OPERATING PRINCIPLE OF THE UNI-VERSITY

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ABSTRACT

Ludwig von Bertalanffy, in the very last sentence of the last chapter of his book *General System Theory* wrote:

> *"Note 7. Notice the theological motive in Leibniz's invention of the binary system. It represented Creation since any number can be produced by a combination of 'something' (1) and 'nothing' (0). But has this antithesis metaphysical reality, or is it but an expression of linguistic habits of the mode of action of our nervous system?" (Bertalanffy 1969)*

It is posited in this paper that such a principle does in fact have a metaphysical reality. It exists not only in the conceptual schemes of humankind as a fundamental principle of that conceptual process, "an expression of linguistic habits…" but also in nature as the primary principle of structural co-operation a.k.a. synergy or the integrative system.

In this paper I will discuss the complementary (a.k.a. system) as an artifact of our conceptualization process as well as provide examples of the metaphysical reality by which nature works together at all levels of existence. This principle is not to be confused with a "Theory of Everything" which is, in principle, impossible because, in short, any thing cannot be everything. However, there can be and is a principle of how everything works as exemplified in the concept of a minimal system. (Schwarz 1995) In short, there is no "General System Theory" but there is a "General System Principle". That principle stated implicitly is "working together."

Keywords: Theory of Everything, Principle of Everything. Operating Principle, Universal Principle, Principle of Conceptualization, General System Theory.

INTRODUCTION

The quest for the unifying principle of the Universe has been with us ever since we could wonder in awe at the sun and stars in the sky. This drive exists because there is in fact a unifying principle. If there were no such principle, then the esoteric thoughts of great thinkers given to us throughout the history of mankind would eventually be revealed as false. This falsification has not happened. Instead the search continues. But is this principle something unknown remaining to be yet discovered? For example, complexity science's search for the Ur principle? Or is it already known?

The quest to grasp the nature of the Universe has been around in recorded history since the Chinese formulated their Yin/Yang concept to describe it in the I Ching around 3000 B.C.. Since then, poets, philosophers and scientists proposed dozens of versions. It was picked up in the Father and Mother in the Kabala, The Subject, Object and Fohat by Blatvaski, by the Opposites of Heraclites, The Love and Hate from Empedocles, the Coincidentia Oppositorum of Nicholas of Cuza, the Binary system of Leibniz, the binary asymmetrical relationships of Salk, the first, second and thirdness of Peirce, and, nowadays, in Bertalanffy's elements in standing relationship philosophy of general systemology.

BACKGROUND

In 1980, Scientific American published an article by Gerard t'Hooft in which he describes the theories of the four forces of nature and their general form.

> "A long standing ambition of physicists is to construct a single master theory that would incorporate all the known forces. One imagines that such a theory would reveal some deep connection between the various forces while accounting for their apparent diversity. Such an unification has not been attained, but in recent years some progress may have been made...*What may ultimately prove more important, all four forces are now described by means of theories that have the same general form*. Thus if physicists have yet to find a single key that fits all the known locks, at least all the needed keys can be cut from the same blank." (t'Hooft 1980)

Perhaps the best survey of such a quest is given by John Barrow in his book *Theories of Everything*. I have excerpted several of his key statements and they read:

> "...a theory of everything which will unite all the laws of nature into a single expression... an abbreviated representation of the logic behind the universe's properties...a single coherent framework...an encapsulation of all the laws of nature...a simple and single representation...the ultimate directory...an independent prescription which appeals to simplicity, naturalness and economy...a union of perfect and unique intercompatibility ... a general principle ... which can be applied in a variety of different situations without becoming embroiled in their peculiarities...Perhaps there exist a whole set of basic rules about the development of complexity which reduce to some of our simpler laws of nature in situations where the level of complexity is essential nil. If such rules do exist, then they are not like the laws which the particle physicists seek. But is there any evidence that such principles exist? A collection of 10^{27} protons, neutrons and electrons may be all that a desktop computer is at some level, but clearly the way in which those sub-atomic particles are put together, is what distinguishes the computer from a crowd of 10^{27} separate sub-atomic particles. ...The question of the existence of a "secret of the Universe" amounts to discovering whether there is some deep principle from which all other knowledge of the physical world follows..." (Barrow 1991)

