

Chapter Three

The Knowledge of Nature

One of the mind-boggling aspects of modern Information Technology (IT) is the realization that all knowledge data can be expressed, using binary arithmetic, as a sequence of ones and zeros. Binary Arithmetic is the basic baby-language of all numbering. Just the two signs of 1 and 0, standing in for *self* and *other*, are all that are needed to effect a positional notation system that can be the vehicle for all word-processing and graphical digital representation. The modern computer world, being structured on the unity or togetherness of distinction and union, manifests the reality of the Existential Relativity which governs the self-other-functioning Cosmos.

Already in this book, use has been made of the grammatical distinction of personal pronouns from the point of view of speech. The First Person is the person speaking "I", "We". The Second Person is the person spoken to "Thou", "You". The Third Person is the person or thing spoken about "She, He, It", "They". The acronym *IT* from Information Technology is fascinating in as much as it sums up also what Grammar's Third Person pronoun *It* verbally expresses in the word-processing of the human cerebral computer. This trinity of persons is not without its theological overtones. The art of contemplation, or the human conversing with what it conceives as the divine, is perfected through being on personal speaking terms with Aseity's Selflife named pronominally "We Us Ours".

The physical world and the psychical realm are existentially related and complement each other. It is convenient to refer to them as *matter* and *spirit*. They have structures in common, at least we so interpret them that way. They both exhibit hierarchical complexity and a multiplicity of dimensions.

We simulate and draw analogies between operations. It is the self which perceives these similarities. We both name and also call the tunes to which we think and say Nature dances. In intuitively reflecting on the external world we create models which on further reflection help better our understanding of ourselves. We breathe in and out, inhale and exhale. Self-other consciousness makes us aware

of psychical activity that is both immanent and transeunt, reflexive and transitive, implosive and explosive, distinction and union.

Whilst all language takes place in the continuum of a self's consciousness, it is also relativistic and quantized, being made up of discrete particles, namely letters or characters and word-signs. A set, as a unity or oneness of distinct ones in a one-continuum, epitomizes the wave-particle duality. Under some circumstances matter seems to behave like sets of discrete particles and under other circumstances like continuous waves.

Light, radio, television, x-rays and so on, exhibit wave properties. They are part of the spectrum of electromagnetic radiation. The latter, as its name suggests, is a biunity of two distinct fields or types of force, namely electric and magnetic. A continually changing or pulsing electric field generates at right angles to itself a pulsing magnetic field. This new latter pulsing magnetic field regenerates again at right angles to itself the original pulsing electric field. Once a first pulse is initiated, electromagnetic radiation is truly self-propagating or self-sustaining. The electric field itself begets an other field, namely, a magnetic field and this latter in turn begets an other electric field which perpetuates the iteration. The process would go on for ever, until the same self-sustaining burst of radiation or radiant energy is taken in by some other entity.

The Universe is pregnant with invisible force fields, with waves of radiation and also sets of discrete particles, atoms, molecules, some radioactive, and others simply like fundamental sub-atomic particles. Any part of our World can be made present to us, by sight and-or by sound and almost instantaneously, with the touch of a computer key.

It is not enough that there should be light which distinctions day from night and enables our eyes to see. We are either blind or walk in the dark if we do not perceive the awesome revelation of the light of this world. It is self-sustaining. It is self-regeneration through the generation of an other. It is being and becoming, self and other, distinction and union, evolving existential relativity begotten by Nature's reciprocating self↔other life in the physical Cosmos.

Such relational unity suggests postulating a first basic Law of Cosmology. *All growth and subsequent sustainability in any evolved or still evolving system of the Cosmos is both self-functioning and simultaneously other-dependent.*

We think we know what space and time are. We measure with a ruler the three dimensions of space, length, breadth and depth. We measure time arbitrarily with various kinds of clocks linked with regularly recurring spatial phenomena. Living in the present, we only really time past events, for to time is to emit backwardness.

For the "I-am" self who IS, time always IS, without beginning or end, eternally the ever-present tense of *now*. We cannot separate, but only distinguish time and space. The three dimensions of self's outside space and the one dimension of self's inside time are a quaternity, a four-in-oneness continuum. *Spaced time* is a deliberate ambiguity. The *spaced* can refer to the divisibility of time and also to time's association with space. The divisibility of our notional time depends on its association with space.

Above the entrance to Plato's Academy in ancient Athens was an inscription which read "*Let none without Geometry enter here.*" Similar advice, though for a different purpose, applies here. The concepts we have of space outside us serve as starting points for our intuitive perception of the nature of the inner space within our conscious being.

Thrown or kicked, a rounded ball serves well as a plaything. As an object of study, it can make sport for the conceptualizing mind. For the ancient Greeks, the circle was the secret of beauty in design: the sphere was the shape of perfection. To have a sphere we need a first term or alpha point with which to begin. From this point, by reason of a radial relation of fixed distance, there is begotten a second or omega term. In doing so, the two terms are now named *centre* and *surface*. The centre spatially begets its surface. From the biunity of the one centre and the one surface proceeds another term, a third one, the *volume*, their embracing togetherness in universal relativity.

