

**UTILISING  
METAMORPHOSIS  
AS A PRINCIPLE  
OF PERCEPTION**

**Mark Smith  
July 2005**

Dear Hermione,

In my previous letter to you I began to provide an introduction to some principles of plant metamorphosis. I referred to the three processes of expansion and contraction that plant life undergoes in its development. If I remember rightly I was endeavouring to relate my comments to your mandalas. Each of your drawings depicted A PROCESS OF BECOMING rather than a fixed product.

In this collection of ideas, I seek to explore the nature of metamorphosis. It was obviously very central to Steiner's thought system. I think it is not greatly understood by modern Science. I hope that this attempt of mine will add to a greater appreciation of how an understanding of it may open up new insights into old problems and fresh approaches to emerging ones.

Good reading.

Much love  
Dad

Dear Milton,

Please find herewith your copy of *'Utilising Metamorphosis As A Principle of Perception'*. Without your financial assistance this work would not have been developed to this stage.

Although the ideas contained in this volume are not new they are certainly novel to most orthodox thinkers. Indeed I feel sure that eminent biologists would ridicule them with 'faint praise' and reject them. This was the manner in which Dr Peter Medawar dismissed D'Arcy Thompson's *'Theory of Cartesian Transformations'*. Such a fate will not arise in this treatment as I am not subjecting it to such compromised thinkers.

The development of the approach to thinking which is illustrated in this work could only arise in a person like myself. For many years I have espoused a philosophy which stood on 'the boundary'. This was a philosophic stance outlined by Paul Tillich in his novel *'On the Boundary'*. In this document he claims that:

'the border line is the truly propitious place for acquiring knowledge'  
(see The Introduction by R.H. Daubney to Paul Tillich's *'The Protestant Era'*,  
Nisbet and Co., London, 1951).

This work stands on the boundary between Art and Science, between philosophy and cosmology, between fact and imagination and between a quantitative and a qualitative understanding of reality.

In a strangely indefinable sense, this work found me! If I had not doggedly persisted in reading the works of unorthodox thinkers I could never have written this work.

Thank You Once Again  
Much Love  
Dad



**MARK OLIVER SMITH**

# UTILISING METAMORPHOSIS AS A PRINCIPLE OF PERCEPTION

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**'Rudolf Steiner attained the realisation that the outside world does not hold the entire contents of reality, allowing itself to be reproduced as conceptions, but that man through his sensory perceptions lives on one side of reality. And it is in order to bring into this outer world of reality what only comes forth from his inner nature that man is born into the world.'**

**(Pg. 9 *Fruits of Anthroposophy* by Rudolf Steiner in a Summary of Lectures by R.G. Seddon, Rudolf Steiner Press, First English Edition, 1986).**

## INTRODUCTION

### I

## A NEW NOETICS, A NEW AXIOLOGY, A NEW EPISTEMOLOGY

The basic thesis of this work is that a new noetics, a new axiology and a new epistemology are required to understand the world of the 21st century. The mechanistic-Newtonian model of investigation is not only inadequate for a study of Physics it introduces misleading and erroneous outcomes when applied to Biology, Economics and Psychology.

### **Shortcomings of the Mechanistic World View of Cartesian-Newtonian Science**

Since the advent of quantum physics there has been a need to rethink the methodological assumptions which underpin the investigation of the physical world. This will require a redefinition of matter, time, space and causality.

### **Misapplication of Scientific Methodology to the Non-Physical Sciences**

Although there have been some outstanding breakthroughs in the biological sciences using the reductionism of modern scientific analyses there can be no doubt that the methodology is fundamentally flawed. It ignores the perspective of holism and it cannot grasp the principles of metamorphosis and apply them to life processes or the time-body of living organisms.

### **Methodology and the Social Sciences**

The application of the tools of the physicists to the social sciences of economics, sociology and anthropology was once known to be inadequate. Today, these limitations are ignored. These studies are not sciences but aspects of a deeply inter-related social fabric. In Economics land, labour and capital should lie outside the economic process but today they are treated as commodities within the process. Again, Banking offers 'products' when they should be offering facilitating 'services'. Banks have become greater than those whom they were supposed to serve. In economics there is a fundamental confusion between means and ends. The study of values is a necessary prelude to a study in the social sciences. There can be no value-free analysis of social phenomena.

### **Newtonian Psychology**

Modern Psychology pretends it has no doctrine of the nature of man. It wants to study only those aspects of man's behaviour which are measurable. It also adopts the 'onlooker' fiction whereby the observer supposes he is objective and outside the observation. Psychology abandoned pneuma (spirit) at the Eight Ecumenical Council of Constantine and reduced man to a psyche and a body. In the 19th century Psychology began the process of eliminating the psyche (soul) from the nature of man. The 20th century witnessed the process of the elimination of soma (body) from the domain of Psychology. With the advent of Behaviourism man has been reduced to a physio-chemical system with neuronal impulses between cellular

constituents. The determinism of Newtonian Physics has triumphed over the freedom of the spirit. Man no longer has a spirit, a soul or a body! While it may be true that the only predictable behaviour is that which is subject to measurement it does not follow that if something cannot be measured it does not exist or capable of explication by other means.

## II BACKGROUND BRIEFING

### Metamorphosis as a Principle of Perception

The title of this monograph is confusing. Metamorphosis is a biological process in which one form is transformed into another form. How, then, can it be a principle of perception? The answer is that for most people it can never be – unless they can perceive imaginatively. In order to perceive the butterfly as ‘a liberated plant’ it is necessary to have imagination.

### Ovid, Swedenborg, Goethe and Steiner

The application of metamorphic thinking to perception and the biological sciences has its antecedents in the literary extravagances of the Roman poet Ovid. However, Ovid’s musings and mythic peregrinations, though seminal, are not the focus of this study. This study introduces three unorthodox scientists whose findings owe a great deal to a style of thinking which can be called ‘imaginative perception’. Imaginative perception is, strictly speaking, more artistic than scientific. Swedenborg, Goethe and Steiner each thought differently to the ‘general-run’ of scientists. In order to comprehend their approaches, the following notes may provide a helpful background briefing. These three thinkers herald a science of the future which will transform man from an outside ‘onlooker’ to an active participant in the creative processes of nature.

### Form and Process

Metamorphosis is concerned with ‘form’. Indeed, metamorphosis may be understood as **form-in-process** or trans-‘form’-ational. It is usual to see these polar concepts as mutually exclusive. In ‘metamorphic’ thinking it may sometimes be profitable to see them symbiotically or dynamically e.g. FORM is FROZEN PROCESS or, conversely PROCESS is MOBILE FORM.

### Statics and Dynamics

To an uninformed observer a bridge may be thought to be a static construct. To an engineer the same bridge is a dynamic system of forces which can be depicted in reciprocal force diagrams. This idea can be applied to all objects. The important concept is that forces are just as real as forms, even if they cannot be seen. We may also add that the forms of today are evidence of the forces of yesterday.

## Nominalism versus Platonism

The arguments of Peter Abelard (1079-1142) to support his Nominalism denied the existence of universals. He thought that language tricked us into thinking that there were Platonic forms. There were 'triangles' but 'triangularity' had no reality. 'Triangularity' was a convention not an essence or a universal form. The Doctrine of Forms espoused by Plato, Swedenborg, Goethe and Steiner, takes the opposite view of Abelard.

## Ovid's 'Metamorphosis'

The idea of 'metamorphosis' may not have originated with Ovid, the Roman poet, but his works certainly gave literary expression to the concept. For Ovid, metamorphosis involved two principles viz. form-shifting and the transmigration of souls. Ovid has Daphne turn into a laurel tree and a young man, Cyenus is turned into a swan. His major poem is replete with such examples. Sometimes Ovid exhibits a perverse comedy such as when the goddess of dawn, Aurora, falls in love with Tithonus, she asks the gods to give him immortality but forgot to ask for endless youth. When he ages in appearance Aurora turns him into a grasshopper.