So the question is whether or not such a principle can be found, and indeed it has as a general form. In Jonas Salk's book, *The Anatomy of Reality*, he writes

> "It appears that all units of reality are comprised of two basic elements in an asymmetrical binary relationship in dynamic interaction...As noted above, one of the basic ideas that underlies my thinking, one of the images I have in mind when I contemplate the universe, is that it is constructed upon a simple pattern of order that may be seen in any and all phenomena, no matter how complex. The simple pattern is that of a binary relationship, recognized in a binary system. The implication here is that everything in nature, everything in the universe, is composed of networks of two elements, or two parts in functional relationship to each other...The most fundamental phenomenon in the universe is relationship." (Salk 1983)

What Salk is talking about is the complementary relationship as a general form. We can fast-forward a little and jump to one of the conclusions reached by quantum physicists in the book *The Conscious Universe:*

> "We will also advance the hypothesis that the epistemological situation we are obliged to confront in a quantum mechanical universe, in which non-locality must now be viewed as a fundamental fact of nature, provides a new basis for understanding the ability of the human brain to construct symbol systems, or symbolic representations of reality. Drawing extensively on Niel Bohr's definition of the logical framework of complementarity, which we regard as fundamental to understanding the actual character of physical reality in a quantum mechanical universe, we will advance and attempt to support the view that complementarity is the most fundamental dynamic in our conscious constructions of reality in both ordinary and mathematical language systems. If this thesis is correct, it provides a more reasonable and self-consistent explanation than physical scientists have developed thus far as to why the language of mathematics, or the language of mathematical physics, is more "privileged" in its ability to uncover the dynamics of physical reality than is ordinary language. And it could also relieve much of the obvious "angst" that has apparently been occasioned by the rather widespread conviction among humanists and social scientists that all of us are locked, as Nietzsche put it, in the "prison house" of our linguistically-based constructions of reality with no real or necessary connection between subjective reality and external reality. The most radical hypothesis advanced here is, however, more narrowly scientific. That hypothesis is that since complementarities has been a primary feature in every physical theory advanced in mathematical physics beginning with the Special Theory of Relativity in 1905, and since complementarity can also be shown to be an emergent property or dynamic in the life of the evolving universe at increasingly larger scales and times, the future advances in physical theory in cosmology, or in the study of the origins and evolution of the entire universe, will also feature complementary constructs." (Kafatos 1990)

Such a principle is not a modern invention, Lao Zhu writes in the Tao te Ching:

In the beginning was the Tao
The Tao begot One
One begot Two
Two begot Three
The Three begot the Ten Thousand Things
The Ten Thousand Things embrace Yin and express Yang
Harmony is achieved by combining these forces (Lao Tzu 1974)

It is assumed in this paper that there is such a principle and that it is well known, but is there a theory?

Barrow concludes that finding a Theory of Everything would be like saying everything, which would be saying nothing at all. There is a problem, after all, with such a "theory". In order for science to formulate a Theory of Everything, it will have to do so in a specific way. It would have to say "something." This is the catch; the Theory of Everything cannot be a specific way, it cannot say something, even everything, because to do so would by definition exclude what is not something. Ultimately, there cannot be a scientific THEORY of Everything. The subtle error in logic, the assumption that the unifying principle can be stated as a theory, is fatal.

Science and Philosophy

Much ado has been made about the translated word "theory", so that there are two ways of interpreting the phrase "General System Theory. One is a "general system" theory and the other is a general "theory of systems". The former implies a single theory that applies to all systems in general, whereas the latter implies a general theory of system principles. Considerable resistance to a single universal general theory has emerged, and the mainstream systemic view has gravitated to a more plausible "general theory of system aspects." This paper posits that both views are valid, but not when taken as a strictly scientific "theory". It is proposed that there is in fact both a general system principle and there are several additional principles composing a theory of systems.

