Thesis

Metaphysics Of Quality And The Hypothesis Of Morphic Resonance

Version 0.2 from 12.04.2000 10:33

(Johannes Plachy)

(Printed: 20.05.2002)


American College of Metaphysical Theology

Minneapolis, Minnesota

hereby confers upon

Johannes Plachy

The degree

Doctor of Philosophy

together with all the rights, privileges and honors and marks of distinction thereto in consideration of the satisfactory completion of the course of study prescribed in

Metaphysics

in witness whereof. The signature of its chancellor has been affixed the Seventh Day of January, Two Thousand and One.

Dr. Jay Wise, Chancellor

Table of Contents

1 Abstract

In the following chapters I will discuss the basic questions of moral and quality as described by Carlos Castaneda in his famous books and compare them to the writings of Robert M. Pirsig. I will point out the different kinds of quality, the biological background as well as – fuck there are missing some wise words… god damn….

A Troy-town

The name Troy-town, or Walls of Troy, allude to the defense walls around the ancient city of Troy. The origin of the Troy-town design is shrouded in mystery and might even antedate the fabled cities. The above design is from a Troy-town outside the medieval town of Visby on Gotland; the actual labyrinth is 19 meters wide. One cannot get lost in a Troy-town labyrinth. At the endpoint one rests, and according to Nordic folklore, finds ones hearts desire. The Metaphysics of Quality is like a Troy-town in that respect.

2 Metaphysics of Quality

"You want to explain the nagual ***with the*** tonal***. That is stupid..." - don Juan to Carlos Castaneda [ToP]***

Now the image of the raggedy Indian dog was back, and he realized what it meant. - Robert M. Pirsig [Lila]

Robert M. Pirsig has written a very interesting encore to Zen and the Art of Motorcycle Maintenance ***[ZaM]*** called Lila ***[Lila]***; An Inquiry into Morals in which he outlines his philosophy called the Metaphysics of Quality. When I first began this paper, I thought perhaps to contrast Pirsig's Metaphysics of Quality to Zen teachings, especially in the way Dynamic Quality is represented as an unknowable ***something***.

The more I thought about it though, the more I realized that I know nothing at all of Zen and have never really studied it, and besides, I see many others have written about that connection already...I wanted something new, a different angle. And while re reading Lila I came across this passage:

Phaedrus thought that this lapse in logic magically fitted the thesis he had started with: that the American personality had two components, European and Indian...even the language was changing from European to Indian... [Lila] P320

Here there seemed to be an angle that few had explored yet. I remembered reading about the ***brujo*** and searched through Lila for just what it was I remembered:

If you had asked the brujo ***what ethical principles he was following, he probably wouldn't have been able to tell you. He was just following some vague sense of 'betterment' that he couldn't have defined even if he wanted to. [Lila] P132***

This passage had never set right with me the first time I read it, and it still didn't. Suddenly I saw [ToP] by Carlos Castaneda on my bookshelf and a flash of inspiration occurred! Here was the real ***brujo*** Pirsig was talking about! And not only that, I am very familiar with Castaneda's work, having read most of his books multiple times. This is something I could write about!

Now I knew why that passage always bothered me...it was an incorrect assumption on Pirsig's part as to what constitutes a ***brujo***. The ***brujo*** described in Lila was: ***...said to have been peering through a window from outside, and this is a sure mark of a witch. At any rate, he got drunken one day and boasted that they could not kill him. [Lila] P126***

Now I began to wonder if the man described as a Zuni ***brujo*** was merely a sham, a wannabe brujo, who nevertheless was in touch with something very Dynamic. A more powerful ***brujo*** would never have revealed himself to be what he was in the first place and of course would have slipped through the anthropological cracks. Sure enough, my suspicion was confirmed when I found this passage of Castaneda's:

"No one can sneak up on a brujo***, even if he is old", Benigno said with authority. "They can gang up on him when he's asleep, though. That's what happened to a man named Cevias."***

I asked him to give me all the details of that event, but he said that people secretly believed Cevias had been only a fool, and that no one could harm a real sorcerer. [aSR] p70

Carlos Castaneda first met don Juan in a bus depot where they were introduced by a mutual acquaintance. Castaneda was interested in learning about medicinal herbs in the region and intentionally represented himself as knowing far more about plants than was true. Does don Juan explain his 'ethical principles'? After they had been acquainted for some time, Castaneda writes:

"Who are you, really?," I asked. He seemed surprised. He opened his eyes to an enormous size and blinked like a bird, closing his eyelids as if they were a shutter. They came down and went up again and his eyes remained in focus. His manoeuvre startled me and I recoiled, and he laughed with child-like abandon. "For you I am Juan Matus, and I am at your service..."

"Why are you doing this to me?" I asked. There was no belligerence in my question. I was only curious as to why it was me in particular.

"You asked me to tell you about plants", he said. I noticed a twinge of sarcasm in his voice. He sounded like as if he were humouring me.

"But what you have told me so far has nothing to do with plants," I protested. His reply was that it took time to learn.

"What is wrong with you when I saw ***you, and what is wrong with you now, is that you don't take responsibility for what you do," don Juan said. "When you were telling me those things in the bus depot you were aware that they were lies. Why were you lying?" I explained my objective was to find a 'key informant' for my work. Don Juan smiled and began humming a Mexican tune.***

"When a man decides to do something he must go all the way," he said, "but he must take responsibility for what he does. No matter what he does, he must know first why he is doing it, and then he must proceed with his actions without having doubts or remorse about them." (***[JtI]*** p38)

I have looked in vain in Lila for anything resembling the ethical principles as powerful as these. This IS the morality of the universe! And so it became increasing clear to me that what Pirsig uses as an example of a brujo in Lila and what a ***brujo*** really is could be likened to the difference between a layperson and a Buddhist master in Zen.

There is a powerful point of interaction between these two philosophies. Castaneda writes:

...[don Juan] explained that every human being had two sides, two separate entities, two counterparts which became operative at the time of birth. one was called the 'tonal' and the other the 'nagual'...He smiled and winked at me. "I am using your own words now," he said. "The tonal ***is***

the social person... the tonal ***is, rightfully so, a protector, a guardian- a guardian that most of the time turns into a guard...The*** tonal ***is the organizer of the world, perhaps the best way of describing its monumental work is to say that on its shoulders rests the task of setting the chaos of the world in order...The*** tonal ***is everything that we are; name it! Anything we have a word for is the*** tonal***."***

"The tonal ***is an island...the*** tonal ***is like the top of this table. There is a personal*** tonal ***for each of us, and there is a collective one for all of us at any given time...***

"The nagual ***on the other hand is the part of us which we do not deal with at all...the*** nagual ***is the part of us for which there is no description- no words, no names, no feelings, no knowledge...I have named the*** tonal ***and the*** nagual ***as a true pair. That is all I have done."*** [ToP] P128

It is clear that don Juan divides reality into what is perceived, the ***tonal*** and what is not perceived and never can be, the ***nagual***. Pirsig writes:

After many months of thinking about it, he [Phaedrus] was left with a reward of two terms: Dynamic good and static good, which became the basic division of his emerging Metaphysics of Quality. [Lila] p133

With the identification of static and Dynamic Quality as the fundamental division of the world, Phaedrus felt that some kind of goal had been reached...He saw that much can be learned about Dynamic Quality by studying what it is not rather than futilely trying to define what it is. [Lila] p138

Static quality patterns are dead when they are exclusive, when they demand blind obedience and suppress Dynamic change. But static patterns, nevertheless, provide a necessary stabilizing force to protect Dynamic progress from degeneration. Although Dynamic Quality, the Quality of freedom, creates this world in which we live, these patterns of static quality, the quality of order, perserve our world. Neither static nor Dynamic Quality can survive without the other. [Lila] p139

Pirsig says: ***Dynamic Quality is not structured and yet it is not chaotic. It is value that cannot be contained by static patterns. [Lila] P164***

The beauty of that old Indian, Phaedrus thought, is that he seemed to have understood this. [Lila] P139-140

Pirsig's Dynamic Quality can only be described through analogies. Its essence is indefinable, for once it is defined, it is no longer Dynamic Quality, but something else. Castaneda takes a somewhat more mystical approach to Dynamic Quality, yet there can be no doubt both authors are describing the same 'thing'.

It is clear that the ***brujo*** don Juan is describing an elementary division of reality exactly where Pirsig places his division. Different words are used, ***tonal*** in place of static quality and ***nagual*** in place of Dynamic Quality. Yet there is certainly no mistake that they are

both describing the same underlying Quality and dividing it between what is experienced and what is not.

There is a remarkable similarity between Pirsig' Dynamic Quality and Castaneda's ***nagual***. Both are equally difficult to get a handle on and impossible to understand...unobjectifiable in other words.

I also find it extremely interesting that don Juan calls the ***tonal*** the social person. For those unfamiliar with don Juan Matus, he was a Yaqui Indian who referred to himself as a ***brujo*** or a sorcerer, and he spent ten years ***teaching*** Castaneda his philosophy. Don Juan encouraged Castaneda's writings even though he himself thought it was a useless exercise and in fact encouraged him to publish his manuscripts.

Castaneda asks don Juan:

"Are the nagual ***and the*** tonal ***within ourselves?" and don Juan answers: "Very difficult question... you yourself would say that they are within ourselves. I myself would say they are not, but neither of us would be right. The*** tonal ***of your time calls for you to maintain that everything dealing with your feelings and thoughts take place within yourself. The sorcerer's*** tonal ***says the opposite everything is outside. Who's right? No one. Inside, outside, it doesn't really matter." [ToP] p131***

There is no doubt that Don Juan is describing the subject / object split and ultimately decides it doesn't really matter. And Pirsig writes:

"If the world consists of only patterns of mind and patterns of matter, what is the relationship between the two? If you read the hundreds of volumes of philosophy available on this matter you may conclude that nobody knows...In a value-centred Metaphysics of Quality the four sets of static patterns are not isolated into separate compartments of mind and matter. Matter is just a name for certain inorganic value patterns." [Lila] p177-8

The subject / object split doesn't matter in Pirsig's Metaphysics of Quality either...what matters is Quality. In a Quality-centred universe, mind and matter, or subject and object, lose their significant meaning we have learned to assign to them.

Don Juan speaks of something he calls "a sorcerer's controlled folly", and Pirsig would seem to use controlled folly when he decides to write his Metaphysics of Quality, although he doesn't delve into just what he is doing as deeply as don Juan:

What made all this so formidable to Phaedrus was that he himself had insisted in his book that Quality couldn't be defined. Yet here he was about to define it. Was this some kind of sell-out? His mind went over this many times. A part of it said, "Don't do it. You'll get into nothing but trouble."

The trouble was, this was only one part of himself talking. There was another part that kept saying, "Ahh, do it anyway, its interesting." This was the intellectual part that didn't like undefined

things, and telling it not to define Quality is like telling a fat man to stay out of the refrigerator, or the alcoholic to stay out of bars. *[Lila]* ***p74***

Pirsig decides that the alternative to writing about Quality is ultimately a degeneracy into avoidance and decides to write about Quality simply because to not write about it would be folly. Without using the words, Pirsig is using 'controlled folly'.

"I wonder if you could tell me more about your controlled folly," I said. "What do you want to know about it?" "Please tell me don Juan, what exactly is controlled folly?" Don Juan laughed loudly and made a smacking sound by slapping his thigh with the hollow of his hand. "That is controlled folly!" he said, and laughed and slapped his thigh again.

"What do you mean...?" "I am happy you have finally asked me about my controlled folly after so many years and yet it wouldn't have mattered to me in the least if you had never asked. Yet I have chosen to feel happy, as if I cared, that you asked, as if it would matter that I care. That ***is controlled folly!"***

We both laughed very loudly. I hugged him. I found his explanation delightful although I did not quite understand it. *[aSR]* ***p78***

Perhaps its easier to see what Pirsig's motivations were now, and how his use of controlled folly resulted in his writing ***Lila***. There is a deep undercurrent of Zen-like teachings running through Castaneda's books. Perhaps this is why the philosophy of don Juan and Pirsig's Metaphysics of Quality have such striking similarities.

Throughout Castaneda's books, don Juan speaks of a ***path with heart*** which sounds very much like the notion of ***arete*** that Pirsig discusses:

Digging back into ancient Greek history, to the time when this mythos-to-logos transition was taking place, Phaedrus noticed that the ancient rhetoricians of Greece, the Sophists, had taught what they called arete***, which was a synonym for Quality.*** *[Lila]* ***p443***

Castaneda asks don Juan: ***"But how do you know when a path has no heart?" don Juan replies, "Before you embark on it, you ask the question: does this path have heart? If the answer is no, you will know it, and then you must choose another path."***

"But how will I know for sure if a path has heart or not?" I asked.