It is one thing to play mathematical games in the mind with the concepts of these three distinct but mutually interdependent terms, centre, surface and volume. It is quite another experience to close our eyes, curl our bodies up physically and imaginatively turn ourselves into a human ball, simulating the foetus in the womb, and acting out a unique inner sense perception of our own one self, now become a three-in-one, an inner spaced trinity of centre, surface and volume.

The relations of the physical sphere suggest possible analogues in the psychical. In the psychical sphere, the reflexive centre-self "I"

begets its transitive surface-self "me" as the conscious expression and becomingness of its own being. This takes place in the unity of the volume-self's "mine" inner complexity of self-conscious and unconscious activity.

The sphere is not a geometrical shape in its own right. It is the limiting position of the egg-shaped ovoid or ellipsoid. Oval-shaped footballs can usually be kicked just as far as round ones, but it requires more skill and understanding. The ovoid is more basic and only seemingly more complex than its spherical counterpart. In two dimensions we can make a comparison between a circle and an ellipse. Both are plane sections through a cone. A circle can easily be drawn by taking a piece of string, fixing one end to a point functioning as centre and fixing the other end to some marking device, such as a pencil, which now moves around keeping the string taut. The path thus generated is the circumference of a circle. The two dimensional space thus proceeding from the biunity of the centre point and the curvilinear circumference we call area. Thus our trinity is complete. We go at the same time both around and in, in a circuminsession. Circular motion, like swinging a stone in a sling, requires a going around as well as a pulling in towards the centre. Whenever the centripetal force is relaxed, the stone flies off at a tangent.

To draw an ellipse, we take the same piece of string, but now whilst keeping it quite loose we fix each end to a separate point called a focus. The string is then stretched out and made taut with a pencil which now moves around, always keeping the string extended, and generates a curved path which is such that for each point on the curve, the sum of its distances from the two foci is constant. The oval shape thus generated is called an ellipse: in three dimensions the egg-shape is called ovoid or ellipsoid. As the two foci get closer to each other the oval shape becomes more circular. When they are about to coincide or become a two-in-one, we obtain the limiting position of an ellipse which is a circle.

When the two foci repel each other to their maximum separation, a straight line becomes their limiting position. With the ovoid, the archetypal trinity becomes a quaternity of two focal terms, a surface term, and a volume term.

Mother Nature has a predilection for her egg-shape and for ovoid relations. In the physical Solar System of outer space, all the planets revolve around the sun in elliptical orbits with the sun at one focus. In our understanding's trying to make sense of the psychical realm of our spirit's inner space conscious activity we can have resort to the ovoid's analogue terms. At the self's primary focus is the now conscious I-self subject. The actual perceived object of its self-reflection, the me-self, is transitively at the secondary other focus. Their surface continuum implosively envelopes the integral volume of mine-self's inner spaced time unity of self-consciousness.

Mirrors and the images that they produce are very meaningful likenesses of psychic processes. When I look into a plane mirror, I do not see my self, but only an external image of it in spaced time. Technically in Optics, the image that the eyes see is only virtual. It is not real. Strictly speaking, when I face a plane mirror, there is no up and down change, nor is there a real directional sideways change, but only a front to back reversal. The observer self and its mirror image otherself stand face to face. The image goes as far behind the mirror in the opposite direction as the object does in front and the imaginary image faces the opposite direction now to the face of the observer.

There are also other sorts of mirrors or reflecting surfaces. There is the parabolic mirror as used in spotlights, searchlights and reflecting telescopes. All parallel rays which strike it are reflected to a single point, its focus, and a light at this focus has all reflected rays parallel.

By far the most intriguing mirror for both simulating and stimulating psychic reflection is the oval shaped or ellipsoidal reflecting surface. A light at one focus has a real image of itself on a screen placed at the other focus. It is not a virtual imaginary image as in a plane mirror, but a real image, unchanged in any direction. The rays of light emanating from the focal source actually converge again at the focal image, which is not self-luminous but other-illuminated.

A thin strip of metal can be bent into the shape of an ellipse and immersed in shallow water. Ripples, when generated at one focus, converge at the other, which then proceeds to regenerate the original ripples and the process would repeat itself over and over again were its energy not soon dissipated. One can only speculate on such iteration in a frictionless field continuum.

An essential characteristics of psychical activity is the ability to

reflect in processes analogous to the physical reflection of light. What light is to the eye of the body enabling it to see both real images in ovoid mirrors and virtual ones in plane mirrors, so reflexive knowledge is to the image-forming realm of the psyche, enabling its *I-self* at one focus to beget and become its reflected true living image *me-self* at the other focus. In this queendom within, I do not see *I-to-I* with my self. I see *I-to-me*. Self, when the subject of relations, is named "I". Self, as the object, is named "me". Nothing is becoming of the knower-I except through its known-me.

Conscious reflection gives evidence of personal individuality. Self's spaced time knowledge of its own self in self-consciousness involves three terms as a trinity. One subject, the I-knower-self, and one object, the me-known-self, become one unity or being-set now in the possessive mine-knowing-self. Ovoidally, maiden self mothers her twin foci, the alpha-I-self and the omega-me-self. Though the latter are self-functionally distinct in spaced time, their act does not engender a distinction of persons. "I-me-mine" is self's first person, the person speaking.