So the controversy around the translation of Bertalanffy's book is actually a confusion of terms which has been recently made moot by the translation of general system theory into General Systemology by David Pouvreau and Manfred Drack in their article *On the History of Ludwig von Bertalanffy's "General Systemology" and its Relationship to Cybernetics* (Drack 2007).

Philosophy and the General

To make a distinction between philosophy and science clear, consider, for example, the Pythagorean theorem. In it's general form, $A^2+B^2=C^2$, it applies to all right triangles. The philosophical expression is a general expression. However, in its specific form, the form

that a scientist would use, it applies only to a specific situation, say: $3^2+4^2=5^2$. This is why scientific formulations, in principle, cannot be wholly composed of generals. Science cannot use the general formulation in that form in any useful way. All science can do, as it is defined in this paper, is find a specific application of the general principle. It is up to the philosophy of science to make it general. It follows therefore, that the supposed Theory of Everything cannot by itself be a theory. However, the impossibility of a Theory of Everything does not imply the impossibility of a Principle of Everything. We can say that all red is a color, but we cannot say that all color is red.

The unifying principle is not to be found in some new science of complexity, or is it a mysterious esoteric secret, instead it can be found in the science of simplicity, but not just any simplicity. A universal principle would have to also describe/enable the simplest form if it were to apply universally. But only the simplest can describe itself. For the same reasons, a principle of complexity, if there is a fundamental principle of complexity to be found, will likewise be found in the simplest form of complexity. Therefore if there is principle of complexity, such as the Ur principle, it will necessarily be the simplest complexity, e.g., a minimal system. A system, by any (systemic) definition, is a complex. Ironically, a "complex system" is oxymoronic. The simplest complex system is a system.

Simple but not too Simple

Surprisingly, simplicity is not as simple as some would think. I was led to this not-too-simple principle because I had used a very simple model to explain a profound insight I had. An insight that was new to me. This turned out to be a great advantage. I used a ordinary coin to model my insight: that the two sides make up a whole coin. That comes pretty close to how I initially modeled my insight. Here is where the story took an ironic fork in the road. I already knew that! In fact, I surmised, everyone knows there are two sides of every coin! So what? But this insight felt "new" to me, so I figured there must be something else, there must be more than just two sides of every coin. And shortly I realized there is the inside that hold the two outsides together -- a third side of every coin,. There are three sides of every coin. At first I thought that was new enough, indeed it would take five years before I found a similar formulation (the Hegelian Triad). In the end, it is an old principle, even older that the Triad which turns out to be a two sided coin.

It is often believed that one is the smallest quantity. At first glance, any concept that we create in our mind seems to start with one single concept. Let's say we start with a point. A point seems like it is a single point. It would seem that a single point is one point. But when we go deeper into our conceptualizing, and examine more fully what we have actually created, we find that we, in our creation of a single point, have done so by isolating it from everything else and in doing that have also created the anti-point. So our creation of a single point is a creation of two concepts, the point and the anti-point. Up means, also, down. But is that all there is to it? No, because when we isolated the point from the anti-point we effectively eliminated or hid their relationship that once held them together as a whole. We have transformed what was three into one, and then assumed that the one is all there is to it. It is in this way that the Hegelian Triad denoting Thesis>Antithesis>Synthesis is incomplete. It is obvious that there must be a relationship

between Thesis and Antithesis before a Synthesis can emerge. A movement from a Thesis to an Antithesis is not a Synthesis.

It is proposed in this paper that the simplest concept of a "part" is not one part or even two parts but three conceptual parts. That is to say if we divide anything into parts we will have divided it into a minimum of three parts. Obviously, one part is not a part, it is the whole. So, also obviously, one part means, by definition as described above, two parts. Not so obvious, two parts have to be in a relationship to be a whole. That adds up to three conceptual parts. The least number of parts composing a whole is three. And it is this very part that we have eliminated that true existence resides.