"Anyone would know that", replied don Juan. "The trouble is nobody asks the question; and when a man finally realizes that he has taken a path without heart, the path is ready to kill him. At that point, very few men can stop deliberately and leave the path...a path without heart is never enjoyable. You have to work hard even to take it. On the other hand, a path with heart is easy; it does not make you work at liking it." [TTodJ] p166f

Pirsig writes: ***Good is a noun. That was*** it***. That was what Phaedrus had been looking for. That was the homer over the fence that ended the ballgame. Good as a noun rather than an adjective is all the Metaphysics of Quality is about. Of course, the ultimate Quality isn't a noun or an adjec-***

tive, but if you had to reduce the Metaphysics of Quality to one sentence, that would be it. [Lila]P468

Good is a noun. That seems like a path with heart to me.

3 Force of Value in the Metaphysics of Quality

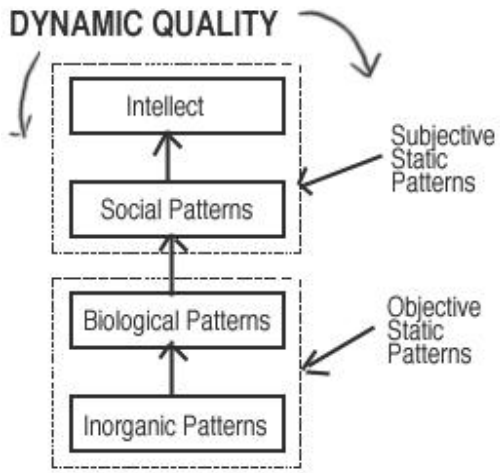
In his latest book, [Lila] Robert M. Pirsig outlines the Metaphysics of Quality, a continuing effort to view the universe from a Quality point of view. In the previous paper chapter I explored some relationships between Pirsig's Metaphysics of Quality and Carlos Castaneda's teachings of don Juan. In that paper, I make a passing reference to the ***tonal*** of don Juan being the social organization of our reality. Here I want to expand on that idea further.

The Metaphysics of Quality divides our reality up into everything that is experienced, static quality, and everything that is not experienced, Dynamic Quality.

Dynamic Quality is a particularly elusive and indefinable "something" which we are unable to perceive directly. Dynamic Quality is un-nameable, for once it is identified, it has become something else and is no longer Dynamic Quality. Since the Metaphysics of Quality is assumed to be an analogy of reality and not actual reality, the words Dynamic Quality will represent this indefinable "something" but in no way define it.

We perceive static quality phenomenon only. Static quality is experienced reality that we have formed agreements with. We form patterns of value from patterned reality by association. We are unable to recognize un-patterned reality, as experience is a metaphor.

Mr. Pirsig's diagram of the Metaphysics of Quality from his Subject, Objects, Data and Values paper:



The four levels of static reality contain all that we are aware of. In addition, Dynamic Quality, an indefinable "something" permeates and directs these static patterns of value in ways that we can perceive, but not directly.

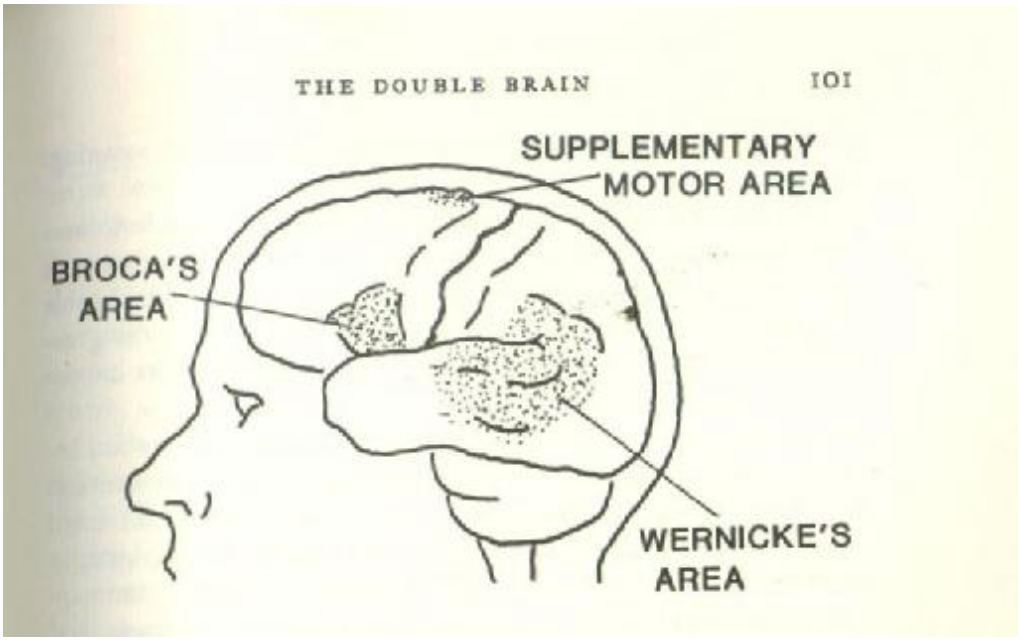
Perhaps it is worthwhile exploring this thing we call experience or consciousness. In going to my bookshelf and picking up [OoC] author Julian Jaynes writes:

What you can consciously recall is a thimbleful to the huge oceans of your actual knowledge. Conscious retrospection is not the retrieval of images, but the retrieval of what you have been conscious of before, and the reworking of these elements into rational or plausible patterns. [OoC](p28)

Conscious retrospection is the consciousness looking back on itself. The manner in which this is accomplished bears some looking at to fully appreciate the complexity of

the problem we are dealing with here. In humans, the left and right sides of the brain are separate yet connected by a net of some 2 million fibres. On the left side of the brain (in 95% of us) is the Wernicke's area, responsible for speech patterns. The right side of the brain has a corresponding area that could be capable of speech patterning, but is not, at least in a sense that is fully understood at this moment.

There are three areas in the left hemisphere of the brain that appear most responsible for speech in humans:



The three speech areas of the left hemisphere have different functions and values. The supplementary motor area is mostly involved in articulation; Broca's area in articulation, vocabulary, inflection, and grammar; and Wernicke's area in vocabulary, syntax, meaning, and understanding speech. [OoC] p101

Music may also have interesting left and right brain interactions as well, as described in an e-mail from Daniel Ferguson via the Lila Squad:

I'm a drummer...and I strive to not only keep the time and lead the changes and accent important parts, set the dynamic, and define and syncopate the groove, but also to sing. My band is progressing as we are working with a newfound singer (who has a voice superior to my own) :).

RMP's static and dynamic, the bodily dance of playing the drums displays the condition of the human experience:

Being a drummer, the left hand plays ghost notes and accents on the snare. It is the hand that is free to "fiddle around" while the right hand keeps steady on the ride or high hat. In jazz the right hand and right foot basically keep the rhythm all the time...while the left hand joins in with the other instruments, accenting different notes depending on the accompaniment.

My drum set is arranged such that all the fun toys are on the left side of the kit. But I only get to take advantage of the "toys" on special occasions.

(Excerpts from Daniel Ferguson's e-mail to the Lila Squad on 11/20/98)

Since there is a crossover mechanism involved, the right hemisphere of the brain controls the left side of the body and visa versa. The left-brain keeps constant rhythm in jazz as it does in our daily interactions with others. And the right brain is the creative side, Dynamic and always changing. Very intriguing.

Julian Jaynes agrees music and poetry are contained in right hemisphere areas of the brain. He writes:

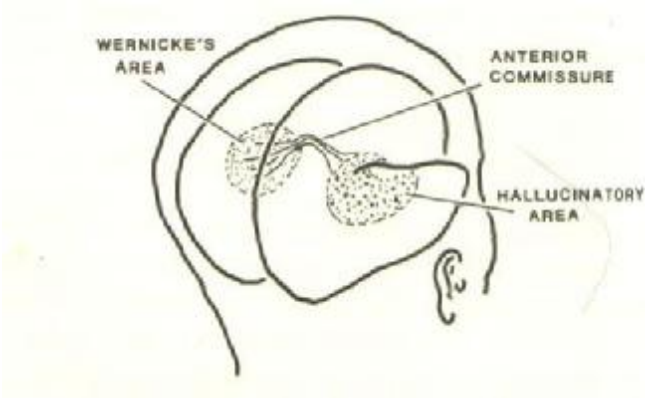
...Song, as we are presently discovering, is primarily a function of the right cerebral hemisphere. The evidence is various but consistent:

It is common medical knowledge that many elderly patients who have suffered cerebral haemorrhages on the left hemisphere such that they cannot speak can still sing.

The so-called Wada Test is sometimes performed in hospitals to find out a person's cerebral dominance. Sodium amytal is injected into the carotid artery on one side, putting the corresponding hemisphere under heavy sedation but leaving the other awake and alert. When the injection is made on the left side as that the right hemisphere is active, the person is unable to speak, but can still sing. When the injection is on the right so that only the left hemisphere is active, the person can speak but cannot sing.

Electric stimulation on the right hemisphere in regions adjacent to the posterior temporal lobe, particularly in the anterior temporal lobe, often produces hallucinations of singing and music. [OoC] p365

Here is an image of the brain, with Wernicke's area on the left side of the brain and the corresponding area on the right, linked by a bundle of nerve fibres, that all important anterior commissure.



The analogue 'I' and the metaphor 'me' are always resting at the confluence of many collective cognitive imperatives. [OoC] p 402

The Bridge Across Civilization

According to Jaynes, the anterior commissure is the bridge that all civilization has been built on. I am not going to explore that so much as I am interested in finding relationships to Pirsig's Metaphysics of Quality. Speech is a social pattern of value in the Metaphysics of Quality. Therefore I would like to equate the left side of the brain to the social level, and the right side of the brain to the intellect. Here the right side is marked as the hallucinatory area, and this is a fascinating area of discovery, but I only mention it in passing here. Rather, I would like to examine for a minute just how experience arises.

Julian Jaynes writes: ***It all began with a study by Karl Marbe in 1901. The subject was asked to lift two weights in front of him and place the one that was heavier in front of the experimenter, who was facing him. And it came as a startling discovery both to the experimenter himself and to his highly trained subjects, all of them introspective psychologists, that the process of judgment itself was never conscious.*** s

This was the problem as H.J. Watt faced it a few years after Marbe. To solve it, he used a different method, word associations. Nouns printed on cards were shown to the subject, who was to reply by uttering an associate word as quickly as he could. It was not free association, but what is technically called partially constrained: in different series the subject was required to associate to the visual word a super ordinate (e.g., oak-tree), co-ordinate (oak-elm), or subordinate (oak-beam); or a whole (oak-forest), a part (oak-acorn) or another part of a common whole (oak-path).

The nature of this task of constrained associations made it possible to divide the consciousness of it into four periods: the instructions as to which of the constraints it was to be (e.g., super ordinate), the presentation of the stimulus noun (e.g., oak) the search for the appropriate association, and the spoken reply. The introspecting observers were asked to confine themselves first to one period and then to another, and thus get a more accurate account of consciousness in each.

It was expected that the precision of the fractionation method would prove Marbe's conclusions wrong, and that the consciousness of thinking would be found in Watt's third period, the period of the search for the word that would suit the particular constrained association. But nothing of the sort happened. It was the third period that was introspectively blank. What seemed to be happening was that thinking was automatic and not really conscious once a stimulus word had been given, and, previous to that, the particular type of association demanded had been adequately understood by the observer.

This was a remarkable result. Another way of saying it is that one does one's thinking before one knows what one is to think about. The important part of the matter is the instruction, which allows the whole business to go off automatically. This I will shorten to the term "struction", by which I mean it to have the same connotation of both instruction and construction. [OoC] p39

This is a connecting point between Jaynes and Pirsig. It may be a little difficult to see, and it requires a shifting of perceptions about reality that we are not accustomed to.

What Pirsig calls static quality is not meant to be motionless or permanent in any sense. Rather there are forces of value at work which are continually instructing and constructing these static quality patterns of value, which Pirsig has divided into four levels...the Inorganic, Biological, Social and Intellect.

Pirsig describes forces of value like this:

What, after all, is the likelihood that an atom possesses within its own structure enough information to build the city of New York? Biological and social and intellectual patterns are not the possession of substance. The laws that create and destroy these patterns are not the laws of electrons and protons, and other elementary particles. The forces that create and destroy these patterns are the forces of value. [Lila] p178

It seems as though a society that is intolerant of all forms of degeneracy shuts off its own Dynamic growth and becomes static. But a society that tolerates all forms of degeneracy degenerates. Either direction can be dangerous...do you tell the saviours from the degenerates? Particularly when they look alike, talk alike and break all the rules alike? Freedoms that save the saviours also save the degenerates and allow them to tear the whole society apart. But restrictions that stop the degenerates also stop the creative Dynamic forces ***of evolution.*** [Lila], pp223

Its [Dynamic Quality's] only perceived good is freedom and its only perceived evil is static quality itself--any pattern of one-sided fixed values that tries to contain the ongoing free force of life. ([LiLa] Chap. 9 p133 Bantam soft cover edition.)