## Marina Warner's Literary Investigation of Metamorphosis

Marina Warner in her book, *Fantastic Metamorphosis – Ways of Telling the Self*, differentiates three processes at work in the transformations of Ovid's mythical characters viz. hatching, splitting and doubling. Her major thesis, however, is to illustrate how many cultures have used Ovid's granary to generate their own supply of literary examples of metamorphosis. She refers to the widespread usage of the butterfly and moth as images of the soul. She examines the story of Leda and the Swan where a mortal woman, after the visit of a god in the guise of a swan, gives birth to two sets of twins – to the future Helen of Troy and her sister Clytemnestra, and to the Dioscuri, the twin heroes Castor and Pollux. She traces the origins of the zombie and the idea of the doppelganger. She also illustrates the periodic revisioning of the macabre, the phantasms of Hieronymus Bosch and the contemporary appeal of the gothic in the cinema, as examples of metamorphic thinking gone rampant. Marina Warner regards these manifestations as a commentary on the nature of the self of man. However, despite the seminal influence of Ovid's literary work the present study is more concerned with the concept of metamorphosis as it applies to perception and to the biological sciences.

## Point and Plane

Euclidean Geometry is a point-wise geometry, whereas Projective Geometry is a plane-wise geometry. They are both 'right' as far as they go. Indeed, they complement each other.

It is no simple task to summarise the differences between the traditional Euclidean geometry from the modern synthetic or projective geometry. The following points may provide a brief introduction:

- (i) Euclidean geometry is a point-wise geometry. For example, a line is defined as the path of a moving point. Modern synthetic geometry, on the other hand, is a plane-wise geometry. For example, a line would be defined as the intersection of two planes;
- (ii) The sphere mediates between the point and the plane. This can be understood from either form of geometry. If a sphere is uniformly imploded it becomes a point. If a sphere is uniformly exploded it becomes a plane at infinity;
- (iii) The line is related equally to points and planes. As points are to planes, so are planes to points. Point, line and plane form a trinity with point and plane representing polar opposites, and line, the intermediate (or balancing factor). For example, any three planes not all in the same line will generate a point. Similarly any three points not in a line will generate a plane.
- (iv) The two infinitely distant points in the opposite directions of a line are identical;
- (v) Perspective transformations occur when a plane figure is projected from one plane into another. Thus the cone of light from a lamp with a circular aperture can be 'projected' to appear as an ellipse, parabola or hyperbola. Such transformations are akin to Goethean processes of metamorphosis.
- (vi) The post-Euclidean geometry introduces the notion that a point can be regarded as the intersection of a number of planes of infinite extent. It may thus be said that the ideal point is of INFINITE CONTENT.

## Polarities

In the Newtonian concept of light no value is given to 'darkness'. In the Goethean scheme it is given a value every bit as creative as light. Whereas Newton avers that all colours are contained in light Goethe maintains that colours arise from the interaction of light and darkness. Similarly, other polarities such as expansion/contraction, space/counterspace, anode/cathode, matter/anti-matter, may be better understood in a Goethean sense. The polarities of pure geometry viz. point/plane may, likewise, be applied to understanding the manifold forms of the organic world. This understanding is won, not from focussing on the point, or atom, but on the celestial periphery of space.

*'Study the processes of growth and embryonic development in their early stages – invaginations, folding and the like and we shall find the typical formations determined without exception by the contours OF THE OUTER SURFACE, NOT BY THE INTERNAL STRUCTURE'. (The Plant Between Sun and Earth, George Adams and Olive Whicher, p. 36).*

And again, from the same work:

*'Metamorphosis is possible in the changing interplay of polarities'. (ibid, p. 37).*

## **Time and Space**

Immanuel Kant was correct in identifying time and space as a priori and not part of the observable world. However, he was incorrect in not understanding they were still knowable as part of the observer's constitution. Living entities have a time body as well as a physical body and the new biology must take that into account. Again, a new science will have to come to terms with a space which is both point-wise and planar. The study of the plant reveals a space which is mobile and in process. The plant makes 'past time real within the present;' yes, in a sense, to borrow Wagner's famous phrase, it makes 'Time become Space'. (Quoted in George Adams's Essay: An Introduction to Goethe's Metamorphosis of Plants in *Essays on the Renewal of Agriculture*, St. George Publications, Spring Valley, N.Y. 10977).

## **Metamorphic Thinking**

Metamorphic thinking is dependent on imaginative perception, flexibility of thought constructs, free-flowing imagery and an experimental attitude to the discovery of relations. It is not simply a question of 'seeing outside of the square', it is rather, the abandonment of the square altogether.

**It is not enough to describe  
the plant – using more or less  
static concepts – as a spatio-  
temporal structure; the plant  
must be grasped as an entity  
in perpetual transformation**

**Jochen Bockemuhl  
'The Formative Movements of Plants' in '*Towards a  
Phenomenology of the Etheric World*' (p. 131)**



## CHAPTER 1 SWEDENBORG and GOETHE as PRECURSORS to RUDOLF STEINER

### The Meaning of 'Metamorphosis'

The word 'metamorphosis' is a combination of two Greek roots: 'meta' and 'morphos'. It can be translated as 'after-form' or 'higher-form'. Thus **metaphysics** is a **higher** form of physics. An **endomorph** is the **form** of a person when fatty tissue predominates. The term 'metamorphosis' is widely used by biologists. It is narrowly applied to the life-cycle of insects. In Steiner's thought-system the term is given an extended usage and is no longer a descriptive term but a principle of understanding.

### Three Extraordinary Thinkers

Swedenborg, Goethe and Steiner were each extraordinary in their own achievements. They were all scientists but did not fit the mainstream of orthodoxy. Today, their scientific works are little known or largely ignored. While they do not constitute a recognised school of thought they are connected by a shared interest in the application of metamorphosis as a principle of understanding life sciences. They also shared a belief in a dualism which did not seek to explain the behaviour of man in physico-chemical terms. They believed that man had a soul. In their scientific studies they did not adopt an 'onlooker' point of view. They each knew that man, as observer, also participated in, and influenced, the observation.

#### I

### Immanuel Swedenborg (1688-1772)



### Estimation

In his essay on Immanuel Swedenborg, Ralph Waldo Emerson pays this tribute to him:

*'As happens in great men, he seemed by the variety and amount of his powers to be a composition of several persons.'*

*A colossal soul he lies vast abroad on his times uncomprehended by them, he requires a long focal distance to be seen.'*

(See pp. 456-457 *Works of Ralph Waldo Emerson in One Volume*, Blacks Readers Service Company, Roslyn, N.Y.)

Swedenborg's father was an eminent Lutheran Bishop who had been a Professor and Dean of Upsala University. His mother bore nine children during her twelve years of married life. Immanuel was the second son and third child. She died at thirty years of age when Immanuel was only eight.

### **Early Life**

Swedenborg completed his University education at Upsala in 1709 after which time he travelled abroad. He had a practical application to his mathematical bent. He acquired skills in book-binding, watch-making, worked in brass and acquired skills in making lenses. For a time he worked as an assistant to the great Swedish engineer and inventor, Christopher Polhammer.

In London he studied the works of Newton and visited the best mathematicians daily. He studied astronomy and made purchases of lenses for the building of a Swedish telescope. In his 'spare' time he acquainted himself with English literature. After England he travelled to Paris and Utrecht in Holland where he advanced his studies in algebra. He then travelled to Hamburg and thence to Pomerania, at that time a Swedish province.

Swedenborg had an inventive mind. He designed a submarine, a device for raising ships, a machine-gun and another device for setting mill-wheels in motion when there was no water flow. He contemplated the building of an aeroplane. His most important discovery was his method of ascertaining terrestrial longitude by means of the moon. He published his treatise several times between 1728 and 1766 in both Swedish and English. After five years abroad he returned to Sweden.