It is further proposed that these three aspects of a whole are archetypal; they are implicit in all conceptual formulations. It may follow then, that these three archetypal concepts, the "This" and the "That" and their "relationship" found in any conceptualization process, forms a primary or first principle of conceptualization. Is there more?

PART TWO

The Operating Principle of the Uni-versity

As a concept, this principle is not something that is mysterious or even profound. It is, after all, just a way of looking at things. A perspective. What may be profound is whether or not such a principle, in the words of Bertalanffy, has a "metaphysical reality"? I am suggesting that it does in fact exist as a reality in nature, that it has an existence independent of human thought, and is not at all mysterious. It is, however, not trivial either.

In this section I will be using DNA as an operational example of how and where the principle is at work at a fundamental biological level. This principle will be presented here as a philosophical principle, and therefore will not be bound to the normal scientific criterion of a presentation of a scientific theory. Specifically, while particular examples will be presented, these particulars are to be regarded as philosophical positions and thus will not be presented in a strictly quantitative manner.

As review, the principle being shown here is first of all the simplest conceptual principle. In any concept a distinction is made between one concept and the other non-concept. No concept can exist without this distinction. Even if we show a single point, it is presented as a point, and by doing so we also have presented that which the point is not. So in any conceptual system we have at least two primary concepts. The concept itself and the anticoncept. This much is obvious. What is not obvious and what is presented as "new" or at least "unique" is the relationship between the point and the anti-point. However in most cases what is obvious is also hidden. When we remove the point from the whole, we have also removed the relationship between the point and the Whole that prior to the separation held them together as a single whole. When we separate the whole into parts we eliminate the relationships between the parts. Our analysis then, given only the two separated parts, proceeds without the relationships as if they do not exist. Therefore, in

any conceptual system, we can identify THREE (3) primary elements, the concept, the anti-concept and their relationship. (This is similar if not identical to Peirce's First, Second and Thirdness approach.)

So, it is clear that the first division of anything conceptual will be a division into three elements (two entities and one relationship). The question now becomes what has nature done with this. Nature is defined here for our purposes as the natural process. (An interesting experiment that might be conducted is to try to cut a pie into three or more "pieces" with one single slice."

The Blueprint of Life

We will now discuss Life. This discussion will be confined to Eukaryotic organisms, organisms having a nucleus. A living multicellular organism begins with the unification of a egg cell and a sperm. Both the egg and the sperm contain a single strand of DNA. An egg is a complete cell (the largest cell in the human) whereas the sperm is only a single strand DNA with a protein coat (the smallest cell in the human body). Following is a description of the organism according to the uni-versity principle being presented in this paper. Notice the word "uni-versity" which is meant to contain both the unity and the diversity of an organism.

First a Review

In most organisms, DNA is formed as a very long and very narrow double-helix formation of two DNA strands coiled around each other in a head-to-toe "antiparallel" orientation. The strands provide structural support for a complementary pair of bases located inbetween the strands (a base pair is like a letter of a genetic word). A sequence of three base pairs forms a codon (a DNA word) on the DNA strand that encodes the information for one amino acid residue. A series of codons, and associated start/stop codons, (a DNA sentence or gene) forms the genetic code for the selection of particular amino acids and their specific arrangement necessary for the assembly of a particular protein molecule. The protein molecules, as many as 20,000 different types, are used in the cell, or are transported, often via small containers (vesicles), to other areas of the organism.

Each single strand of DNA is a long biopolymer comprised of repeating units called nucleotides. A nucleotide is a base linked to a sugar and phosphate group which form a sugar/phosphate backbone. Attached to each sugar molecule (deoxyribose) is one of the four "bases"; Adenine (A), Thymine (T), Guanine (G) or Cytosine (C).

Double stranded DNA is formed by a weak hydrogen bond between the bases holding the nucleotides together. Each base is a structural complement of its opposing base, so both together form the base pair. The complementarity base pairs, A&T, C&G, are identical in size and shape and only one of the four arrangements - TA, AT, GC and CG, will fit between the backbones of double stranded DNA; e.g., adenine always pairs with thymine and guanine always pairs with cytosine. This "complementarity", is at work in all DNA

functions, and makes it possible for DNA to be copied and repaired relatively easily, while accurately preserving its information content. Thus it forms the basis of semi-conservative DNA replication.