But the Metaphysics of Quality also says that Dynamic quality--the value force ***that chooses and elegant mathematical solution to a laborious one, or a brilliant experiment over a confusing, inconclusive one--is another matter altogether.*** (Chap. 29 p418)

In rereading Lila I came across this passage from chapter 11: ***What Dynamic force had to invent in order to move up the molecular level and stay there was a carbon molecule that would preserve its limited Dynamic freedom from inorganic laws and at the same time resist deterioration back to simple compounds of carbon again. A study of nature shows the Dynamic force was not able to do this but got around the problem by inventing two molecules: a static molecule able to resist abrasion, heat, chemical attack and the like; and a Dynamic one, able to preserve the subatomic indeterminacy at a molecular level and "try everything" in ways of chemical combination.*** [LiLa] p169

According to the Metaphysics of Quality, the intellect is the highest quality static pattern of value. Using that clue, in the word-association experiment above, the third "blank" period must be the intellect at work. The instruction is a social process, as is the presentation. The search for association in the third period is the intellect level at work, yet it is blank. Forces of value are at work that are unpatterned and yet constrained and funnelled into perceptions of what we already know.

The spoken reply is again a social process, a result of the blank third period but not the intellect itself at work directly. Rather what has been constructed is a social pattern of

value from a stimulus of another pattern of value after the previously held notion has been ***destroyed by the intellect***. The construction is not done through any feature of the intellect. That level is blank. New patterns arise from the social level once the previously existing pattern has been dis-created.

It is that third period of blankness that has no value in the experiment until we use the Metaphysics of Quality to examine it. Along the way, this also may provide some clues as to just what functions the social and intellect forces of value have. If we look at that blank third level as an unpatterned de-matching, or de-structed value, and equate that to Pirsig's force of value as a dis-creation, we can then assign creation force of value to the social level and dis-creation force of value to the intellect.

Looking at the problem this way, the Metaphysics of Quality tells us that we experience reality exclusively through the social level. The role of the intellect is to dis-create, or de-struct social patterns of value to enable new associated social patterns of value to be constructed. The intellect level is always of higher moral value than static quality social patterns of value, and force of value moves these static social patterns into dis-creation so that new and better ones may arise in the old ones place.

This also jells with Carlos Castaneda's writings when don Juan tells him:

> ***"Today is not the day of the*** nagual***, today is the day of the*** tonal***. I put on my suit today because I am all*** tonal***," he said.***
>
> ***He stared at me. I was about to tell him that the subject was proving to be more difficult than anything he had ever explained to me; he seemed to have anticipated my words.***
>
> ***"It is difficult", he continued, "I know it. But considering that this is the final lid, the last stage of what I have been teaching you, it is not too farfetched to say that it envelops everything I have mentioned since the day we first met."***
>
> ***I raised a point. I said that when he talked about the "tonal" and the "nagual" it sounded as if there was still a third part. He had said that the "tonal" forces us to perform acts. I asked him to tell me whom he was referring to as being forced.***
>
> ***He did not answer me directly. "I am using your words now," he said. "The*** tonal ***is the social person."*** [ToP]

In order to simplify the notion, I will use Jaynes term "struction" to denote this action from a Metaphysics of Quality point of view and trust it is very close to how Jaynes intends. In Pirsig's Metaphysics of Quality, the inorganic and biological levels compose objects, while the social and intellect levels are the subjective side of reality.

Keeping that in mind, I want to envision each as a struction, in both a state of creation and discreation as forces of value effect the patterned value of each level in different ways, causing moral conflicts to arise. This is taking us farther away from subjec-

tive / objective thinking into a realm where it no longer matters, which is which. What matters are the Forces of Value at work dis-creating old patterns so new ones may be created.

The force of value at the inorganic level seems to be de-struction, discreation, and an unpatterned unconceptualizable idea we can only envision by analogy. The biological level is at odds with this level and is a con-struction, or creation, and yet nothing lives forever. There must be some de-struction built into that level. The social level is also a con-struction, and it is this level that regulates everything the biological life form does. This is don Juan's ***tonal***. The intellect level's purpose is to free the social restraints, to overthrow the ***tonal*** so to speak. The highest morality results from de-struction of social patterns of value by the intellect.

I want to introduce a tentative labelling of Force of Value within each level. I received an intriguing e-mail from my friend Bodvar Skutvic concerning an e-mail he received from Craciun Madalin George with a set of equations contained within. I have taken the liberty of changing them slightly and using them to label the four levels of the Metaphysics of Quality. Please remember this is very tentative and new.

- = - + = +	Represents Dynamic Quality Force of Value
(- -) = -	Intellect Force of Value
(+ +) = +	Social Force of Value
(+ -) = -	Biological Force of Value
(- +) = +	Inorganic Force of Value

Symbol "-" = negative = changes any subject.

Symbol "+" = positive = keeps the subject = doesn't change the subject.

Looking at creation as (+) positive value and discreation as (-) negative value, I have attempted to create a notion of struction within the four static levels containing patterns of value. Within each level are forces of creation and discreation, which direct or guide the evolution of static patterns of value. The lowest level, the inorganic, and in the next level, the biological (the two of which make up objects) each contain a flux of both, creation and discreation with one dominating the other in the dance of creation-discreation. This is object struction.

The social level is creation directed in both dominate and dominated patterns, indicated by the (+ +) symbols. The intellect level is discreation directed. These two levels make up the subjective struction. Using a vertical and horizontal grid, as suggested by Roger

Parker via the Lila Squad, I have attempted to place moral values in a sequence for better understanding. This is from a static quality point of view.

3.1 MORALITY'S FORCE OF VALUE

Dominant Value: Highest Moral Value---moving to Dynamic Freedom--}				
Intellect (-)	Computer virus	Clinton-like	Artist	Brujo / Saint
Social (+)	Computer-House	Criminal	Government	Love-War
Biological (+)	Nutrition	Life	Family	Isolationism
Inorganic (+)	Electricity	Death	Family	Freedom-Chaos
Dominated--}	Inorganic (-)	Biological (-)	Social (+)	Intellect (-)

Lowest Moral Force of Value----------moving to Dynamic freedom---}

To use the chart, ***both*** value forces must work together in a complementary fashion. The higher-level forces dominate the lower level forces.

Value forces in the Metaphysics of Quality do not change the static patterns of value in a instantaneous or certain way, but rather it is responsible for guiding them, directing them so to speak. Force of Value could be thought of as the breath of reality. Planck's constant and the Lamb shift come into play here.

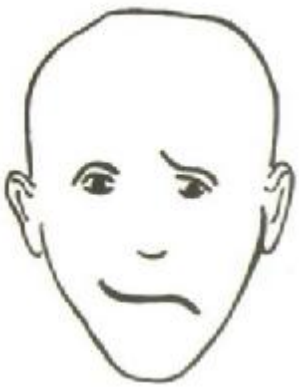
Recognizing force of value within the Metaphysics of Quality allows an expanded awareness to develop of the interactions and moral implications. Like the Buddhist Wheel of Life, our reality is continually con-structing and de-structing itself through these forces of value.

In the table above, I have attempted to identify some of the contributing Forces of Value in a context of everyday reality. Some may disagree with my placements of certain things like love / war, but overall I think it is a Good way to see how Forces of Value direct our lives in every conceivable way. Rather than looking at the four static quality levels as permanent, they must be seen as in a continual state of creation and discreation, not necessarily in that order.

In the upper right-hand corner of the chart is Brujo / Saint. Because this realm is completely de-latched, viewing it from the social level as we do it is difficult to understand the higher moral value contained in the intellect level patterns of value.

It could be said that the Brujo / Saint have transcended the self and in doing so have left the "real" world behind in a very real way. Static quality patterns of value arise through our consciousness by means of static latching at the social level.

We can see how these patterns arise in the way we perceive reality. Look at the two faces below. Which face is happier?



These faces are mirror images of each other. Look at the noses of each. Which face is the happy face? Julian Jaynes writes:

We definitely know that there are specific areas of the brain that are inhibitory to others, that the brain in a very general way is always ***in a kind of complicated tension (or balance) between excitation and inhibition, and also that inhibition can occur in a number of different ways.*** [OoC] p428

This tension seems to be between the left hemisphere, associated with social level patterns of value, with the right hemisphere, associated with intellect patterns of value. The left hemisphere is directed by the static latching creative Force of Value, while discreative de-latching Force of Value directs the right hemisphere.

Most right-handed people will choose the bottom picture, with the smile going up on the left. They are judging the face with their right hemisphere, if they are looking at the nose as instructed. In fact, with the focal point as a centre, by tachistoscopic presentation (pictures flashed at one/tenth of a second), the bottom face always looks happier to right-handed people.

You can try this here by moving the page up and down fairly rapidly. At least the effect is very apparent for me, a right-hander

4 Pragmatism, Precession and the Metaphysics of Quality

...Instead of taking counsel of despair, I make bold to vary my statements, in the faint hope that repeated droppings may wear upon the stone, and that my formulas may seem less obscure if surrounded by something more of a 'mass' whereby to apperceive them. [TMT]

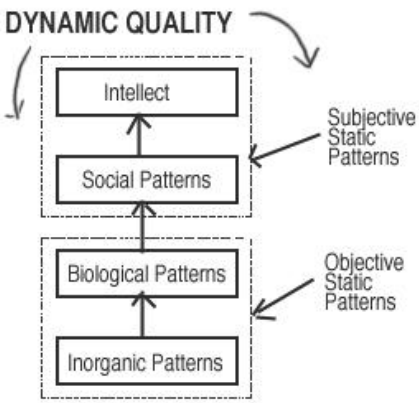
Humanity is moving ever deeper into crisis - a crisis without precedent. [CP]

Man is always the measure of all things, even in matters of space and dimension. [Lila]

What is truth? Is there only one, or A- Truth? Or are there many truths? b- truth and c-truth and d-truth and on and on, contained within One? Is such a thing even possible? The concept of "many truths" presupposes One truth by the virtue of talking about truth at all, as well as supposing definition of a truth as an independently existing reality in the universe, doesn't it?

In this paper I would like to explore the meaning of truth, whether it is indeed a verifiable independent reality in the universe, or if it is only what we agree it is. I will be quoting mainly from these sources: the works of Robert M. Pirsig, including [Lila], and [ZaM], [TMT], [Pr], and Essays in Radical Empiricism by William James, who Pirsig makes mention of in [Lila], and [CP], since his work helps to explain some of the irrelevant meanings that Pirsig talks about in [Lila].

James describes reality in the much the same terms as Carlos Castaneda. In chapter 1, I explored the complex relationship between the Metaphysics of Quality as proposed by Robert M. Pirsig and the writings of Castaneda, the teachings of don Juan Matus, a Yaqui Indian from Sonora. I will assume the reader is familiar with it here. And in chapter 2 I explored in a small way the complex relationship between the social and intellect levels of Pirsig's theory as depicted in his diagram from his Subjects, Objects, Data and Values paper.



In order to use this diagram, it must be realized it is a pragmatic tool, a metaphor and not an actual map of reality. To understand pragmatism, its worthwhile exploring the thinking behind it briefly.