### **Working Life**

In 1716 Swedenborg was appointed 'Extraordinary Assessor' at the Board of Mines. Although no salary was attached to the position until he attained to full Assessorship, he liked the work. After two years he refused the Professorship of Astronomy at the University of Upsala. It was not until 1724, at the age of 36, that Swedenborg was appointed an ordinary Assessor of the Board of Mines, Swedenborg worked concurrently on many projects and had them published by the Duke Brunswick-Luneberg. These matters dealt with the manufacturing of iron and steel and won for him a wide reputation.

He became one of the first elected members of the Royal Academy of Sciences in his own country.

In the middle part of his life Swedenborg continued his studies especially in the natural sciences. He also obtained permission to travel extensively. In 1719 he

submitted a dissertation to the Royal Medical College on Anatomy. He sought to investigate the soul of man. After exhausting his studies of biology, anatomy, physics and chemistry he published the first three parts of *The Animal Kingdom* between 1743-1746. Dr Wilkinson, in an introduction to the larger work, *Economy of the Animal Kingdom*, calls Swedenborg, the 'synthesis of Aristotle and Bacon' (p. 78, *Swedenborg Life and Teaching*, by G. Trowbridge).

### Swedenborg's Favourite Doctrines

The doctrine of Forms was explained by Plato through the arguments of Socrates. Aristotle saw no need for the doctrine. However Swedenborg is said to have regarded 'the Doctrine of Forms, the Doctrine of Series and Degrees, the Doctrine of Influx and the Doctrine of Correspondence' as among his favourite views. (See *The Works of Emerson*, p. 459). Swedenborg is not remembered as a naturalist but, in his day, he was superior to others as a scientist. He perceived 'that nature iterates her means on successive planes.'

*'In the plant, the eye or germinative point opens to a leaf, then to another leaf, with a power of transforming the leaf into radicle, stamen, pistil, petal, bract, sepal or seed. The whole art of the plant is still to repeat leaf on leaf without end, the more or less of heat, light, moisture, and food, determining the form it shall assume.'*

(p. 459, *The Works of Emerson*)

These perceptions do not depend on observing through a microscope and they describe processes without resorting to genetics.

### Nature is Always Self-Similar

Swedenborg also saw the truth of the old aphorism: 'NATURE IS ALWAYS SELF-SIMILAR', when he observed animals. All animals could be located between the vertical spine of man and horizontal spine of the snake:

*'At the end of the spine, nature puts out smaller spines, as arms, at the end of arms, new spines, as hands; at the other end, she repeats the process, as legs and feet. At the top of the column, she puts out another spine, which doubles or loops itself over as a span-worm, into a ball, and forms the skull, with extremities again; the hands being now the upper jaw, the feet the lower jaw, the fingers and toes being represented this time by upper and lower teeth.'*

(p. 460, *The Works of Emerson*)

Swedenborg perceived that the mind of man performed all of the bodily processes. It was concerned with feeding, digesting, absorbing, excreting and generation BUT IN AN ETHEREAL ELEMENT. As far as Swedenborg was concerned there was no limit to the ascending scale of series on series. 'Everything at the end of one use, is taken up into the next, each series punctually repeating every organ and process of the last. WE ARE ADAPTED TO INFINITY.' (p. 460, *Ibid*).

Swedenborg published his scientific books between 1734 and 1744 and they have remained neglected since that time. Emerson praised Swedenborg's *'The Economy of the Animal Kingdom'*

*'... it is one of those books which, by the sustained dignity of thinking, is an honour to the human race.'*

(see p. 459 Biographical Study of Swedenborg in *'The Works of Ralph Waldo Emerson in One Volume'*, Black's Readers Service Company, N.Y.

## II Johann Wolfgang von Goethe (1749-1832)



### Unknown As A Scientist

The celebrated German poet and man of letters is not widely known for his scientific works. He was a contemporary of Isaac Newton and Goethe's Theory of Colour, *'Fablenlehre'*, is poles apart from Newton's *'Optics'*. While everyone is, today, familiar with Newton's theory of colour few have even heard of Goethe's alternative theory. The differences arise from methodological assumptions. Robert A. McDermott devotes a full chapter to *'Goethe's World View'* in his book *'The Essential Steiner'*. Goethe's approach to examining nature accepted the idea that the observer participated in the observation. He rejected the idea of an 'outside onlooker'. Goethe went even further:

*'Man in himself, in so far as he uses his healthy senses, is the most powerful and exact physical apparatus there can be.'* (p. 53).

In today's 'parlance', Goethe thought holistically while Newton thought atomistically. Goethe knew what quantum physicists are only now discovering: the observer, in the very act of observing, influences and participates in the observation.

### Anschauende Urteilskraft

The concept of *'Anschauende Urteilskraft'* may be translated as 'perceptive judgement', i.e. a combination of perception and valuing.

*'For Goethe seeks the explanation of something living, not merely in the logically thought-out relationship of cause and effect, but through what he calls 'anschauende Urteilskraft', i.e. perceptive judgement.*

*(The Plant Between Sun and Earth,  
George Adams and Olive Whicher,  
p. 35).*

### **'Morphology' and 'The Metamorphosis of Plants'**

Goethe was also very much concerned with aspects of botany. He wrote two extensive essays, *'Morphology'* and *'The Metamorphosis of Plants'*. Goethe perceived that the leaf is the pro-typic shape of all of the plant's foliage:

*'It dawned on me', writes Goethe in a letter to Herder, 'that in the organ of the plant ... (called) leaf ... lies hidden all formations. FORWARD OR BACKWARD, THE PLANT IS EVER LEAF and ONLY LEAF. The leaf undergoes manifold variation and metamorphosis: it appears time and again, in cotyledon, stem-leaf at different stages and development, sepal, petal, stamen and carpel.'*

*(p. 39, Nature Ever New, George Adams)*

Indeed, when viewed PERCEPTIVELY the shape of the whole tree is a leaf!

### **The 'Urflanze'**

Another one of Goethe's perceptive observations concerns his idea of the *'Urflanze'* or *'Archetypal plant'*. He proclaimed the idea that the plant kingdom appeared as a single mighty plant. The Ur-plant had various geological manifestations as fern-tree, coniferous tree, palm tree and as dicotyledon but each type manifested the same parts. These four manifestations were expressions of an underlying unity. They were examples of the principles of metamorphosis working in nature on a grand scale.

*'We note that tree formation occurs successively at four different levels – as fern-tree, as coniferous-tree at the stage of the gymnosperms, as palm-tree at the stage of the monocotyledons, and lastly in the form in the species of the leaf-trees at the highest level of the plant kingdom, the dicotyledons. The ur-plant achieved these various tree formations successively.'*

*(See p. 92 Man and Matter by Ernst Lehrs)*

### **'Steigerung'**

A fourth holistic observation of Goethe was his recognition of three successive rhythms of expansion and contraction in the life-history of the flowering plant. 'In this climbing up the spiritual ladder Goethe learned to recognise one of nature's basic principles. He termed it *'Steigerung'* (heightening). Thus he saw the plant develop

through metamorphosis and heightening towards its consumation (and ultimate renunciation)'. (see p. 85 *Man or Matter* by Ernst Lehrs).

The perceptive observations of Goethe seem, to the layman, a re-iteration of the botanical principles enunciated by Emanuel Swedenborg:

*'...there is no limit to this ascending scale, but series on series. Every thing, at the end of one use, is taken up into the next, each series punctually repeating every organ and process of the last. We are adapted to infinity'*.  
(p. 460, *The Works of Ralph Waldo Emerson*)

### III

## Rudolf Steiner (1861-1925)



### Spiritual Successor to Goethe

Apart from his Anthroposophical teachings, Rudolf Steiner was the spiritual inheritor of the Goethean way of thinking. At the age of twenty-nine Steiner assumed duties at the Goethe-Schiller Archives in Weimar. He laboured on the preparation of scientific material for inclusion in the Encyclopaedia Edition of Goethe's writings. When he finished this task in 1897 Steiner published his book on the epistemological underpinnings of Goethe's approach to nature: *'The Theory of Knowledge Implicit in Goethe's World Conception'* (see p. 62 of Henry Barnes' *'A Life For the Spirit'*). Steiner's introductions to the several volumes and sections of Goethe's scientific writings (1883-97) have been collected into the book *'Goethe the Scientist'* (see p. (viii), *The Philosophy of Freedom – The Basis For A Modern World Conception* by Rudolf Steiner).