Nuclear DNA is organized and stored as chromosomes within the nucleus. The nucleus is a double membrane separating the DNA from the cytoplasm of the cell enabling certain processing to occur prior to protein synthesis. Each chromosome holds hundreds or thousands of genes. A gene can be described in different ways but in general can be thought of as a whole unit of genetic information.

At conception, the male sperm, (a half stranded DNA with a protein coat), and female ovum, (an unfertilized egg also containing a single strand of DNA), each contribute 23 chromosomes for a total of 46 chromosomes in the human fertilized embryo. The total sum of chromosomes is called the kayrotype in eukaryotes (organisms such as plants, yeasts and animals whose cells have a nucleus)

The entire DNA sequence of genes as a whole in any organism is called its genome. The genome provides the necessary genetic instructions to produce the phenotype, the outward physical manifestation of an organism, as well as the necessary processes involved in the replication of nuclear DNA.

It is the complementary structure of DNA which enables it to function as a template for translating the genetic code and the assembly of the proteins. This complementary structure also enables the double stranded DNA to be separated and replicated as two exact duplicates during cell division (replication). Nobel lauareat Arthur Kornberg explains, "Complementarity has come to explain transcription and translation and thus the entire sequence of events in the expression of genetic functions. It is also the basis for exchange of DNA segments between chromosomes in several forms of recombination." (Kornberg 1980)

The Complementary

This is a simple but accurate mainstream description of the DNA process. Now we will look at how these elements and processes form groups, in particular a this and that group. To do this I will be using groups or systemic units or holons as conceptual entities.

A complementary process (synergy) is a process of working together. Together implies more than one. Working implies action. Working together implies at least two working together. In the following example I will show how the DNA process is composed throughout the entire process of two somethings working together.

A Translation

For this explanation I will be using “WT” to denote the relationship between the pairs. This relationship is contextual and depends on the situation being described. It is not the purpose of this description to ascertain what WT is, only that it is present.

The first grouping is male and female and their relationship. This grouping is obvious and applies to most living organisms.

(Male/Female)WT <=> Marriage

This relationship, if loving, results in a unification

(Sperm/Ovum)WT <=>Zygote

The significant process upon the integration of the sperm and egg is a union of single stranded DNA from the female egg and male sperm each, forming one double stranded DNA molecule.

(SSDNA/SSDNA)WT <=> DNA molecule

Double strands, as a unified object, consists of two strands each constructed from a repeating series of a sugar molecule and a phosphate molecule

(Sugar/phosphate)WT <=> single DNA backbone

Each of the strands are bonded to the other by the complementary bonds of the bases forming the backbone of DNA

(Strand/antiparallel strand) WT<=> double stranded backbone

Bonded to the sugar molecule is one of four different types of bases

(Sugar/base) WT <=> nucleoside

Two of the bases are complementary to two other bases

(T/A)WT <=> base pair

(C/G)WT <=> base pair

The DNA molecule is wound around a protein and further folded into a chromosome.

(DNA/Histones)WT <=> chromosome

Replication is achieved by the transcription of a sequence of codons to a complementary mRNA

(SSDNA/mRNA)WT <=> isolated mRNA

The mRNA is a complementray of the sequenced codons.

(Guanine/Cytozine)WT <=> Base pair

(Anadine/Thymine)WT <=> Base Pair

Amno acids The amino acid is a ring of atoms with a tail. All amino acids have an identical ring but different tails. So here we have a common “This” which works together with a different “That” with the result if 21 different amino acids.

(Circle/tail)WT < = > Amino acid

Amino acid itself is composed of a amine group and a carboxylic acid group hence amino acid/

(Amine group/Carboxylic acid group)WT < = > Amino acid

Translation the mRNA moves the transcribed sequence to a Ribosome . The ribosome is constructed of a small and a large part. The ribosome is assembled within the nucleus as a small and a large unit, a this and a that, and then is moved to the cytoplasm.