Taking [Pr] down from the shelf, we read: ***...I wish to illustrate the pragmatic method by one more application. I wish to turn its light upon the ancient problem of 'the one and the many'. I suspect that in but a few of you this problem occasioned sleepless nights, and I should not be astonished if some of you told me that it had never vexed you. I myself have come, by long brooding over it, to consider it the most central of all philosophic problems, central because so pregnant. I mean by this that if you know whether a man is a decided monist or a decided pluralist, you perhaps know more about the rest of his opinions than if you give him any other name ending in*** ist***. To believe in the one or in the many, that is the classification with the maximum number of consequences.*** [Pr] p50

[We] treat the problem of the One and the Many in a purely intellectual way; and we see clearly enough where pragmatism stands. With her criterion of the practical differences that theories make, we see she must equally abjure absolute monism and absolute pluralism. The world is one just so far as its parts hang together by any definite connexion. It is many just so far as any definite connexion fails to obtain. And finally it is growing more and more unified by those systems of connexion at least which human energy keeps framing as time goes on. [Pr] p60

Pragmatism relies on "common-sense" everyday reality to lend agreement to its conclusions. Lets start by examining just what James means by pragmatism. In [TMT] he writes: ***My account of truth is realistic, and follows the epistemological dualism of common sense. Suppose I say to you 'The thing exists' - is that true or not? How can you tell? Not till any statement has developed its meaning farther is it determined as being true, false or irrelevant to reality altogether. But if now you ask 'what thing?' and I reply 'a desk'; if you ask 'where?' and I point to a place; if you ask 'does it exist materially, or only in imagination?' and I say 'materially'; if moreover I say 'I mean that desk,' and then grasp and shake a desk which you see just as I have described it, you are willing to call my statement true. But you and I are commutable here; we can exchange places; and as you go bail for my desk, so I can go bail for yours.[***TMT]

This notion of commutability is an underpinning of pragmatism. Basically, our reality consists of observations only the individual can be sure of. But because of commutability, we are able to assume a concrete reality independent of the self by assuming others with like quality's to our self also view this independent reality in the very same way as we our self. Subjects and objects are born by agreement with commutability. James goes on:

This notion of a reality independent of either of us, taken from ordinary social experience, lies at the base of the pragmatic definition of truth. With some such reality any statement, in order to be counted true, must agree. Pragmatism defines 'agreeing' to mean certain ways of 'working', be they actual or potential. Thus, for my statement 'the desk exists' to be true of a desk recognized as real by you, it must be able to lead me to shake your desk, to explain to myself by words that suggest that desk to your mind, to make a drawing that is like the desk you see, etc. [TMT]

Here James gives us the essence of his pragmatism. It is essential to note he uses "ordinary social experiences" as the basis for pragmatic truth. Cultural realism. In order for something to be counted true, we MUST recognize an independent reality beyond "our

self" AND AGREE WITH OTHERS THROUGH ORDINARY SOCIAL EXPERIENCE. We see James is starting with social experience "agreements" to develop his pragmatism. This is his foundation; much as don Juan's ***tonal*** is the foundation of his teachings and Pirsig's foundation of static quality everyday reality comprising everything that arises from awareness.

James continues: ***Only in such ways as this is there sense in saying it agrees with*** that ***reality, only thus does it gain for me the satisfaction of hearing you corroborate me. Reference then to something determinate, and some sort of adaptation to it worthy of the name of agreement, are thus constituent elements in the definition of any statement of mine as 'true'.[TMT]*** remarks at the meeting of the American Philosophical Association, Cornell University, December, 1907)

Reference is to something determinate. For that something to be determinate, we must all agree that it is indeed a determinate something. James calls that determinate something "social experience". Looking at this from a Metaphysics of Quality point of view, social experience can be seen as a social level pattern of value opposed to both a higher-level intellect pattern of value and a lower biological level. Unlike the Metaphysics of Quality, pragmatism seems to assume the existence of the molecules that make up social experience as well as the biological life forms and starts with the social level as a basis.

James writes: "Pragmatism defines 'agreeing' to mean certain ways of 'working', be they actual or potential." "Agreeing" is a difficult term to define. I find I use it in my own writings and I have attempted to define it in the past when asked, but have always failed to really convey what I meant. I am somewhat at a loss to understand James definition too. I wonder why Pirsig felt highly enough of James to mention him in Lila? Here is what Pirsig wrote:

However, in his rereading of [William] James, he had so far found three things that were beginning to dissolve his early prejudice. The first wasn't really a reason, but was such an unlikely coincidence Phædrus couldn't get it out of his mind. James was the godfather ***of William James Sidis, the child prodigy who could speak five languages at the age of five and who thought colonial democracy came from the Indians. The second was a reference to James's dislike of the dichotomy of the universe into subjects and objects. But the third thing, which might also seem irrelevant, but which was doing more than anything else to dissolve Phædrus's early prejudice, was an anecdote James told about a squirrel.***

James and a group of friends were on an outing somewhere and one of them chased a squirrel around a tree. The squirrel instinctively clung to the opposite side of the tree and moved so that as the man circled the tree the squirrel also circled it on the opposite side.

After observing this, James and his friends engaged in a philosophic discussion of the question: Did the man go around the squirrel or didn't he? The group broke into two philosophical camps and Phædrus didn't remember how the argument was resolved. What impressed him was James interest in the question. It showed that although James was no doubt an expert philosophologist

(certainly he had to be to teach stuff at Harvard) he was also a philosopher in the creative sense. A philosophologist would have been mildly contemptuous of such a discussion because it had no "importance", that is, no body of philosophical writings existed about it. But to a creative philosopher like James the question was like catnip. [Lila] pp373 Being a creative philosopher, James point of view evolved into what he called Radical Empiricism, distinct in his opinion from pragmatism. In his Essays in Radical Empiricism he writes: ***Although for fluency's sake I myself spoke early in this article of a stuff of pure experience, I have now to say there is no*** general ***stuff of which experience at large is made of. There are as many stuffs as there are 'natures' in the things experienced. If you ask what any one bit of pure experience is, the answer is always the same: "It is made of*** that***, of just what appears, of space, of intensity, of flatness, brownness, heaviness or what not." Experience is only a collective name for all these sensible natures, and save for time and space (and, if you like, for "being") there appears no universal element of which all are made.*** Essays in Radical Empiricism, Does Consciousness Exist? pp27

Here James makes no bones about his methods. He says that what we perceive is just that, just what it appears to be and nothing more or less. James' conclusions are much the same as Pirsig's answer to the mind / matter platypus that all schools of thought are right on the subject. The "rightness" is built on a foundation of agreements with reality that we have each formed prior to the experience.

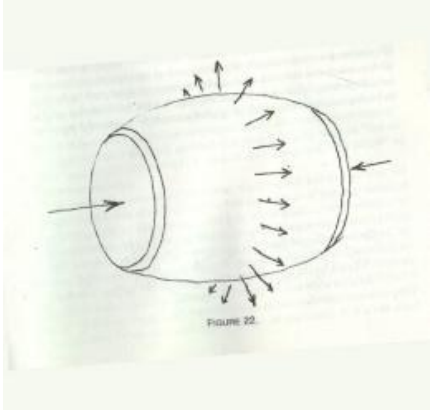
James builds this line of thought into "perceptual experiences" and "conceptual experiences". He writes: ***Of [these], our perceptual experiences are the nucleus, they being the originally*** strong ***experiences. We add conceptual experiences to them, making these strong also in imagination, and building out the remoter parts of the physical world by their means; and around this core of reality the world of laxly connected fancies and mere rhapsodical objects floats like a bank of clouds. In the clouds, all sorts of rules are violated which in the core are kept. Extensions there can be indefinitely located; motion there obeys no Newton's laws.*** Essays in Radical Empiricism, Page 34

This sounds remarkably like Robert Pirsig's Dynamic Quality that James is attempting to describe here. I am intrigued by seemingly inconsequential, irrelevant coincidences, like Pirsig is, and he mentions in Lila that William James was the ***godfather*** of William James Sidis. I have also read off-handedly about Buckminster Fuller being given a copy of one of William James Sidis' books and being very impressed with the depth of understanding portrayed by Sidis.

Buckminster Fuller (sometimes described as an eccentric genius, though he himself was loath to call himself a genius of any kind) was also impressed with seemingly inconsequential happenings, so much so that he declared those coincidences and seeming irrelevant happenings as the "real" way the universe operates, and named that action "precession".

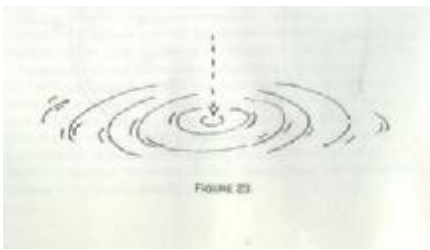
Precession explains these seemingly irrelevant happenings and coincidences beautifully, and is perhaps the way Dynamic Quality operates in the universe, so perhaps it's

worthwhile looking into a a bit more detail. Of course this will take us a bit off-track, but perhaps we will get to where we are going anyway. In his book [CP] Fuller explains what precession is and why it is the fundamental way the universe operates.



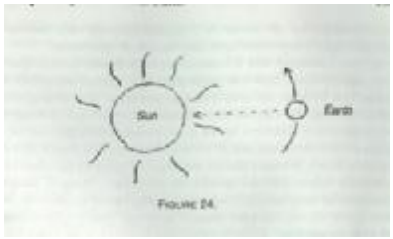
When we push toward one another the opposite rigid-disc ends of a flexible, water-filled cylinder, the centre swells maximally outward in a circular plane perpendicular (at right angles) to the line of our pushing together.

When we pull away from one another on the opposite ends of the same water-filled cylinder, the middle part contracts in a concentric series of circular planes of diminishing radius perpendicular (at right angles) to the line of our pulling.



When we drop a stone in the water, a circular wave is generated that moves outwardly in a plane perpendicular (at right angles) to the line of stone-dropping - the outwardly expanding circular wave generates (at ninety degrees) a vertical wave that in turn generates an additional horizontally and outwardly expanding wave, and so on.

All these right-angle effects are precessional effects. Precession is the effect of bodies in motion on other bodies in motion.



The sun and the earth are both in motion. Despite the 180 degree gravitational pull of the in-motion sun upon the in-motion earth, precession makes earth orbit around the sun in a direction that is at ninety degrees - i.e., at right angles - to the direction of the sun's pull upon earth.

The successful regeneration of life growth on our planet Earth is ecologically accomplished always and only as the precessional, right-angled "side-effect" of the biological species' chromosomically programmed individual-survival preoccupations - the honeybees are chromosomically programmed to enter the flower blossoms in search of honey. Seemingly inadvertently (but realistically precessionally) this occasions the bee's bumbling tail's becoming dusted with pollen (at ninety degrees to each bees' linear axis and flight path), where after the bees' further bumbling entries into other flowers at right angles inadvertently dusts off, pollenizes, and cross-fertilizes those flowers at right-angles (precessionally) to the bees' operating axis - so too, do all the mobile creatures of Earth cross-fertilize all the different rooted botanicals in one fashion or another precessionally (right-angled), inadvertent way. [CP] p141-2

There are no solids. There are no things. There are only interfering and non-interfering patterns operative in pure principle, and principles are eternal. Principles never contradict principles. Principles can interaccomodate one another only in non-interfering frequency ways. Principles can interaugment one another if frequency is synchronizable. [CP] p158

Here we have a description of reality that is very close to Pirsig's Metaphysics of Quality's description of static quality and Dynamic Quality and what William James calls pragmatism. All three deny the dichotomy of subject / object thinking as a foundational base and instead incorporate an actuality / potentiality, interfering / non interfering patterns operative in pure principle state, a static quality / Dynamic Quality division as a fundamental basis as a metaphor of reality.

This concept is of primary importance to understanding the Metaphysics of Quality and the interactions of the four static levels with Dynamic Quality via the forces of value creating and discreating our everyday reality in a precessional way. Even though Pirsig uses the term "division of reality" in describing static quality / Dynamic Quality, that is not really a proper way of talking about this "split".

This is what James calls a determinate social experience. We all "know" how to split something...we do it all the time. But the division Pirsig talks about is beyond our conception of the four static levels of reality, beyond our awareness altogether. We have all formed "agreements" with each other through social interactions from the time we

formed "agreements" with each other through social interactions from the time we were born. These agreements are all we know, and all we can ever know. But if this is true, where do new agreements arise? How can we ever learn anything new? Clearly we must "know" much more than we think we know at any moment in time.

Interacting then, in a precessional, or right-angled manner, is the fundamental way the entire universe operates. Recognizing this, we can then say that this is how the four static levels of the Metaphysics of Quality also interact with one another.

From [ZaM] we read: ***In all of the Oriental religions great value is placed on the Sanskrit doctrine of*** Tat rvam asi, ***"Thou art that," which asserts that everything you think you are and everything you think you perceive are undivided. To realize fully this lack of division is to become enlightened.***

Logic presumes a separation of subject from object; therefore logic is not final wisdom. The illusion of separation of subject from object is best removed by the elimination of physical activity, mental activity and emotional activity. ([ZaM] p126, paperback)

This separation of subject and object is also a focus of James when he writes: ***...the pragmatic method, in its dealings with certain concepts, instead of ending up with admiring contemplation, plunges forward into the river of experience with them and prolongs the perspective by their means. Design, free will, the absolute mind, spirit instead of matter, have for their sole meaning a better promise as to this world's outcome. Be they false or be they true, the meaning of them is this meliorism.***

I have sometimes thought of the phenomenon called 'total reflexion' in optics as a good symbol of the relation between abstract ideas and concrete realities, as pragmatism conceives it. Hold a tumbler of water a little above your eyes and look up through the water at its surface - or better still look similarly through the flat wall of an aquarium. You will then see an extraordinary brilliant reflected image say of a candle-flame, or any other clear object, situated on the opposite side of the vessel. No candle ray, under these circumstances, gets beyond the water's surface: every ray is totally reflected back into the depths again. ([Pr] p128, The One and the Many)

This is how I like to look at the relationship between the social and intellect levels in the Metaphysics of Quality. Logic arises as social level agreements to what is normally perceived as an independently existing reality, commutable between us as individuals. This commutability arises Dynamically in a precessional manner permeating the four static levels of everyday static quality patterns of value with forces of value. These forces direct the social level to create our entire reality, while at the same time they direct the intellect level patterns of value to seek Dynamic freedom precessionally from the underlying social level by means of abstraction, or discreation of what would otherwise be exclusively permanent stasis and stagnation in the social level.