### Metamorphosis

Rudolf Steiner's writings, lectures and thought owes much to Goethe. Indeed, it can be asserted that, along with Projective Geometry, the idea of Goethean Metamorphosis are keys to an understanding of Steiner's own thinking. Steiner goes much further than Goethe in his application of the principles of metamorphosis. He applied them beyond botany to zoology and the development of man, to his explication of social theory and the doctrines associated with reincarnation.

The concept of metamorphosis was also given artistic expression in the carved capitals of the planetary columns in the Goetheanum. In a sense, Steiner 'wrote large' the principles of metamorphosis that Goethe had perceived mainly in botany.

### **Steiner's Theory of Knowledge**

Steiner's Theory of Knowledge is outlined in *'The Philosophy of Freedom'*. He wrote this book in 1894. In this work he sought to build a bridge from the sense-bound materialism of science to a conscious experience of spiritual reality. His central discovery was that human thinking is itself that bridge. Kant denied that man could bridge that gap. Steiner, like Goethe, was convinced that man could experience an understanding of the creative processes that belonged to the spiritual world that expressed itself in the natural world. It is the SELF-SUSTAINING ACTIVITY OF THINKING that man gains entry to the essential nature of spirit. (See Ch. 3 *The Philosophy of Freedom*. 'Thinking in the sense of knowledge'. Steiner expressed his scientific methodology on several other occasions. In his educational lectures to teachers he lamented:

*'In Anglo-American thought man is reduced to being a mere spectator of the world... Man is not merely a spectator of the world; he is rather the world's stage upon which great cosmic events continuously play themselves out.'*  
(See p. 54, *'Study of Man – General Education Course'*).

*'Our mind is to be regarded not as a container of the world of ideas, not as a vessel that contains the Thoughts but as an organ that perceives them.'*  
(Quoted by George Adams on p. 64, *'George Adams – Interpreter of Rudolf Steiner'*).

### **Combining Goethean Thinking and Planar Geometry**

When Goethean thinking is combined with planar geometry the outcome is the forging of a remarkable intellectual tool of great heuristic power.

With Steiner it is necessary to understand Goethean polarities such as expansion/contraction, light/darkness, space/counterspace and so on. The polarities of pure geometry viz point/plane, may, likewise, be applied to understanding the manifold forms of the organic world. This understanding is won, not from focussing on the point, or atom, but on the celestial periphery of space.

*'Study the processes of growth and embryonic development in their early stages – invaginations, folding and the like and we shall find the typical formations determined without exception by the contours OF THE OUTER SURFACE, NOT BY THE INTERNAL STRUCTURE.'*

*The Plant Between Sun and Earth*  
George Adams and Olive Whicher, pg. 36

And again, from the same work:

*'Metamorphosis is possible in the changing interplay of polarities'.  
p. 37.*

### **Illustrating Metamorphic Thinking**

Thus Steiner had no difficulty in 'seeing' the butterfly as a composite plant, with root, stem, foliage and bud secretly incorporated into a separate morphological entity. The caterpillar belongs to the foliage, the chrysalis (pupa) to the bud, and the finished insect (imago) to the unfolded blossom. Hermann Popplebaum, in applying this Goethean thinking in his *New Zoology*, also had no difficulty in viewing the insects:

*'as a realm of ennobled shapes, (they) arise from the worm region. They are the blossoms of the worm world. The genuine worms on the other hand, appear as a realm which has sacrificed higher perfection.'*

*New Zoology, p. 52.*

Furthermore:

*'What the worms give to the soil, the imprisoned larva of the brain gives to the human entity.'*

*p. 56.*

For Steiner the soul activities of fantasy, exact imagination, recollection, and perception are the etheric correlates of the hatching of insect imagos on their different levels.

Perhaps it is beyond the comprehension of most to extend the application of 'metamorphic thinking' as far as Steiner's disciple Guenther Wachsmuth does when he asserts:

*'The existence of man in the cosmic and earthly spheres is a continuous metamorphosis of states of consciousness.'*

*Reincarnation, p. 58.*

One of Steiner's often used examples of metamorphic thinking is his claim that the outer surface of the skull-bone can be transformed to the inner surface of a tubular bone through a process of 'turning-inside-out'. To this example of form he extends his thinking to allow for the principles of metamorphosis to be applied to functional processes within the human body.



**'Western philosophy has tended to accept the cartesian dichotomy of mind and matter while forgetting the active ego who discovers it.'**

**Stephen Edelglass, Georg Maier, Hans Gebert and John Davy, Co-authors '*The Marriage of Sense and Thought, Imaginative Participation in Science*' 1997, Lindisfarne Books.**

## CHAPTER 2 NOETICS, AXIOLOGY AND EPISTEMOLOGY

### I NOETICS

#### **Definition of Noetics**

Noetics is the study of ‘the logical doctrines of axioms’ or of ‘the laws of thought’. However there are some axioms which are rarely examined by philosophers or scientists. These axioms relate to TIME and SPACE, which Kant regarded as A, PRIORI. Other topics such as CAUSALITY, BEING, NON-BEING, JUSTICE, TRUTH, BEAUTY, FREEDOM are seldom examined by scientists even though they are freely used by them. The investigation into the nature of MATTER demonstrates the inadequacy of our preconceived theories. One of the most elementary aspects of THOUGHT is a CONCEPT about which certain PROPOSITIONS may be claimed by assertion, induction, deduction etc. Physics begins with such concepts as matter (being), light, energy, mass, force, space, time etc. It makes certain propositional statements about the characteristics of these concepts. Some of these propositional statements are leading to confusion. This is as true in Physics as it is in Astronomy.

#### **Need to Redefine Axioms and Assumptions**

It is the contention of this work that some of the confusion is caused by not beginning with the most appropriate axioms. For example, Goethe explained colours as emanating from struggles or sufferings of light and darkness. They were not hidden in light alone! Modern colour theory is based on Newton’s unitary assumptions and eschews the polar theory of Goethe.

#### **Need to Redefine Taxonomies**

As we move further into the twenty-first century it will not be enough to redefine such entities as matter, light, life, time, space etc. It will be necessary to overhaul and re-examine the basis of existing taxonomies and classification systems.

### II AXIOLOGY

#### **Definition of Axiology**

Axiology is the study of values and it underpins the study of aesthetics, ethics and religion. It has an instrumental application to the study of economics and other social sciences.

#### **Fact and Value**

A naïve science is founded on the assumption that all phenomena can be reduced to facts. It adopts a QUANTITATIVE approach to its propositional statements. On the other hand, values have a QUALITATIVE aspect to them. Values arise when there

are CHOICES to be made. They are concerned with what OUGHT TO BE rather than what IS. When a researcher chooses NOT to investigate a suspected relationship or possible variable he is making a VALUE JUDGEMENT.

### **There Can Be No Value-free Facts**

It should be noted that the domain of values is not limited to MORAL DILEMMAS such as whether stem-cell research should be reliant on unwanted embryos. It needs to be clearly understood that it is also enmeshed in the hum-drum process of data selection or exclusion.

### **Aesthetics**

In Goethe and Steiner there is an undoubted respect for scientific rigour but there is also an appreciation of the observation that Nature, herself, is an artist who will not yield her secrets to an entirely quantitative investigation of the world!