(Small ribosome part/big ribosome part)WT <=> ribosome

The ribosome reads the sequences and connects the appropriate amino acid one at a time, it connects a this with a that. The ribosome is a biomachine which translates the tRNA sequence of amino acids into a protein one step at a time.

(amino acid string/amino acid)WT <=> incomplete protein string

An enzyme connects to a this molecule and also connects to the other that molecule. In all cases, an integration of molecules requires the enzyme action to assemble the molecules or proteins. By connecting the molecules together eventually a protein is formed. When the ribosome is assembling the protein it does it by assembling one single amino acid to the partial string one at a time. So in all cases it is assembling a this to a that. It should be noted that a particular RNA may have multiple ribosomes moving along its length at a time. And that there may be multiple ribosomes acting on multiple mRNA.

(molecule/molecule)enzyme <=> large molecule

The reverse process of disassembling proteins in order to obtain energy also works by enzyme action.

Molecules <=> enzyme(molecule/molecule) <=> energy

And in all of these cases, the addition or removal is a binary process of a this and a that working together.

(This molecule/That molecule)WT < = > complete molecule

> What is have just described in the entire DNA process using the same general form. The same general form that t'Hooft used t describe the Four Forces of nature, and the same general form that physicists use in their theories, and the same general form used in many archetypal principles.

Exceptions to the Rule

It has been pointed out that there are tens of thousands of process occuring in a typical cell and that not all of them are as simple as this principle would suggest. This is true, but what is being posited here is that all of them are derived from this simple principle. Every combination of molecules or amino acids or proteins occurs by means of enzymes. An enzyme works by attaching to one part and the other part. This is also true of combinations that are being separated. It is suggested here that every one of these process occurs as a binary process, that is to say every process is an integration of a this and a that. The fact that there are millions of these processes occuring at any given moment does not invalidate the principle itself.

It has been suggested that there are many cases where more than two units are involved. For example there are thousands if not millions of processes going on in a typical cell. I do not wish to suggest that this is not true. What I would suggest it that each of these thousands of processes are working according to this principle. A good example is cell membrane. Cell membrane is made of two molecules back to back repeated the appropriate number of times.

> (molecule/molecule)WT < = > membrane

Additional Reading

In additon to this formulation, a scientific notation was invented by the author and published if the journal *Scientific Inquiry* (Mandel 2006)

CONCLUSIONS

What I have shown here is that the entire process of DNA structure, transcription, replication and protein construction is accomplished by the complementary process of taking a this, and with the aid of an enzyme, combining with a that ending with a new whole. And while there may be tens of thousands if not millions of simultaneous processes occuring in any single cell, all of them follow this simple scheme.

All molecular process involving both the integration and/or differentiating involve an enzyme. The enzyme works by making a connection to a this and then a connection to a that and then bringing them together. And it does this one at a time.

The purpose of this demonstration is to show that the foundational structures in all living being are fundamentally a complementary process. There is little reason to suspect that this complementary process does not follow through in all the processes involved in

living organisms. If this is eventually shown to be true, then it is clear that this complementary process, the assymetrical binary system, forms a universal principle.

To use this principle in any way you want, just clap your hands. Think of that as the general syntax. Now add your own semantics, what do you hold in your left hand and what do you hold in your right hand, Bring them together.

It is as Kafatos and Nadeau writes: a skeleton key from which all other keys could be made.

