlocality and the quantum vacuum or whether they involve superphysical forces and states of matter as yet unknown to science is still an open question, and one which merits further experimental study.

[Abstract of David Pratt's article, “Consciousness, Causality and Quantum Physics,” located at: <http://www.jse.com/>]



GALLERY OF GALAXIES

Hubble peers back more than 10 billion years to reveal at least 1,500 galaxies at various stages of development.

<http://opposite.stsci.edu/pubinfo/gif/HDFWF3.gif>