In Goethe there is much of the poet. He did not believe that the world would surrender its secrets to mere logical thinking. For Goethe, nature was an artist and the use of imagination was as important as logic in understanding her. This was expressed so succinctly by Rudolf Steiner:

*'Man must not be studied merely according to logic, but according to a reason only acquired when intellectual perception has passed over into artistic perception'*

AND

*'No one can understand that in the butterfly there is the nature and the quality of a flower raised into the air by light and cosmic forces, UNLESS HE CAN ALSO TRANSFORM HIS ABSTRACT THOUGHTS WITH ARTISTIC MOBILITY'*

(See Rudolf Steiner's: *Man As Symphony of the Creative Word*, p. 71).

## **III ELEMENTS OF EPISTEMOLOGY**

### **SENSATION, PERCEPTION and IDEATION**

#### **Scope**

Epistemology embraces many disciplines. These include philosophy, psychology, neurology, the life sciences and the sciences of matter viz. physics and chemistry.

#### **Epistemology**

Epistemology is the study of 'how we know' or 'how knowledge is acquired'. The western style of thinking owes a great deal to the early Greek philosophers for the

rational manner in which thought is shaped. With the emergence of British Empiricism, Rationalism became associated with the rigour of the scientific method. This style of thinking differentiated sensation, perception and ideation. It did not, however, give much attention to the entity who was doing the sensing, the perceiving or the ideating. Nor did British Empiricism carefully delineate the number of senses or the relationship that sensation bore to perception. Also it did not explain how sensation and perception could give rise to thinking language or be related to thinking.

## Materialism

The philosophy which underpins contemporary approaches to perception is expressed by the Nobel Prize Winner R.W. Sperry:

*'Perceptual experience is a functional property of brain processing, constituted of neuronal and physicochemical activity, and embodied in, and inseparable from, the active brain.'*

R.W. Sperry (1980).

Mind-brain interaction.

Mentalism, yes; Dualism, no. Neurosciences, (195-206).

This approach is dominant in most academic institutions and it totally eliminates any consideration of a soul or a mind.

## Dualism

Another Nobel Prize Winner, Sir John Eccles, subscribed to a view which is diametrically opposed to the materialism of Sperry.

*'Dualism holds that perceiving (like any 'mental' function) is not solely a phenomenon of the physical brain. Instead, it also entails some special non-physical substance – the mind or the soul – that interacts with the brain.'*

J. Eccles (1979)

The Human Mystery.

Berlin: Springer Verlanger.

## John Locke and the Primacy of the Senses

British Empiricism is based on a naïve realism. Since the days of John Locke (1632-1704) it based its theory of knowledge on the primacy of the 'tabula rasa' or blank slate of the new born child. The classical dictum of Locke was: *'that there was nothing in the mind which was not first in the senses.'*

## David Hume and the Importance of Percepts

David Hume (1711-1776) drew attention to the argument that there was indeed a great deal in the mind which was not first in the senses! Even the young child was not simply an aggregation of sensations! The sensations did not merely impinge on the blank slate but were selectively organised into percepts and meaningful relationships. The child was **actively** organising the raw sensory data and using

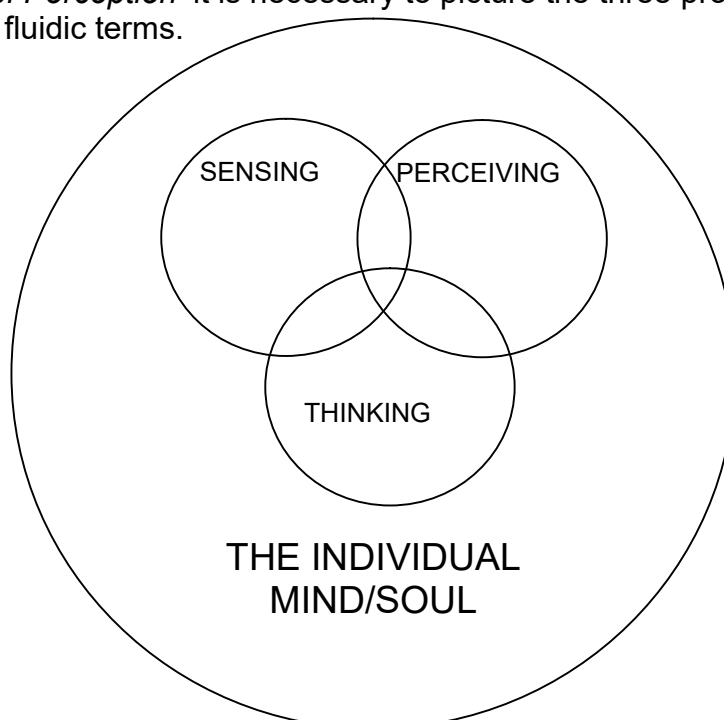
prepositions and relational words not found in the sense-world. Words such as 'of' do not come from sensory input. Even the child's use of the first person nominative, 'I', is something the child gives to the world and can never be said to him by others.

### **Ideation or Thinking**

The realm of ideas or concepts has traditionally been regarded as the final 'stage' of gaining knowledge. This 'stage' is the process of clothing the sensory-perceptual data into language and concepts.

### **Sensing, Perceiving, Thinking and Soul**

The three processes of sensing, perceiving and thinking are usually treated as if they occurred discretely and sequentially. In this treatment of the topic '*Metamorphosis as a Principle of Perception*' it is necessary to picture the three processes in more interactive and fluidic terms.



Since thinking and language are attributes of man, a fourth element must be added. This fourth element is mind or soul.

## **IV GOETHE'S APPROACH TO KNOWLEDGE**

### **The Road to Materialism and the Development of the Onlooker Consciousness**

The road to the present-day Scientific Materialism is thought to have commenced with Francis Bacon (1561-1626). His advocacy of inductive reasoning has become a cornerstone of scientific methodology. The road leads to the studies of Galileo Galilei (1564-1642) and proceeds to the discoveries of Isaac Newton (1642). A parallel philosophical pathway accompanied this scientific road. It can be traced in the writings of John Locke (1632-1704), Bishop George Berkeley (1685-1753), David Hume (1711-1776) and Immanuel Kant (1724-1804).

## The Scepticism of Hume and Kant

The philosophies of Hume and Kant lead to a scepticism about getting beyond man's perceptions to a knowledge of the, so-called, 'real' world. For both of them there were limits to knowledge. These limits were due to the limits of experience. Metaphysical questions such as God, Freedom and Immortality could not be investigated scientifically.

According to Kant:

*'we constitute the objects of our experience out of our intuitions or sensations, locating these objects in space and time and in causal relations with other objects.'*

(see p. 91, *A Passion for Wisdom*).

However, some of our concepts are not derived from experience. These are the basic categories of thought used to describe and order experience. Kant called these basic rules 'a priori', i.e. occurring prior to experience. Such categories include 'time', 'space', 'being' and 'causality'.

## Goethe's Opposition to Kant

Goethe challenged the scepticism of Kant's claim that we cannot get beyond man's perceptions to know 'the thing in itself'. For Goethe there are no limitations to knowledge. For Goethe man, as spirit, is part of nature as spirit. He does not separate object and idea. The idea is expressed in the object. Whereas some philosophers see reality only in ideas (Idealism), others can only see it in perceptions (Phenomenology). For Goethe the phenomena reveal themselves to the unbiased thinking of man. The idea in the object is intuited by the thought of man because they are of like nature. Another way of expressing this concept is to regard thinking itself, as an organ of perception which enables man to connect himself with the world. Thought and sense-perception are the same thing, 'The world thinks in me'.

## Goethe and the Principle of Polarity

In his *Fabenlehre* Goethe introduces the student to the fundamental polarity of colour formation. He understood colour formation as an outcome of the struggles of 'lightness' and 'darkness'. However, 'darkness' was not the mere absence of light. It was its polar equivalent.

Goethe's indications about colour formation have been united to the claims of projective geometry and about the polar equivalence of point and plane, (or centric and peripheral formations), to produce a framework for a New Physics.

## Towards a New Physics

Werner Heisenberg is quoted by George Adams as saying that '*Goethe in his polemics with Newton was in reality opposing not only Newton's theory of colour or*

*the spectral analysis of light, but the whole trend of modern Physics'*, (see Goethe's *Concept of Light and Darkness and The Science of the Future*, p. 63).