In conclusion then, what is Truth? Pragmatically, Truth is an agreement, and as such, it is a social level pattern of value within the Metaphysics of Quality. Precessionally, Truth always occurs at a right-angled intersection of the Quality Event (interesting connections to Pirsig's explorations of the morpheme ***rt*** where he writes "The right-handedness was also interesting", [Lila] p434). Truth lies in value forces that direct the four levels of static quality patterns of value in the Metaphysics of Quality.

Hopefully this paper sheds just a little more light on how these forces of value operate in the universe.

5 Ayurvedic Tradition and Pirsig's Metaphysics of Quality

Our western culture is a deterministically inclined society; this legacy left over from ancient Greek culture. Traditionally, western medicine treats physical symptoms as "causes" of ailments that beset us from time to time, then deterministically sets about to cure those causes, sometimes with medicines, sometimes with surgery, sometimes with even more aggressive therapies. Many times though, condition of patient in general is overlooked, since A) most physicians simply hasn't time to adequately access patients; B) in doing his / her limited assessment, cause is focused onto exclusion of all else; C) classical western medical determinism fails to address this very "real" non-physical part of our beings adequately.

In his book "Quantum Healing; Exploring the Frontiers of Mind / Body Medicine" Dr. Deepak Chopra questions, if our body has enough intelligence to heal a cut, then why would it not be intelligent enough to cure itself of lung cancer or heart disease or diabetes? He examines many cases of so-called spontaneous remissions of diseases western medicine simply cannot cure and asks, are these remissions true miracles - results of some supernatural intervention - or are these miracles only that certain individuals have found ways to switch on self healing mechanisms in their own bodies?

This is centre to a system of medicine called Ayurveda, which translated means "science of life", a 5000 - year -old Indian medical tradition whose guiding principle is that mind exerts a powerful influence over body. In other words, Ayurveda is medical tradition that looks at not only our physical body, but also normally unseen non-physical influence of mind over that physical body. Also, unlike other alternative systems, Ayurveda allows physicians to work within our western, or allopathic, system of medicine. Basic tenets of Ayurveda are simple. Mind controls body. But first, perhaps we should explore just what we mean when we say, "mind".

Robert M. Pirsig studied in India, and though he doesn't write of it, I suspect that he must have been exposed to Ayurveda during his time there. Ayurvedic tradition is so ingrained into India's culture that it is like folklore, even though it is seldom practiced in actuality anymore from what I understand. Pirsig's Metaphysics of Quality states that four static quality levels, which contain everything that we are and know, are each discrete and follow their own moral code, in seeming opposition to each other. Furthermore, intellect level moral codes cannot directly affect biological or inorganic level moral codes without being mediated by social level codes. Putting this into Ayurvedic tradition, it becomes clear that "mind" which controls "body" is all four levels of Pirsig's Metaphysics of Quality, plus undefined Dynamic Quality. Each level must be in balance to allow Dynamic free flow of life. Looking at Ayurveda from a Metaphysics of Quality point of view opens up many intriguing insights into mind / body connections.

According to Ayurveda, being in balance means that we live in tune with our particular nature, which we are each born with. Being in balance means our body mobilizes its own perfectly attuned defense system to keep us well. It seems implicit in Ayurvedic tradition to treat not only physical inorganic level, but also non-physical biological, social and intellect levels as well. Mental stress, arising from our social interactions with others, becomes physical illnesses affecting biological level moral codes. Intellect level cannot treat biological level moral codes directly, but must first address social environment stress.

In order to identify some correct ways of addressing social imbalance, (which doesn't "cause" stress, but rather stress values this preconditioned social imbalance) Ayurveda states that there are three main "doshas", places where mind and body actually meet, and they control metabolism, motion and structure. Each dosha are sets of characteristics that define mental and physical needs, strengths and weaknesses. This allows Ayurvedic practitioners to identify particular patient's doshas intellectually and recommend social changes that will ultimately bring about biological attunement.

Doshas are developed from elements of nature: space, air, fire, water and earth. This corresponds to inorganic level moral codes in Pirsig's Metaphysics of Quality, and like Metaphysics of Quality, doshas evolve from basic elements of nature into temperaments uniquely individualistic for each living being, depending upon that being's environmental circumstances. We all know hot-tempered individuals, who we think of as "fiery", and of course we all know individuals who must be talked into doing anything new; "stick-in-the-mud" is often applied to those persons. So we already tend to link individualistic temperaments to elements of nature by matter of habit.

In traditional western medicine, social aspects of our environments are often times overlooked in search for causal factors within biological level moral codes. Being out of balance, which happens when we fight our nature, leads to psychological distress and physical illness because our defense system becomes damaged. Because social level moral codes mediate between intellect and biological level moral codes, what happens socially eventually manifests itself in our biological bodies. When we are under stress, it doesn't take long for a boss who aggravates us at work to make us feel frustrated and angry. And those feelings are translated into physical symptoms, such as headaches, stomach problems and insomnia.

In Ayurvedic system, healing is usually achieved by individuals who, recognizing that they are out of balance, begin living socially according to their true nature. Three main doshas are vata, pitta, and kapha. Vata is associated with air and space. Vatas do everything quickly: move, think, act. They tend to eat and sleep irregularly. Most of them can eat anything without gaining weight. Vatas are most common. When they are out of balance, vatas suffer from constipation, hypertension, insomnia, anxiety, depression, backaches, muscle spasms and irregular heart rhythm.

Pittas are associated with fire and water. They are articulate, and all great orators are pittas. Pittas are bold, sharp-witted and sharp-tongued. They're ones who take over when they think that a leader is needed. When out of balance, pittas tend to be angry and irritable. Kaphas are associated with earth and water. They're stable and sturdy. Problems don't upset kaphas. They tend to be calm, forgiving and loving. Unlike vatas, they may take some time learning something new, but they never forget. An out of balance kapha might suffer lots of colds, allergies and sinus infections. With their predilection for over-eating, they can also develop diabetes and cholesterol problems.

Most people find characteristics of at least two doshas in their own personalities, and many times all three. This in total makes up prakiti, or mind/body type of that individual. Basically, Ayurvedic tradition intellectually focuses upon social interaction of individuals in an effort to bring about relief from biological stress factors that lead to illness and eventual death. Of course this is a very complex interaction and not nearly as simple as my delineation here, but nevertheless there are clear connections with Ayurveda and Pirsig's Metaphysics of Quality.

Put into context in Metaphysics of Quality, Ayurvedic tradition gives higher focus to that which we are unaware of, Dynamic Quality and Dynamic free flow of life, rather than that which we are physically aware of, static quality and stasis. Identifying stasis becomes much more than just identifying "cause", rather Ayurveda throws causality out our proverbial window and embraces holistic approaches to health, where "all" is of higher value than is particular concerns which traditional western medicine focuses upon as cause of disease.

This allows identification of not only biological illness, but also social illness, one major cause of stress in our 20th century culture. Biological and social levels are linked intrinsically, yet social level moral codes have come to dominate biological level moral codes and therefore exert basically unseen influences over us all, which our traditional medicine has failed to address in proper fashion. Perhaps in combining Ayurveda and allopathic medicine, many solutions to health concerns can be addressed that up to now have been left twisting furiously. Pirsig's Metaphysics of Quality gives us rational guideline for realizing why this would be, and in doing so, gives mind even greater power to heal body and restore free flow of Dynamic life to us all.

6 The Hypothesis of Morphic Resonance

"Most biologists take it for granted that living organisms are nothing but complex machines, governed only by the known laws of physics and chemistry. I myself used to share this point of view. But over a period of several years I came to see that such an assumption is difficult to justify. For when so little is actually understood, there is an open possibility that at least some of the phenomena of life depends on laws or factors as yet unrecognised by the physical sciences." -[HoMR] (P9)

With the first paragraph of the preface to [HoMR] it is clear that this is no ordinary book on biology. Rupert Sheldrake begins his hypothesis by explaining some of the more difficult notions behind biology, but it soon becomes apparent that there is a good deal more going on in biology than even biologists themselves care to admit.

In this review, I will just give a brief overview of each chapter and some of the ways Sheldrake's ideas interact with Pirsig's Metaphysics of Quality which he wrote about in his book [Lila]. I really don't think I can do justice to the ideas contained in the book in such a short review. For the purpose of this review I am assuming the reader is familiar with Pirsig's writings and I will not explore those here other than to compare them with Sheldrake's ideas.

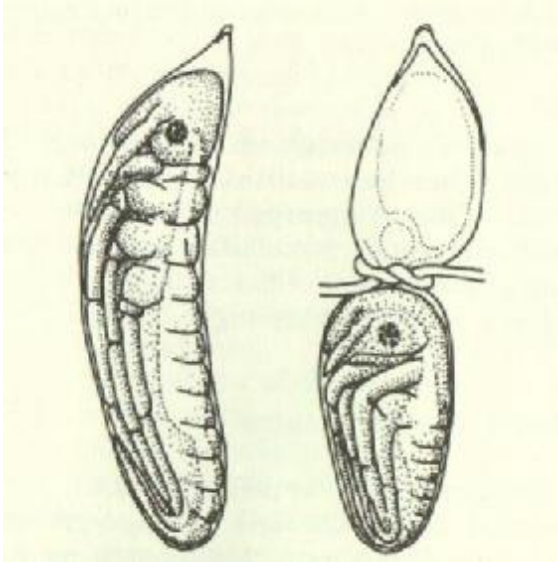
In the first chapter, Sheldrake examines some of the unsolved problems in modern biology; the success biology has obtained in the context of the underlying problems still confronting biologists in the fields of behavioural science, evolution, the origins of life, psychology and parapsychology.

6.1 Biological Morphogenesis

"Biological Morphogenesis can be defined as the 'coming-into-being' of characteristic and specific form in living organisms. The first problem is precisely that form comes into being. Biological development is ***epigenetic*** (see image below); new structures appear which cannot be explained in terms of the unfolding or growth of structures which are already present in the egg at the beginning of development." (P19)

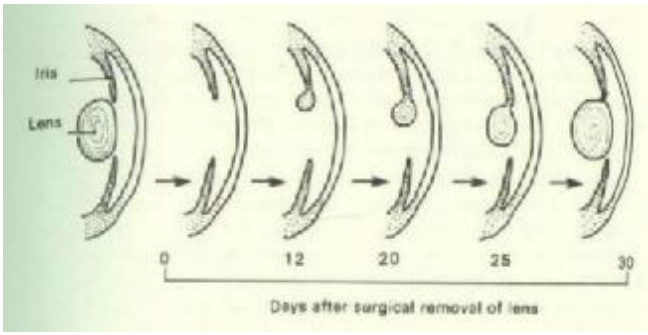
"The second problem is that many developing systems are able to regulate; in other words if a part of a developing system is removed (or if an additional part is added), the system continues to develop in such a way that a more is less normal structure is produced... Regulation has been demonstrated in many developing systems. However, as development proceeds this capacity is often lost as the fate of different regions become determined." [HoMR] (P19)

Here is an example of regulation in action:



On the left is a normal embryo of a dragonfly. On the right is a small but complete embryo formed from the posterior of an egg ligated around the middle soon after laying. (After Weiss, 1939)

"The third problem is that of regeneration, whereby organisms are able to replace or restore damaged structures." ([HoMR] p20) Here is an image of the regeneration of a newt's eye lens:



Regeneration of a lens from the margin of the iris in a newt's eye. (Cf. Needham, 1942)

"The fourth problem is posed by the simple fact of reproduction. The only way in which these phenomena can be understood is in terms of causal entities which are somehow more than the sum of the parts of the developing systems, and which determine the goals of the processes of development." ([HoMR] p21)

6.2 Vitalists, Organicists, and Mechanistics

Sheldrake then examines 3 schools of thought in regards to these problems...the Vitalists ascribe these properties to 'vital factors', Organicists to 'morphogenetic fields' and Mechanists to 'genetic programs', or DNA. Sheldrake shoots down the mechanistic theory of genetic programming by using a computer analogy...

"The concept of genetic programmes is based on an analogy with the programmes that direct the activities of computers. It implies that the fertilized egg contains a pre-formed programme that somehow specifies the organism's morphogenetic goals and coordinates and controls its development towards them. But the genetic programme must involve something more than the chemical structure of DNA, because identical copies of DNA are passed on to all cells; if all cells were programmed identically, they could not develop differently. So what exactly is it? In response to this question, the idea can only disintegrate into vague suggestions about physico-chemical interactions somehow structured in time and space; the problem is merely restated." ([HoMR] p21)

He examines the Vitalist school of thought in this fashion...