For Discussion

It is not within the scope of this paper to speculate on the evolution of all living beings. But it is clear to this author that such a scheme, which is really a simple system, is the evolutionary principle by which all life emerges. The alternative view, survival of the fittest by natural selection, is sterile. Natural selection is "after the fact" and doesn't kick in until after the evolutionary change has taken place. When pinned down, advocates of the selection viewpoint propose that the preceding evolutionary change was a random mutation, an accident. But there are far too many changes requiring multiple simultaneous changes to explain by means of an accident. Survival of the fittest has led to a notion that the Universe operates by competition, that harmony is achieved by the victory of one over the other. There is nothing in the human body that operates accidently or by means of competition outside of cancer and dis-ease. It should be obvious, as evidenced by the first steps in the creation and maintenance of all living organisms that the primary evolutionary principle is working together, what is called here, the complementary system. The compounding of elements into something new is basic to systems, and it is this principle that the Universe works by. From the proton and electron in relationship to hydrogen and oxygen in relationship, to the sperm and egg in relationship, to the man and woman in relationship, to the child and the Universe in relationship, working together is the primary operating principle of the Uni-versity. The Unity found in all diversity.

A "System" is a Family…

If we want to change the world in order to improve it, we can do so by changing the way we look at the world. This much is obvious to anyone who has fallen in love. It is often touted in systems thinking that it is necessary to look at the whole picture, and then it is added that the whole picture looks different than merely adding up the parts. And while this may certainly be true, it is not all that systemics has to offer. Indeed, many will say it is obvious that all components of a system need be considered, so what is new? Well, there is much more to a system than just the components making up a whole system.

Ludwig von Bertalanffy writes:

> *"Compared to the analytical procedure of classical science with resolution into component elements and one-way or linear causality as basic category, the*

> *investigation of organized wholes of many variables requires new categories of interaction, transaction, organization, teleology..." (Bertalanffy 1969)*

I would like to bring attention to "new categories of interaction, transaction…" Permit me to use a more general term "relationship" What is a relationship? Is a relationship a kind of entity that we can name? I submit that a relationship is not an entity but an action, a doing. Take Love for example, what is love? We really haven't figured out the answer to that question because to define love is to define a thing. And apparently we haven't found the thing we call "love." But what if we change the thing to an action and then ask "what is loving?" Ah, suddenly we know. The same goes for life? What is life? Well, what is living?

As we all know, the human is among the most complex beings we know of. So when we talk of a human being we are talking about complex systems. It is interesting to note that the language ordinarily used in the human complex system is actually very systemic. So much so that how we talk about humans can be used as a model for how we need to talk about other relationships of the mundane kind. Let's go back to our most complex human being language. Imagine two persons. There are two ways in the language of mankind that these two persons can be described by our language. We can call them Jim and Mary, we can name them as if they were an entity. But there is another way we can name them, we can name them father and mother. It is their relationship that makes them a father and mother. If we look at a whole collection of names like Bill, Dave, Mike, June, Jill, Joan, We can surmise that they are human beings but not very much more than that. We don't know from their name how old they are, or what they do or how they are related to each other. But look what happens when we give them relational names like father, son, uncle, cousin, daughter, friend, stranger, neighbor. When we name them in terms of their relationships we know a whole lot more about each of them and what they do.

And so it is with our favorite word "system." When we think of a system in terms of a thing we run into all kinds of problems. Are we talking about that system or are we talking about "my system" or "your system"? So the word system, by itself, is sterile too. It has no intrinsic meaning. Or it has so many meanings that it become meaningless. But look at what happens if we name a system in terms of human relationships, in terms of what a system does. We find we can call a system a family. A system is a family. A family is a system.

And it is the same way with things. We can give things names but those names are sterile. What is more important and meaningful is what those things are doing. What they are in terms of their relationships.

So it is not the concepts that make up our reality, rather it is how those concepts work together.

Erich Jantsch wrote in his book Self Organizing Universe:

> *"In a true system...not all macroscopic properties follow from the properties of components and combinations. Macroscopic properties often do not result from static structures, but from dynamic interactions playing both within the system and between the system and its environment...A human being falling in love -- perhaps only once in a lifetime -- changes the life of the community of which he or she is a part. Such considerations already hint at the fact that a systemic view of necessity leads to a dynamic perspective. Quite generally, a system becomes observable and definable as a system through its interactions. (Jantsch 1980)*

Note: One can observe what a system does by observing the Gestalt figure below with a focus on the white or a focus on the black.

"That's All Folks"

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