### **George Adams – Interpreter of Rudolf Steiner**

The New Physics is replete with pairs of dyadic relationships:

light	darkness
point	plane
centre	circumference
radial	spheroidal
pressure	suction
gravitation	levitation
space	counter-space
matter	anti-matter
centric	peripheral
contraction	expansion

## **V**

### **STEINER'S CLASSIFICATION OF THE SENSES**

#### **The Standard Five Senses**

Early Psychologists identified five primary senses: sight, hearing, taste, smell and touch (or kinaesthetic sense).

#### **Subdividing the Kinaesthetic Sense**

The sense of touch was the first of the senses to be differentiated. It was shown to be a composite of a sense of cold, a sense of warmth, a sense of pain and a sense of texture involving a fine muscle tone.

#### **Adding Two More Senses**

Dr W. Siebert in his *The Twelve Senses*, added two more to the extended list and included a 'sense of balance' and a 'sense of anxiety'.

#### **Steiner's Twelve Senses**

Steiner claimed that there was a correspondence between the twelve-fold ordering of the fixed stars of the zodiac, the twelve pairs of brain nerves and the twelvefold co-ordination of the senses. Steiner's list is as follows:

1. Sense of touch
2. Sense of life
3. Sense of movement
4. Sense of balance
5. Sense of smell
6. Sense of taste
7. Sense of sight

8. Sense of warmth
9. Sense of hearing
10. Sense of speech
11. Sense of thought
12. Sense of the ego.

### **The Seven Life Processes**

Steiner went a stage further after identifying the twelve senses. He explained that the seven life processes were related to the twelve zodiacal centres in a like manner to the relationship of the seven planets to the constellations. The seven life processes identified by Steiner were:

- |   |   |  |
|---|---|--|
| <ol style="list-style-type: none"> <li>1. Breathing</li> <li>2. Warming</li> <li>3. Nutrition</li> </ol>                            | } | Under the outward-opening formative forces of Mars, Jupiter, Saturn  |
| <ol style="list-style-type: none"> <li>4. Secretion</li> <li>5. Conservation</li> <li>6. Growth</li> <li>7. Reproduction</li> </ol> | } | These processes are connected with the inner organic processes which are more influences of the inner planets of Moon, Venus, Mercury. |

The first three life-processes are more connected with consciousness. The last four are less subjected to consciousness.

### **Metamorphosis of Senses**

In his elaboration of the 'mechanisms' of reincarnation, Steiner made some startling claims. He asserted that reincarnation involved a metamorphosis of the potentiality and function of one organ into another. Thus the dexterity of the hands would manifest in a new incarnation as speaking skill. Likewise the inner structure of the dynamics of the knee would manifest as a sense of touch in the next incarnation.



**'In the new Geometry we begin to experience space more as a living organism, hence these ideas of metamorphosis apply. We have already seen what is at work as the original idea of space: the polarity of point and plane. In this polarity we have to do with infinitely many planes. What matters is their potential interplay by virtue of the line that rays and weaves between the two kinds of entity, creating what we have described as the 'pictures' and the 'SEEDS OF FORM'.**

**(see p. 33 *Physical and Ethereal Spaces* by George Adams)**

## CHAPTER 3

### METHODOLOGICAL APPROACHES TO THE INORGANIC WORLD, THE LIFE SCIENCES AND THE SOCIAL SCIENCES

#### Limitations of the Scientific Method

It is commonly assumed that the successful application of the scientific method to an understanding of the inorganic world will yield valid results in the life sciences and the social sciences. The scientific method may yield some results but the chances are that the methodology itself will strait-jacket the results and distort them.

At a deeper level than the methodology itself is the dangerous assumption that there is a certain isomorphism between animal behaviour and human behaviour and the properties of the number system. There are qualitative approaches to investigations as well as quantitative ones. Science limits itself to those aspects which are measurable but reality includes much more than that which is subject to measurement.

#### Limitations of the Onlooker Consciousness

The naïve scientist thinks that scientific knowledge is not dependent on the thinking of the scientist! Scientific insight demands personal activity. (See p. 8, *The Marriage of Sense and Thought*, Eds. Stephen Edelglass et al.).

*'The notion of the detached observer thus emerges from a slightly spooky way of imagining the universe: Scientists see the world as a machine, which they haunt like ghosts'*

(Ibid, p. 6)

again

*'The Western Philosophy has tended to accept the Cartesian dichotomy of mind and matter while forgetting the active ego who discovers it.'*

(ibid, p. 7)

#### Rudolf Steiner's Warning

Steiner warned of the errors that would be committed if the methods of investigating physics were applied to the life sciences. A different type of mental activity is needed for each domain.

Hermann Popplebaum examines Steiner's standpoint in *'The Battle For A New Consciousness'* (see pps. 140-159).

According to Steiner we must investigate things according to their own nature, otherwise we will be forcing laws and principles on to the subject matter which are quite foreign to it. We can distinguish between approaches to the investigations of stones, crystals, plants, insects and man.

# I APPROACHING THE NATURAL WORLD THROUGH AN EXAMINATION OF FORM

## **Definition of the Word 'Form'**

The pocket Macquarie Dictionary lists 30 slightly different definitions/usages of the noun 'form'. In this article it will refer to the shape of things.

## **Characteristic Examples of Form**

The form or shape of something is independent of its colour and is not confined to the three-dimensional world. Indeed, Plato was at home in the ideal world of forms and regarded our everyday world as one of appearance only, or a copy, of the "formal" world. We may distinguish between:

### **(i) Ideal Thought Forms**

The world of geometry can be visualised in one's mind. It does not have to be represented on the page as two dimensional or as a 3 dimensional solid form. The archetypal plant or ur-phenomena of Goethean thought has only approximations in the real world.

### **(ii) Gaseous Forms**

Gases have a tendency to occupy all space. This tendency is subject to the density and mass of the gas etc. Gases which can be ignited assume evanescent forms as they burn.

### **(iii) Fluidic Forms**

Fluids assume the form or shape of the container which holds them.

Of course, not all fluids are in containers. Clouds are combinations of gases and water vapour and they assume countless shapes according to atmospheric conditions etc. The mobility of cloud formations, according to Rudolf Steiner, testifies to an early stage in planetary evolution when the forms of plants and animals were more plastic and had limited fixity of form.

### **(iv) Two Dimensional Forms**

Mirror-images, shadows, and reflections are genuine two-dimensional shapes with no thickness. Drawings and paintings are representations or approximations of two-dimensional space on a surface.

**(v) Plastic Three-dimensional Forms**

The use of gelatinous or plasticine materials allows for the manipulation of form. The forms of plants and animals is not entirely fixed and changes can be observed due to the processes of growth and development.

**(vi) The Fixity of Solid Forms**

The shape of crystals and rock-formations is more-or-less fixed. Solids may be regular and symmetrical such as one can see in the perfect solids of sphere, tetrahedron, cube, octahedron, dodecahedron and icosahedron, or they may have complete irregularity such as one finds in boulders etc.

## II

### STONES, CRYSTALS, SNOW CRYSTALS AND INSECTS

**(i) Stones – Fixity of Form**

Stones are inert. They have colour, weight, volume, mass and shape. They do not have internal organs and do not reproduce. They may be measured and one can be reasonably sure that they will retain their characteristics unless acted upon by some external force. The methods and procedures of physics are appropriate to an understanding of their nature.

**(ii) Crystals – Expansion of Form**

Crystals have a different nature to stones even though they have many common characteristics. The laws of crystals are usually determined by chemistry and the mathematical relationships between vertices, edges and surfaces. They are not inert and do not reproduce. They can increase in size but they retain their essential FORM (unless acted upon by changes of external conditions).