"...in so far as mechanistic explanations depend on teleological concepts such as genetic programmes or genetic instructions, goal-directedness can be explained only because it has already been smuggled in. Indeed the properties attributed to genetic programmes are remarkably similar to those with which Vitalists endowed their hypothetical vital factors; ironically, the genetic programme seem to be very like a vital factor in a mechanistic guise". ([HoMR] p22)

And of the Organicist school of thought, he says: "The organicist approach in its present state also suffers from the disadvantage of suggesting no new lines of empirical research; it offers little more to experimental biology than an ambiguous terminology...the prospects for improved versions of mechanistic, vitalistic and organismic theories of Morphogenesis are discussed in the following chapter." ([HoMR] p49)

Of these 3 outlooks, it seems to me that the organicist theory, developed in the late 19th century, is most in tune with Pirsig's Quality universe. Rather than ascribing form to the individual structure, organicists ascribe the individual structures to a collective 'field' from which the individual structures draw instructions as to a goal-directed movement via growth, regeneration or reproduction.

In other words, the final form of structure is already contained within the morphic 'germ' that precedes the structure. Sheldrake goes on to explain these 3 schools of thought in more detail in chapter 2.

"Mechanistic theory of morphogenesis ascribes a role of prime importance to DNA...it doesn't play the role directly; one of its strands is first 'transcribed' to give a single-stranded molecule of 'messager' RNA from which, in the process of protein synthesis,

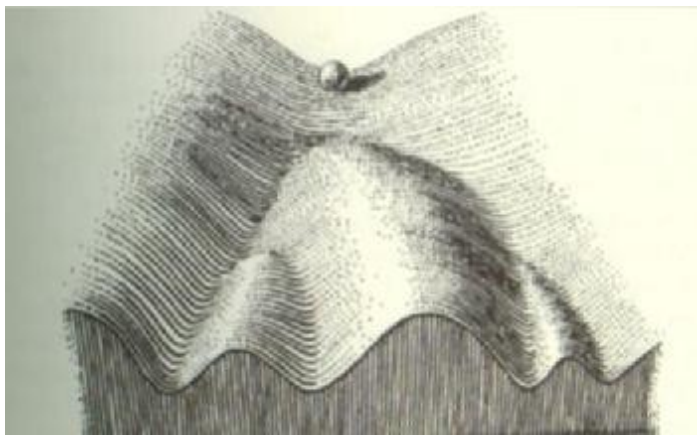
the sequence of bases is 'read off' three at a time. Within the mechanistic framework of thought, the central problem of development and morphogenesis is seen as the control of protein synthesis." (p36)

"Vitalism asserts that the phenomena of life cannot be fully understood in terms of physical laws derived only from the study of inanimate systems, but that an additional causal factor is at work in living organisms...ideas of this type, although widely held, were too vague to provide an effective alternative to the mechanistic theory." p43)

"Organismic theories of morphogenesis have developed under a variety of influences; some from philosophical systems...organicists proposed morphogenetic (or embryonic or developmental) 'fields'. Other developmental biologists soon took up the 'field' terminology, but it remained ill defined, although it served to suggest analogies between properties of living organisms and inorganic electro-magnetic systems

6.3 Chreodes

C.H. Waddington suggested an extension of the idea of the morphogenetic field to take into account the temporal aspect of development. He called the new concept the ***chreode*** (from the Greek chre`, it is necessary, and hodos, route or path) and illustrated it by means of a simple three-dimensional ***epigenetic landscape.***" ([HoMR] p50)



The concept of the chreode is very similar to Pirsig's concept of static latching within the four static levels of the Metaphysics of Quality. In this model, the path chosen is Qualitative rather than quantitative, or infinite.

Sheldrake seems to believe that of the 3 theories, the organicist theory is a most promising starting point. It's difficult to say exactly what a morphogenetic field is, for it is non-energetic and undetectable. This makes the concept very difficult to get a grip on, much like the forces of Dynamic Quality that Pirsig refers to.

Attempting to get a grasp on morphogenetic fields is an example of the objectifying process we have all learned to use to categorize reality and to function as we do. Clearly, this is where most scepticism to Sheldrake's theory of formative causation arises. The morphogenetic fields are undetectable and indefinable in mechanistic terms, yet the evidence of morphogenetic fields is within our own form.

6.4 Morphogenetic Fields and Dynamic Quality

This makes morphogenetic fields impossible to objectify and quantify. And so science, which insists on 'objective' viewpoints, is at a loss to explain anything that is unobjectifiable and so denies existence to it. When we look at the problem from the Quality is everything point of view of the Metaphysics of Quality, the quantitative problems of mechanistic classical thinking begins to disappear.

Dynamic Quality is itself indefinable and undetectable, for as soon as Dynamic Quality is enclosed and named, it becomes 'something' else and not Dynamic Quality. The evidence of Dynamic Quality is only contained in its passing.

In chapter 3, Sheldrake examines the causes of Form, the problems of Form, the relationship to Form and energy:

"In the most general terms, form and energy bear an inverse relationship to each other; energy is the principle of change, but a form or structure can only exist as long as it has a certain stability and resistance to change." ([HoMR] p63)

This is very similar to Pirsig's static latching. Without a certain stability to allow static latches to form, Dynamic Quality would be in a state of total Freedom, what we perceive as chaos. In place of form and energy that we can perceive, we must conceive instead of an unconceptual Energy that exists as Dynamic Quality in the Metaphysics of Quality.

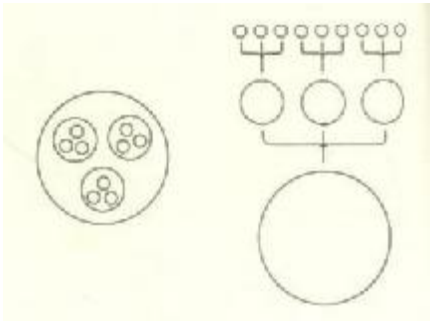
Sheldrake outlines his theory of formative causation:

"The hypothesis of formative causation proposes that morphogenetic fields play a causal role in the development and maintenance of the forms of systems at all levels of complexity. In this context, the word 'form' is taken to include not only the shape of the outer surface or boundary of the system, but also its internal structure. This suggested causation of form by morphogenetic fields is called formative causation in order to distinguish it from the energetic type of causation with which physics already deals with so thoroughly. For although morphogenetic fields can only bring about their effects in conjunction with energetic processes, they are not in themselves energetic." ([HoMR] p71)

6.5 Formative Causation

This is the core of Sheldrake's theory of formative causation. A careful reading will remind the reader much of Pirsig's Dynamic Quality being indefinable and therefore also

non-energetic in nature. According to organismic theory, systems or "organisms" are hierarchically organized at all levels of complexity. Here are some simple hierarchical systems.



These are different ways of depicting ***morphic units***. The adjective morphic (from the Greek root morphe`=form) emphasizes the aspect of structure, and the word unit the unity or wholeness of the system.

Morphogenetic fields are explored in chapter 4. Sheldrake uses the term 'morphogenetic germ' to explain the genesis of being:

" Morphogenesis does not take place in a vacuum. It can only begin from an already organized system that serves as a 'morphogenetic germ'. During morphogenesis a new higher-level morphic unit comes into being around this germ, under the influence of a specific morphogenetic field. So how does this field become associated with the morphogenetic germ to start with?

" The answer may be that just as the association of material systems with gravitational fields depends upon their mass, and with electromagnetic fields on their electrical charge, so the association of systems with morphogenetic fields depends on their form. Hence a morphogenetic germ becomes surrounded by a particular morphogenetic field because of its characteristic form." ([HoMr] p76)

This is not an easy conceptual picture to imagine. First of all, to even ask how anything began is meaningless and unexplainable. I feel this is one mistake that Pirsig made in Lila and so left himself open for attack from certain perceptual angles. It seems that Pirsig uses evolution both in its neo-Darwinian classical sense and in a 'Buddha' sense, but perhaps fails to distinguish between the two when describing his four levels of static quality and how they originated by 'evolving' from each lower layer.

6.6 Evolution by Past Influences

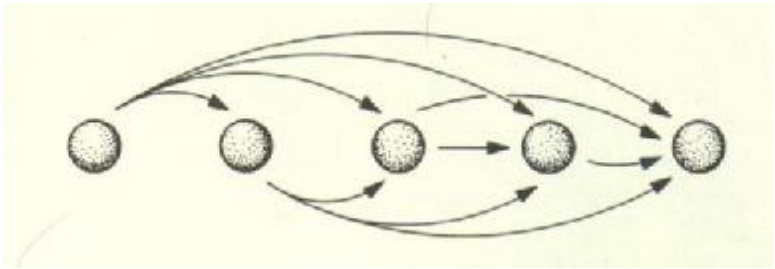
Sheldrake deals with the evolution problem effectively by stating:

"However, this theory can never be more than speculative. The evidence for evolution, primarily provided by the Fossil Record, will always be open to a wide variety of interpretations... thus the problem of evolution cannot be solved conclusively." ([HoMr] p24)

In [HoMr] chapter 5, Sheldrake examines the influence of past forms and the constancy and repetition of forms. He writes:

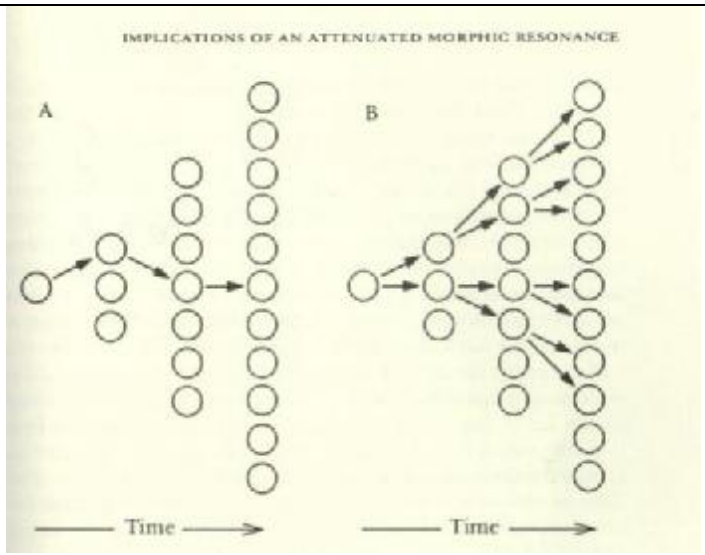
" (i) The first system with a given form influences the second such system, then both the first and the second influence the third, and so on cumulatively. In this process the direct influence of a given system is progressively diluted as time goes by; although its absolute effect does not diminish, its relative effect declines as the total number of similar past systems increase."

Here is an example of what Sheldrake means:



" (ii) The forms of even the simplest chemical morphic units are variable: sub-atomic particles are in ceaseless vibratory motion, and atoms, and molecules are subject to deformation by mechanical collision and by electrical and magnetic fields. Biological morphic units are still more variable; even if cells and organisms have the same genetic constitution and develop under the same conditions they are unlikely to be identical in every respect.

" (iii) The automatic averaging of past forms will result in a spatial probability distribution within the morphogenetic field, or in other words, a probability structure...The probability structure of a morphogenetic field determines the probable state of a given system under its influence in accordance with the actual states of all similar systems; the most probable form the system will take up is that which has occurred most frequently already." ([HoMr] p99f)



This diagram illustrates situations in which the influence of previous systems is exhausted by morphic resonance with only one subsequent system (A) and two subsequent systems (B).

The influence of past systems on present systems is not attenuated by temporal or spatial separation. Nevertheless, the ability of past systems to affect present ones could be weakened or exhausted by action.

6.7 Morphogenetic Fields

Chapter 6 deals with formative causation and morphogenesis. Sequential morphogenesis for instance... " After sub-atomic particles have aggregated into atoms, the atoms may combine together into molecules, and the molecules into crystals. The crystals then retain their form indefinitely as long as the temperature remains below their melting point. By contrast, in living organisms morphogenetic processes continue indefinitely in the endless repeated cycles of growth and reproduction."

Sheldrake examines polarity of morphogenetic fields and their size as well. " Most biological morphic units are polarized in at least one direction...The dimensions of particular atoms and molecular morphic units are more or less constant...although morphogenetic fields may be adjustable in absolute size, the range within which the size of the system can vary is limited by severe physical restraints. This simple fact means that biological systems cannot be magnified or diminished indefinitely without becoming unstable."