This unity of knowledge admits only a logical precedence of the spaced time knower to the known. Each brings the other into existence. There cannot be a knower without something known, just as there cannot be a parent without a child. Begetting its child-other, the self becomes a parent to it. The two become one relation.

The sphere is the limiting shape of the ovoid. As the two foci of the latter get closer together, the spherical shape is revealed. We should remember that, considered this way, at the centre of the sphere there are two real but spatially coincident or conjugate points.

When we talk of the psychological sphere and human self-centredness we are speaking figuratively and to maintain a logical sequence we must remind ourselves of the dual-foci ovoid-nature of consciousness. I can try to bend my own consciousness, psychically and physically back on itself, on its self, in a reflexive relation. I can be introverted and introspective to the point of insanity, but I can never isolate and comprehend what is at the centre of my own alpha I-self or of what it is made. I can never know my I-self in its act of being a factual subsistent "*I*", but only in its spaced time act as becoming an actual existent "*me*". In knowing its omega-me, the self knows its

alpha-I, for they are one in a real existential relation. The "I" is one with and in the "me" and the "me" is one with and in the "I".

Einstein's Relativity Theory of space and time, about energy and matter, took him beyond Physics to Metaphysics and to seek a comprehensive understanding and consistent expression of the unity embracing the laws of physical movement and all force-field interactions in the Cosmos. He spent most of his subsequent research exploring the topic of an enigmatic and elusive Unified Field, but without any real and lasting success.

There are other approaches to this ultimate goal of understanding the Mathematics of the Universe. Special and General Relativity in the physical world are projections of the self↔other existential relativity underlying all activity both physical and psychical.

A satisfactory understanding of unity and infinity is as equally important to the philosopher as to the astrophysicist and the molecular biologist. The childlike enquiring mind of a natural philosopher can neither wander nor wonder in a metaphysical void. No Theory of Everything can be complete without a rational and comprehensive solution to the age-old questions concerning the nature of that which has neither beginning nor end, yet in whose continuum there is infinite provision for both retrogressive change and progressive evolutionary growth. In this quest, a modern restructured and consistent Set Theory of Unity and Infinity can provide a simple, non-technical and yet most meaningful revelation of this basic human intuition of infinity's beginningless past and endless future in the field unity of the Cosmos.

One of the few gleanings of learning that the author remembers from his teenage study and that has occupied his mind ever since is what he read at the end of a book of Philosophy. It reminded the reader that Philosophy had yet to come to an in-depth understanding of the concept of *unity*. [That would be left to the Theory of Sets.]

Set Theory is a relatively modern topic in Mathematics and provides both fresh insights into unity and also the terminology necessary for the formal logical analysis of self-reference systems. Known as *The New Mathematics*, it has a unique and vital role in cultural evolution. Readers who admit not being mathematically minded should not fear to indulge their curiosity in spaces where once angels feared to tread, but now angles spread their welcoming

arms. Little children in their first years of Primary School are taught that a well-defined collection of distinct things is called a Set, like the set of children in the class or the set of chairs in the room. Such a collective whole or togetherness is made manifest by enclosing the distinct units in a pair of bracket-like braces { }.

For this writer, in more abstract terms, a Set is a well-defined Unity of distinct Units in intentional Union. A set of two things is called a two-in-one or a biunity: a set of three things is called a three-in-one, a triunity or trinity: a set of many things is called a many-in-one or polyunity. The identity sign \equiv can be used to *identify* a set.

Sets have subsets which are well-defined sets of some specific and distinct members of the original set. The set of letters of the English alphabet has the subsets of five vowels and twenty one consonants. There are also sets of sets e.g. The set of letters of the alphabet can be written $\{\{\text{vowels}\}, \{\text{consonants}\}\}$. The set of all possible subsets of any set is called a power set. With the inclusion now of the word *all*, complications arise from the unlimited use of *all* in the concept of a Set of All Sets.

Granted that a Set of All Sets is a power set, there emerges the problem whether such a Set is an element itself of this Set of All Sets. If X stands for the Set of All Sets, and Y stands for all sets other to X, then $X \equiv \{X, Y\}$. Is X an element of X? This may seem only a trivial question, but in reality it is pertinent to the nature and existence of Aseity, the Mother Selfset of all Selfsets.

The concept of The Set of All Sets had been dealt a deathblow at the hands of Russell's Barber. The seeming contradictions or teasing paradoxes which resulted from its acceptance into a formal system of mathematical logic rendered the latter's conclusions inconsistent. The best mathematical minds declared any solution to be impossible. Its use had been abandoned but its ghost still lurked in the Halls of Academia. Of this, much more is said in the author's book *Achieving the Impossible*. There, using simple language analysis, this writer's revision of the foundations of mathematical logic disposes of the troublesome paradoxes in Set Theory with the bonus of initiating new outlooks in cultural evolution through the introduction of a new simple logic of Existential Self-Other Relativity.