George Adams, a mathematician and student of Rudolf Steiner, has made a number of observations about crystals:

- the form of the crystal can be understood best through planar geometry rather than Euclidean geometry
 

*‘The crystal reveals itself on scientific investigation as being formed from the unbounded (or infinite) sphere’.* (See p. 2 *Essays by George Adams – Plant and Crystal.*
- ‘the once-living process of its creation has made it so perfect and self-contained as to leave no room for change or development. The ether body having once formed it, has in a sense withdrawn into the cosmic vast, leaving it alone and empty. Hence it appears to us filled with matter but void of life.’ (Ibid, p. 3)
- the crystal differs from the plant in that the earth’s contribution is, more or less, incidental for the crystal whereas for the plant the earth’s contribution is

essential. *'The crystal is like an Earth all by itself, the plant on the other hand, is inconceivable without the entire planet Earth beneath it'*. (p. 9).

- *'the crystal is related more to the fixed-star aspect of the Earth; the plant more to its planetary, ever moving aspect'* (p. 9).

### (iii) Snow Crystals – Infinite Variations of the Same Form

The snow-crystal, or snowflake, has much to teach us about the variety, the beauty and the very nature of form.

*'the snow-crystal is a regular hexagonal plate or thin prism. Ringing her changes on this fundamental form, Nature superadds to the primary hexagon endless combinations of similar plates or prisms, all with identical angles, but varying lengths of side; and she repeats, with an exquisite symmetry, about all three axes of the hexagon, whatsoever she may have done for the adornment and elaboration of one.'*

(see p. 153, *'On Growth and Form'*, by D'Arcy Thompson).

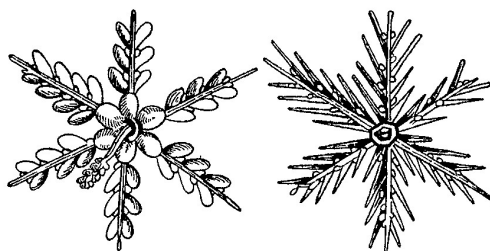


Fig. 53. Snow-crystals, or 'snow-flowers'. From Dominic Cassini (c. 1600).

p. 153 *'On Growth and Form'*

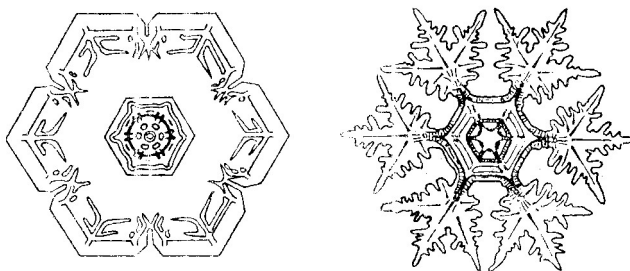


Fig. 54. Snow-crystals. From Bentley and Humphreys, 1931.

p. 154 *'On Growth and Form'*

### (iv) The Plant – A Stream of Changing Forms

We cannot attain an adequate understanding of the nature of a plant by examining it under a microscope or taking a snap-shot of it. A plant has a time-body and its form is ever-changing. A movie camera with time-exposure techniques will depict the three pulsations of expansion and contraction and the four stages of growth. The four stages of growth may be depicted diagrammatically.

**Stage 1**

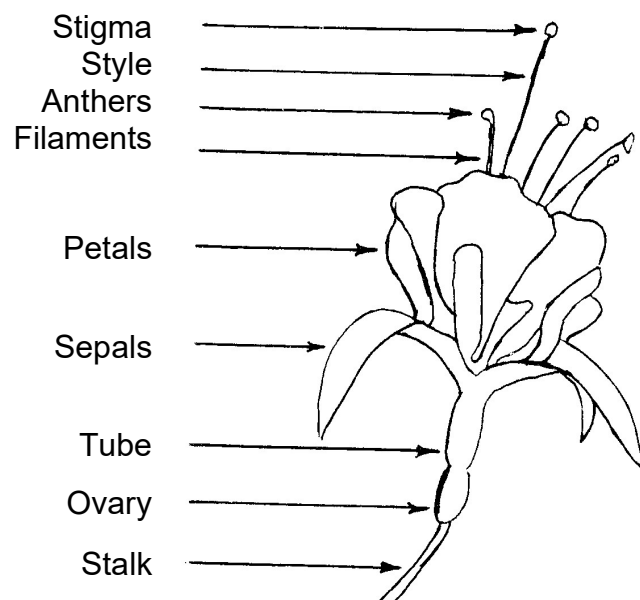
The Seed Formation

**Stage 2**

The roof formation

**Stage 3**

The Foliage

**Stage 4** The Flower Formation  
(e.g. Fuchsia)

George Adams outlines some of the indications given by Goethe about plant development. His article on 'An Introduction to Goethe's *Metamorphosis of Plants*' is in his collection of essays in '*Nature Anew*'. He reminds us that we have to shift forward and backward in **time**. We can follow the **form** of the cotyledons and the

subsequent variations. We notice the closer the plant approaches its blossom the finer its leaf-shapes become. Where the blossom appears, the leaf-forms are gathered together into the calyx, where leaf-shapes become petals, stamens and carpels.

*'The plant makes past time real within the present ... in a sense it makes Time become Space'. (p. 42, ibid).*

#### **(v) Insects – A stream of Changing Successive Forms (Butterflies)**

##### **Metamorphosis of Forms**

If one focuses on FORM alone it is possible to see a metamorphosis or a change from immobility to mobility of shape:

Stone	-	fixed form
Crystal	-	enlargment of fixed form
Snow crystals	-	infinite variations of fixed form
The plant	-	a stream of changing forms
Insects	-	a stream of changing successive forms

(For a discussion of the realm of insects see the following Chapter 3).

**'In an age in which science and technology so pervade Western culture, there is almost an irresistible urge to identify what is real only with those elements out of which the world of physics has been built.**

**p. 106 *The Marriage of Sense and Thought – Imaginative Participation in Science*, Stephen Edelglass, George Maier, Hans Gebert and John Davy, 1997, Lindisfarne Books.**



## CHAPTER 4 THE RELATIONSHIP OF INSECTS TO PLANTS

### Form and Metamorphosis

In the previous chapter the relationship between form and its metamorphosis occurred within the plant kingdom. In this chapter the argument is taken a stage further. It will be demonstrated that metamorphosis also takes place between the plant kingdom and the realm of the insects. Popplebaum advances the concept of a 'morphogenetic field' out of which the living being takes on its growing and propagating shape.

### Teleology and the Stag Beetle

When the larva of the stag beetle prepares its chrysalis-bed in the bark of a tree, it leaves ample space for the antler shaped jaws of the mature beetle. How does it know what the future spatial needs are? This behaviour raises the question of teleology or design determining behaviour. A teleological explanation presupposes a quality in the object that is future-oriented. Whereas causality is an outcome of antecedents, teleology presupposes a future condition working backwards in time!

### Three Modes of Explanation

Wolfgang Schad, in his article *Scientific Thinking as an Approach to the Etheric*, claims, that life processes

*'are determined not so much by previous or future conditions but AT EACH MOMENT BY THEIR OWN PRESENT.'*

See p. 172, *Towards a Phenomenology of the Etheric World*.

He explains further:

*'the conditioning events are no longer separated in time from their affects; Steiner once termed it a relationship of reciprocal causality.'*

Schad proposes that in explanations of the natural world it is necessary to adopt three different modes of thinking:

<b>Causal Explanations</b>	<b>Teleological Explanations</b>	<b>Correlative explanations</b>
Are applicable to the mineral-lifeless domain where analyses of substances are best approached by Physics and Chemistry	Are applicable to the psychological realm where drives, wishes, desires, longings and intentions are best approached by Psychology	Are applicable to the realm of the living and are in the domain of Biology
Determined by THE PAST	Determined by THE FUTURE	Determined by THE PRESENT

Schad concludes:

*'The natural world is not explicable in terms of ONE WAY of thinking.'*

(ibid, p. 177).