He also sums up his theory of formative causation here... " (i) In addition to the types of energetic causation known to physics, and in addition to the causation due to the structures of know physical fields, a further type of causation is responsible for the forms of all material morphic units. (ii) Formative causation depends on morphogenetic fields,

structures with morphogenetic effects on material systems. (iii) Most inorganic morphogenesis is rapid, but biological morphogenesis is relatively slow and passes through a succession of intermediate stages." ([HoMr] p116)

6.8 Inheritance of Form

Sheldrake goes on to list another 5 postulates before moving on to chapter 7, where he discusses the inheritance of form. Here he examines genetics and heredity and talks of altered morphogenetic germs and altered pathways of morphogenesis; family resemblance's and the inheritance of acquired characteristics. He writes:

" The influence of previous organisms on subsequent similar organisms by morphic resonance would give rise to effects which could not conceivably occur if heredity depended only on the transfer of genes and other material structures from parent to their progeny. This possibility enables the question of the 'inheritance of acquired characteristics' to be seen in a new light." ([HoMr] p133)

In chapter 8, Sheldrake discusses evolution in a neo-Darwinian type of way. He writes: " Very little is actually known, or ever can be known, about the details of evolution in the past. Nor is evolution readily observable in the present." ([HoMr] p137)

Sheldrake goes on to examine the Darwinian notion of evolution from a morphogenetic point of view, using terms such as divergence of chreodes, suppression of chreodes and the influence of other species. In summing up the chapter, Sheldrake examines the origin of new forms saying...

" However, neither the repetition, modification, addition, subtraction nor permutation of existing morphogenetic fields can explain the origin of these fields themselves. Nevertheless, during the course of evolution, entirely new morphic units together with their morphogenetic fields must have come into being; those of the organelles, of the basic types of cells, tissues and organs; and of the fundamentally different kinds of lower and higher plants and animals."

6.9 Formative Causation and Movement

In [HoMr] chapter 9, Sheldrake begins examining the role of formative causation in the control of movement. He examines plant movement (normally accomplished by growing), amoeboid movement, and nervous systems in animals. Sheldrake discusses morphogenetic fields and motor fields...

" Although the fields controlling the changes of form of the specialized motor structures of animals are in fact morphogenetic fields, they bring about movement rather than net changes of form." ([HoMr] p162)

Sheldrake ties the senses to these motor fields by writing: " By morphic resonance, an animal comes under the influence of specific motor fields as a result of its characteristic structure and internal patterns of oscillatory activity. These patterns are modified by changes arising within the body of the animal, and by the influences from the environment." ([HoMr] p165)

6.10 Instincts and Learning

Chapter 10 examines an extension of movement known as instinct and learning. Sheldrake describes how influences of past actions effect the present. He writes: " The detailed structure of an animal...will generally resemble 'itself' more closely than any other animal. Thus the most specific morphic resonance acting upon it will be that from its own past. The next most specific resonance will be that of genetically similar animals which live in the same environment." ([HoMr] p170)

Sheldrake goes on to discuss chreode formation and the relationship between instinct and sign stimuli and how they result in what we call learning. He writes:

" Learning can be said to occur when there is any relatively permanent adaptive change in behaviour as a result of past experience." ([HoMr] p176)

Sheldrake believes all forms of life learn in the same underlying way and goes on to explain some similarities between seemingly different species.

6.11 Evolution of Behavior

Chapter 11 deals with the inheritance and evolution of behaviour. Of human behaviour, he writes:

"In human behaviour the ranges of ways in which behavioural goals are reached are far wider than in any other species, but the same principles seem to apply: under the influence of the higher-level motor fields, patterns of action are 'funnelled' towards stereotyped consummatory acts which are generally innate." ([HoMr] p194)

Here Sheldrake is examining the social relationships that arise in all life forms, a striking resemblance to the social layer of the MOQ, in my opinion.

6.12 Sheldrake's Conclusions

In chapter 12, the final chapter, Sheldrake offers four possible conclusions, and describes each one in some detail. He writes of Modified Materialism:

" Materialism starts from the assumption that only matter is real; hence everything that exists is either matter or entirely dependent upon matter for its existence. However, the

concept of matter has no fixed meaning...the philosophy of materialism has had to be modified accordingly." ([HoMr] p200)

...And the Conscious Self:

" Contrary to the philosophy of materialism, the conscious self can be admitted to have reality which is not merely a derivative from matter. One can accept, rather than deny, that one's own conscious self has the capacity to make free choices. Then, by analogy, other people can also be assumed to be conscious beings with a similar capacity." ([HoMr] p202)

...Of the Creative Universe:

" Although a creative agency capable of giving rise to new forms and new patterns of behaviour in the course of evolution would necessarily transcend individual organisms, it need not transcend all nature. It could, for instance, be immanent within life as a whole." ([HoMr] p205)

...And of Transcendent Reality:

" The universe as a whole could only have a cause and a purpose if it were itself created by a conscious agent which transcended it. Unlike the universe itself, this transcendent consciousness would not be developing towards a goal; it would be its own goal. It would not be striving towards a final form; it would be complete in itself.' ([HoMr] p206)

This fourth metaphysics tends to resemble Pirsig's own philosophy a great deal and is the choice of Sheldrake as well.

6.13 My Conclusions

I understand many scientists are sceptical of Sheldrake's theory of formative causation, even though some experimental evidence tends to back up Sheldrake. It seems that to really get into the book, the reader must be prepared to set aside some previously formed assumptions about science, life and reality in general, otherwise one will miss some important points along the way.

I would recommend the discussion in the appendix between David Bohm and Rupert Sheldrake. All through the book, Sheldrake offers experiments on attempting to confirm his hypothesis, and they discuss some of these experiments and what the results mean.

I highly recommend reading 'A New Science of Life' to further understand the intricate way we are all connected with our environment and with each other. And Rupert Sheldrake is able to present these ideas in an interesting and Dynamic way which makes for absorbing reading.

6.14 Frequently Asked Questions

Q- what is morphic resonance?

A- On [HoMr] p95, Sheldrake writes: " The idea of a process whereby the forms of previous systems influence the morphogenesis of subsequent similar systems is difficult to express in terms of existing concepts. The only way to proceed is by means of analogy.

" The physical analogy which seems most appropriate is that of 'resonance'. Energetic resonance occurs when an alternating force that coincides with its natural frequency of vibration acts a system on. Examples include the 'sympathetic' vibration of stretched strings in response to appropriate sound waves; the tuning of radio sets to the frequency of radio waves given out by transmitters; the absorption of light waves of particular frequencies by atoms and molecules, resulting in their characteristic absorption spectra; and the response of electrons and atomic nuclei in the presence of magnetic fields to electromagnetic radiation in Electronic Spin Resonance and Nuclear Magnetic Resonance. Common to all these types of resonance is the principle of selectivity: out of a mixture of vibrations, however complicated, the systems respond only to those particular frequencies."

" A 'resonant' effect of form upon form across space and time would resemble energetic resonance in its selectivity, but it could not be accounted for in terms of any known types of resonance, nor would it involve a transmission of energy. In order to distinguish it from energetic resonance, this process will be called 'morphic resonance'.

" Morphic resonance is analogous to energetic resonance in a further respect: it takes place between vibrating systems. Atoms, molecules, crystals, organelles, cells, tissues, organs and organisms are all made up of parts in ceaseless oscillation, and all have their own characteristic patterns of vibration and internal rhythm; the morphic units are dynamic, not static." ([HoMr] p95)

Here Sheldrake uses the very same words that Pirsig uses to divide Quality into 2 parts, static and dynamic. It is indeed very tempting to believe they are both talking about the same thing.

Thank you for reading!

6.15 Glossary of Terms

adaptation: An attribute of an organism that appears to be of value for something, generally its survival or reproduction. The purposive, or seemingly purposive, nature of adaptations can be thought of in terms of teleology or teleonomy (q.v.).

allele: Each gene (q.v.) occupies a particular region of a chromosome, its locus. At any given locus, there may exist alternative forms of the gene. These are called alleles of each other.

atavism: The reappearance of characteristics of more or Im remote ancestors. Also called reversion or throwing back.

atom: In the philosophy of atomism (q.v.), the eternal, invariant, impenetrably hard, homogeneous, ultimate unit of matter. In chemistry, the smallest unit or part of an element that can take part in a chemical reaction. In modern physics, a complex structure of activity, with a central nucleus orbited by electrons. Nuclei and their constituent particles are in turn complex structures of activity.

atomism: The doctrine that all things are composed of ultimate, indivisible atoms of matter endowed with motion. These ultimate particles are the enduring basis of all reality. In the modern form of this philosophy, atoms have been superseded by fundamental subatomic particles.

attractor: A term used in modern dynamics to denote a limit towards which trajectories of change within a dynamical system move. Attractors generally lie within basins of attraction. Attractors and basins of attraction are essential features of the mathematical models of morphogenetic fields due to Rene Thom.

chreode: A canalised pathway of change within a morphic field.

chromosomes. Microscopic, threadlike structures found in the nuclei of living cells, and also in cells without nuclei such as bacteria. They are made up of DNA and protein and contain chains of genes.

cybernetics: The theory of communication and control mechanisms in living systems and machines.

dialectical materialism: A form of materialism that sees matter not as something static, on which change and development have to be imposed, but as, containing within its own nature those tensions or "contradictions" that provide the motive force for change.

DNA: Deoxyribonucleic acid, a molecule consisting of a large number of chemical units called nucleotides attached together in single file to form a long strand. Usually two such strands are linked together parallel to each other and coiled into a helix. DNA is the material of genetic in-

heritance, but in higher organisms only a small proportion of the DNA appears to be in genes. DNA contains four kinds of nucleotide, and the sequence of the nucleotides is the basis of the genetic code. DNA strands pass on their structure to copies of themselves in the process of replication, and the genetic code of genes can be "translated" into the sequences of amino acids that are joined together in chains to form proteins. Protein synthesis takes place on the basis of strands of RNA (ribonucleic acid), which serve as templates. These are "transcribed" from the DNA of genes.

dominance: In genetics, a dominant gene is one that brings about the same phenotypic (q.v.) effects whether it is present in a single dose along with a specified allele (q.v.), or in a double dose. The allele that is ineffective in the presence of the dominant gene is said to be recessive.

dualism: The philosophical doctrine that mind and matter exist as independent entities, neither being reducible to the other (cf. materialism).

energy: in general, the capacity or power to produce an effect. in the technical sense of physics, energy is the property of a system that is a measure of its capacity for doing work. Work is technically defined as what is done when a force moves its point of application. Energy can be potential or kinetic, and it comes in a variety of forms: electrical, thermal, chemical, nuclear, radiant, and mechanical.

entelechy: In Aristotelian philosophy, the principle of life, identified with the soul or psyche. The entelechy is both the formal or formative cause and the final cause, or end, of a living body; thus there is always an internalised purpose in life. In the vitalism (q.v.) of Hans Driesch, entelechy is the nonmaterial vital principle, a directive, teleological causal factor that brings about harmonious developmental, behavioural, and mental processes (cf. genetic program and morphic field).

epigenesis: The origin of new structures during embryonic development (cf. preformation).

evolution: Literally, a process of unrolling or opening out. In biology, originally applied to the development of individual plants and animals, which according to the doctrine of preformation depended on the unrolling or unfolding of pre-existing parts. Only in the 1830s was this word first applied to the historical transmutation of organisms; by the 1860s and 1870s it had come to refer to a general process of transmutation, which was generally assumed to be directional or progressive. Darwin's theory of evolution by natural selection enabled this process to be thought of as blind and purposeless, and this interpretation is central to neo-Darwinism (q.v.), the dominant orthodoxy in modern biology. A variety of other evolutionary philosophies postulate an inherently creative principle in matter or in life; and some see in the evolutionary process the manifestation of a directional or purposive principle. According to modern cosmology, the entire universe is an evolutionary system.

field: A region of physical influence. Fields interrelate and interconnect matter and energy within their realm of influence. Fields are not a form of matter; rather, matter is energy bound within fields. In current physics, several kinds of fundamental field are recognized: the gravitational and electromagnetic fields and the matter fields of quantum physics. The hypothesis of

formative causation broadens the concept of physical fields to include morphic fields as well as the known fields of physics.

force: In general, active power; strength or energy brought to bear. In physics, an external agency capable of altering the state of rest or motion of a body.

form: The shape, configuration, or structure of something as distinguished from its material. In the Platonic tradition, the term Form is used to translate the Greek term *eides* and is interchangeable with the term Idea. Particular things we experience in the world participate in their eternal Forms, which transcend space and time. By contrast, in the Aristotelian tradition, the forms of things are immanent in the things themselves. From the nominalist point of view, forms have no objective reality independent of our own minds.

formative causation, hypothesis of: The hypothesis that organisms or morphic units (q.v.) at all levels of complexity are organized by morphic fields, which are themselves influenced and stabilized by morphic resonance (q.v.) from all previous similar morphic units.

gene: A unit of the material of inheritance. Genes consist of DNA and are situated in chromosomes; an individual gene is a short length of chromosome that influences a particular character or set of characters of an organism in a particular way. Alternative forms of the same gene are called alleles. The unit of the gene is defined in different ways for different purposes: for molecular biologists it is usually regarded as a *cistron*, a length of DNA that codes for a chain of amino acids in a protein. For some schools of neo-Darwinism, the gene is the unit of selection, and evolution is the change of gene frequencies in populations.

genetic program: A program is a plan of intended proceedings, as in a concert or computer program. The concept of the genetic program implies that organisms inherit plans of intended proceedings; these plans are assumed to be carried in the genes. The genetic program is the principal metaphor through which conceptions of purposive activity and of formative causes are introduced into modern biology (cf. entelechy).

genotype: The genetic constitution of an organism (cf. phenotype).

gestalt: A German term roughly meaning form, configuration, shape, or essence. The term is used to refer to unified wholes, complete structures or totalities that cannot be reduced to the sum of their parts.

habit: A bodily or mental disposition; a settled tendency to appear or behave in a certain way, generally acquired by frequent repetition; a settled practice, custom, or usage. The word habit also means dress or attire, as in a monk's habit. In biology, it is used to refer to the characteristic mode of growth or appearance of a plant or animal; and crystallographers refer to the habits of crystals, meaning the characteristic forms they assume. On the hypothesis of formative causation, the nature of morphic units at all levels of complexity tends to become increasingly habitual through repetition, owing to morphic resonance.

heredity: The transmission of characters from ancestors to their descendents. Originally under-

stood in a broad sense that included the inheritance of acquired characteristics and habits of life; restricted in modern biology to mean the inheritance of genes (see Mendelian inheritance, neo-Darwinism). According to the hypothesis of formative causation, heredity includes both genetic inheritance and the inheritance of morphic fields by morphic resonance.

holism: The doctrine that wholes are more than the sum of their parts (cf. reductionism).

holon: A whole that can also be part of a larger whole. Holons are organized in multi-levelled nested hierarchies or holarchies. This term, due to Arthur Koestler, is equivalent in meaning to morphic unit (q.v.).

homoeotic mutation: A mutation causing one part of the body to develop in a manner appropriate to another part: for example, a leg growing where an antenna normally does in a fruit fly.

information: To inform literally means to put into form or shape. Information is now generally taken to be the source of form or order in the world; information is informative and plays the role of a formative cause, as for example in the concept of "genetic information."

information theory: A branch of cybernetics (q.v.) that attempts to define the amount of information required to control a process of given complexity. Information in this narrow technical sense is measured in bits. A bit is the amount of information required to specify one of two alternatives, for example to distinguish between 1 and 0 in the binary notation used in computers.

interactionism: A form of dualism (q.v.) according to which mental events can cause physical events, and vice versa.

Lamarckian inheritance: The inheritance of acquired characteristics. Until the late nineteenth century, it was generally believed that characteristics acquired by organisms in response to the conditions of life or as a result of their own habits could be inherited by their descendents, and both Lamarck and Darwin shared this general opinion. The possibility of this type of inheritance is denied on theoretical grounds by the current orthodoxy of genetics (cf. Mendelian inheritance).

materialism: The doctrine that whatever exists is either matter or entirely dependent on matter for its existence.

matter: That which has traditionally been contrasted with form or with mind. In the philosophy of materialism, matter is the substance and basis of all reality, and is usually conceived of in the spirit of atomism. In Newtonian physics, matter, distinguished by mass and extension, was contrasted with energy. According to relativity theory, mass and energy are mutually transformable, and material systems are now regarded as forms of energy.

mechanics: In its broad, traditional sense, the body of practical and theoretical knowledge concerned with the invention and construction of machines, the explanation of their operation, and the calculation of their efficiency. In physics, the study of the behaviour of matter under the action of force. in the present century, Newtonian mechanics has been substantially modified by relativity theory and has been replaced by quantum mechanics as a method of interpreting physi-

cal phenomena occurring on a very small scale.

mechanistic theory: The theory that all physical phenomena can be explained mechanically (see mechanics), without reference to goals or purposive designs (cf. teleology). The central metaphor is the machine. In the seventeenth century, the universe was conceived of as a vast machine, designed, made, and set running by God and governed by his eternal laws. By the late nineteenth century, it was commonly regarded as an eternal machine which was slowly running down. In biology, the mechanistic theory states that living organisms are nothing but inanimate machines or mechanical systems: all the phenomena of life can in principle be understood in terms of mechanical models and can ultimately be explained in terms of physics and chemistry.

meme: A term coined by Richard Dawkins, who defines it as "a unit of cultural inheritance, hypothesized as analogous to the particulate gene and as naturally selected by virtue of its 'phenotypic' consequences on its own survival and replication in the cultural environment."

memory: The capacity for remembering, recalling, recollecting, or recognizing. From the mechanistic point of view, animal and human memory depend on material memory traces within the nervous system. From the point of view of the hypothesis of formative causation, memory in its various forms, both conscious and unconscious, is due to morphic resonance.

Mendelian inheritance: Inheritance by means of pairs of discrete hereditary factors, now identified with genes. One member of each pair comes from each parent. The genes may blend in their effects on the body, but they do not themselves blend and are passed on intact to future generations.

mind: In Cartesian dualism, the conscious thinking mind is distinct from the material body; the mind is non-material. Materialists derive the mind from the physical activity of the brain. Depth psychologists point out that the conscious mind is associated with a much broader or deeper mental system, the unconscious mind. In the view of Jung, the unconscious mind is not merely individual but collective. On the hypothesis of formative causation, mental activity, conscious and unconscious, takes place within and through mental fields, which like other kinds of morphic fields contain a kind of in-built memory.

molecule: A chemical unit. The smallest amount of a chemical substance that is capable of independent existence. Each kind of molecule has a characteristic atomic composition, a specific structure, and specific physical and chemical properties.

morphic field: A field within and around a morphic unit which organizes its characteristic structure and pattern of activity. Morphic fields underlie the form and behaviour of holons or morphic units at all levels of complexity. The term morphic field includes morphogenetic, behavioural, social, cultural, and mental fields. Morphic fields are shaped and stabilized by morphic resonance from previous similar morphic units, which were under the influence of fields of the same kind. They consequently contain a kind of cumulative memory and tend to become increasingly habitual.

morphic resonance: The influence of previous structures of activity on subsequent similar struc-

tures of activity organized by morphic fields. Through morphic resonance, formative causal influences pass through or across both space and time, and these influences are assumed not to fall off with distance in space or time, but they come only from the past. The greater the degree of similarity, the greater the influence of morphic resonance in general, morphic units closely resemble themselves in the past and are subject to self-resonance from their own past states.

morphic unit: A unit of form or organization, such as an atom, molecule, crystal, cell, plant, animal, pattern of instinctive behaviour, social group, element of culture, ecosystem, planet, planetary system, or galaxy. Morphic units are organized in nested hierarchies of units within units: a crystal, for example, contains molecules, which contain atoms, which contain electrons and nuclei, which contain nuclear particles, which contain quarks.

morphogenesis: The coming into being of form.

morphogenetic fields: Fields that play a causal role in morphogenesis. This term, first proposed in the 1920s, is now widely used by developmental biologists, but the nature of morphogenetic fields has remained obscure. On the hypothesis of formative causation, they are regarded as morphic fields stabilized by morphic resonance.

mutation: A sudden change. Mutations are observed in the phenotypes of organisms, and can generally be traced to changes in the genetic material. The term mutation is now generally taken to mean a random change in a gene.

nature: Traditionally personified as Mother Nature. The creative and controlling power operating in the physical world, and the immediate cause of all phenomena within it. Or the inherent and inseparable combination of qualities essentially pertaining to anything and giving it its fundamental character. Or the inherent power or impulse by which the activity of living organisms is directed or controlled. From the conventional point of view of science, nature is made up of matter, fields, and energy and is governed by the laws of nature, usually thought to be eternal.

neo-Darwinism: The modern version of the Darwinian theory of evolution by natural selection. It differs from Darwin's theory in that it denies the possibility of Lamarckian inheritance (q.v.); heredity is explained in terms of genes passed on by Mendelian inheritance (q.v.). Genes mutate at random, and the proportions of alternative versions of genes, or alleles, within a population are influenced by natural selection. In its most extreme form, neo-Darwinism reduces evolution to changes of gene frequencies in populations.

organicism: A form of holism according to which the world consists of organisms (or holons or morphic units, q.v.) at all levels of complexity. Organisms are wholes made up of parts, which are themselves organisms, and so on; they are organized in nested hierarchies. The parts of organisms can be understood only in relation to their activities and functions in the ongoing whole. Organisms in this sense include atoms, molecules, crystals, cells, tissues, organs, plants and animals, societies, cultures, ecosystems, planets, planetary systems, and galaxies. In this spirit, the entire cosmos can be regarded as an organism rather than a machine (cf. mechanistic theory).

paradigm: An example or pattern. in the sense of T. S. Kuhn (1970), scientific paradigms are

general ways of seeing the world shared by members of a scientific community, and they provide models of acceptable ways in which problems can be solved.

phenotype: The actual appearance of an organism; its manifested attributes. Contrasted with the genotype, which is the particular genetic material the organism has inherited from its parents.

physicalism: A modern form of materialism. The doctrine that all scientific propositions can in principle be expressed in the terminology of the physical sciences, including propositions about mental activity.

Platonism: The philosophical tradition that, following Plato, postulates the existence of an autonomous realm of Ideas or Forms or essences existing outside space and time and independently of manifestations of them in the phenomenal world.

protein: A complex organic molecule composed of many amino acids linked together in chains, called polypeptide chains. The sequence of amino acids is specified by the sequence of nucleotides in the DNA of genes. There may be one or more such chains in a protein, and the chains are folded up into characteristic three-dimensional configurations. Proteins are found in all living organisms, and there are many different kinds of protein molecule. Many proteins are enzymes, the catalysts of biochemical reactions; others play a variety of structural and other roles.

preformation: The theory (now known to be false) that the entire diversity of structure of adult organisms pre-exists in the fertilized egg. Embryonic development supposedly consisted merely of the manifestation of this preformed structure as it enlarged and unfolded, or "evolved" (cf. epigenesis).

Pythagoreanism: The belief that the universe is somehow essentially mathematical. its fundamental mathematical reality transcends space and time. Closely akin to Platonism.

reductionism: The doctrine that more complex phenomena can be reduced to less complex ones (cf. holism). In philosophy, the theory that human behaviour can ultimately be reduced to the behaviour of inanimate matter governed by the laws of nature. In biology, the belief that all the phenomena of life can ultimately be understood in terms of chemistry and physics. Closely associated with the mechanistic theory, materialism, and atomism (q.v.).

regulation: in embryology, the normal development of an embryo, or part of an embryo, in spite of the disturbance of its structure in some way, as by removing some of it, adding to it, or rearranging it. For example, half of a young sea-urchin embryo will develop into a small but normally proportioned larva and eventually into a normal sea urchin.

synapse: An area of functional contact between nerve cells or between nerve cells and effectors such as muscle cells.

systems theory: A form of holism concerned with the organization and properties of "systems" at all levels of complexity. Much of the early inspiration for this approach came from an attempt to establish parallels between physiological systems in biology and social systems in the social

sciences. The systems approach has been deeply influenced by cybernetics (q.v.). The central metaphor in much systems thinking is the self-regulating machine.

teleology: The study of ends or final causes; the explanation of phenomena by reference to goals or purposes.

teleonomy: The science of adaptation. "in effect, teleonomy is teleology made respectable by Darwin" (Dawkins, 1982). The apparently purposive structures, functions, and behaviour of organisms are regarded as evolutionary adaptations established by natural selection.

vitalism: The doctrine that living organisms are truly vital or alive, as opposed to the mechanistic theory that they are inanimate and mechanical. Living organization depends on purposive vital factors, such as entelechy (q.v.), which are not reducible to the ordinary laws of physics and chemistry. Vitalism is a less far-reaching form of holism than organicism (q.v.), in so far as it accepts the mechanistic assumption that the systems studied by physicists and chemists are inanimate and essentially mechanical.

7 Bibliography

[CP]	Buckminster Fuller, Critical Path
[aSR]	Carlos Castaneda A Separate Reality: Further Conversations with don Juan
[JtI]	Carlos Castaneda Journey to Ixtlan
[ToP]	Carlos Castaneda Tales of Power
[TTodJ]	Carlos Castaneda The Teachings of don Juan: A Yaqui Way of Knowledge
[OoC]	Julian Jaynes The Origin of Consciousness in the Breakdown of the Bicameral Mind
[Lila]	Robert M. Pirsig Lila; An Inquiry into Morals
[ZaM]	Robert M. Pirsig Zen and the Art of Motorcycle Maintenance
[HoMR]	Rupert Sheldrake A New Science of Life; The Hypothesis of Morphic Resonance
[Pr]	William James Pragmatism
[TMT]	William James, The Meaning of Truth