## I THE BUTTERFLY AS A LIBERATED PLANT

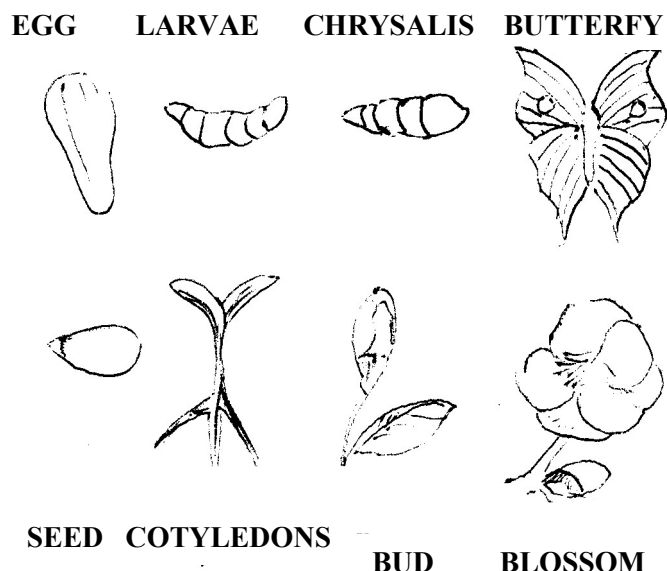
In his twelve lectures brought together as *'Man as Symphony of the Creative Word'*, Rudolf Steiner spoke of the plant in the following terms:

*'The plant is but a butterfly chained to the earth; the butterfly is but a plant liberated from the earth by the cosmos. If we consider a butterfly or any insect, we see in it, from egg to fluttering insect, a plant that has been fashioned and raised into the air by the cosmos. If we consider a plant we see it as a butterfly chained to what is below.'*

(see p. 70, *Man as Symphony of the Creative Word* – Rudolf Steiner)

### The Four Stages of Butterfly Development

- (i) The egg (solid region)
- (ii) The caterpillar (liquid region)
- (iii) Chrysalis (warmth/light region)
- (iv) Imago (air region)



Hermann Poppelbaum in his 'A New Zoology' observes, like Steiner, 'that the butterflies and moths follow the development of a higher plant. The caterpillar 'belongs to the foliage, the chrysalis (pupa) to the bud, and the finished insect (imago) to the unfolded blossom.' He then adds:

*'...there is ALSO A DIFFERENCE. In the plant, the developing organs on their successive levels remain visibly standing on top of each other. The foliage REMAINS while above it the flowers unfold and fruits and seed develop. IN THE INSECT, HOWEVER, EACH FOLLOWING STAGE CONSUMES THE PRECEDING ONE'.*

and

*'Strictly speaking the butterfly is not a 'flower broken loose' but is a whole plant which has lifted its green parts and built them into the animated blossom.'*

(pps. 42-43 'The New Zoology').

## II

### MOTHS, BEETLES, GRASSHOPPERS AND WORMS

#### Life-Cycles

The life-cycle of the butterfly is the closest analogue of the structure and physiology of the plant.

Butterfly  
Chrysalis

Caterpillar

Seed

*'As against this parallelism the other insects have a shifted metamorphosis' (p. 44, 'A New Zoology' by Hermann Poppelbaum).*

### **(i) The Moths**

The moths do not ascend to the flower region but 'prefer to remain closer to the ground'. Just as the cabbage is shy about flowering its insect companion moth prefers to lay low.

### **(ii) The Ladybird Beetle**

The position of the Ladybird Beetle in relation to our idealised plant shows that in its final stage it has overshot the blossom stage and appears as miniature fruit! Its feeding on plant lice rather than on plant juice indicates an irregularity from the pattern of the butterfly. Ladybirds, indeed, overstep the flower region and to the region of fruit and seed.





### **(iii) Grasshoppers, locusts, crickets**

*'The Orthopters (grasshoppers, locusts, crickets, etc.) never come to a higher level than that of leaves of grass and weeds. Their bodies, although magnificently equipped with armour, ALWAYS PRESERVE THE TOUCH OF A LARVAL FORM. It is evident that this group never passes through bud to blossom and thus is comparable to those plants which never can flower, and therefore are incomplete.'* (p. 46, *The New Zoology*, by Hermann Poppelbaum).

### **(iv) Grubs and Worms**

*'The life rhythm of both grubs and worms have strange features in common. Just as the insects change their form from level to level so the intestinal worms change organs or hosts. Some of the nematodes pass through cycles in which METAMORPHOSIS AND CHANGE OF LEVEL are so clearly linked as to remind us of AN INSECT IN DISGUISE!' (Ibid, p. 49).*

## SUMMARY

Plant	Butterfly	Beetle	Grasshopper	Worm
Fruit/Seed				
Blossom				
Leaf				
Root				

## LIFE CYCLES

(See page 52 'New Zoology' by Hermann Popplebaum, Philosophic. Anthroposophic Press, Dornach/Switzerland, 1961).

## III

## STEINER'S NINE LECTURES ON BEES

### Apiary

In 1923 Rudolf Steiner gave an amazing series of nine lectures to the workers on the Goetheanum. These lectures have been published as *Nine Lectures on Bees*. Among these workers were a number of apiarists who raised issues with him. These lectures were translated into English by Marna Pease and Carl Alexander Mier and published in 1964 by Rudolf Steiner Publications, Inc.

The lectures not only demonstrate Steiner to be a knowledgeable apiarist but also remarkably well informed about wasps and ants. In his lectures and answers to farmers' questions, Steiner gave an incredible display of the application of the principles of metamorphosis.

### Common Characteristics of Bees, Ants, Wasps and Termites

- Structure (head, thorax, abdomen)
- Role differentiation
- Nest building
- Production of 'poisons'
- Sociality.

### Structure of the Social Insects

The structure of the social insects reveal a clear segmentation of head, thoracic and abdomen regions. The 'limbs' (including wings) though strong, appear spindly. Steiner always spoke of man as three interlocking regions of head, chest and digestion/limb systems.

## Role Differentiation

Within the community of the beehive there is a differentiation of roles. There is the Queen, the Workers and the Drones. Notwithstanding this division the entire colony works as a unity. The following table summarises these differences:

<b>Role</b>	<b>Days to Maturity</b>	<b>Cosmic Influence</b>
Queen	16	Abides within Sun influence
Worker	21	Child of the Sun
Drone (males)	23-24	Under earth influence

The Queen bee is fertilised in flight by the successful drone. The Queen can actually lay eggs without being fertilised but these eggs only result in the birth of drones. In parthenogenesis only the opposite sex is produced. When a Queen dies, then one of the worker bees is bred to be a Queen, but it will only produce inferior drones. After 16 days the Queen is fully developed. All the individuals are descendants of the Queen (or the Queen's mother).

It is the Worker bee who gathers the pollen and the nectar. It works on the nectar with its own bodily forces and produces wax. Out of this wax it makes hexagonal cells. The eggs of the Queen are laid in these hexagonal hollows.

## Developmental Sequence of the Worker Bee

The naturalist K. von Frisch has reported on the developmental tasks undergone by the Worker bee:

<b>Day</b>	<b>Task</b>
1-3	Cleaning comb cells
2-5	Feeding the riper larvae with honey and pollen
6-10	Feeding younger larvae with 'milk' from salivary glands
10-18	Taking over the pollen brought in by collectors, stamping it into the honeycomb, building-up the comb and cleaning the hive
18-20	Carrying-away waste material. Conducting patrol service and the entrance to the hive
20+	Collecting of pollen and nectar

Frisch claims that this sequence of roles follows in accordance with the growth and developmental pattern of the bee.

**The human body is only to be explained when we know the processes that take place in it: when we know that the human being must dissolve within him the mineral, must reverse within him the plant kingdom, must raise above him, that is, must spiritualise, the animal kingdom.**

**R. Steiner  
(p. 171, *Study of Man*)**

## CHAPTER 5 EVOLUTION

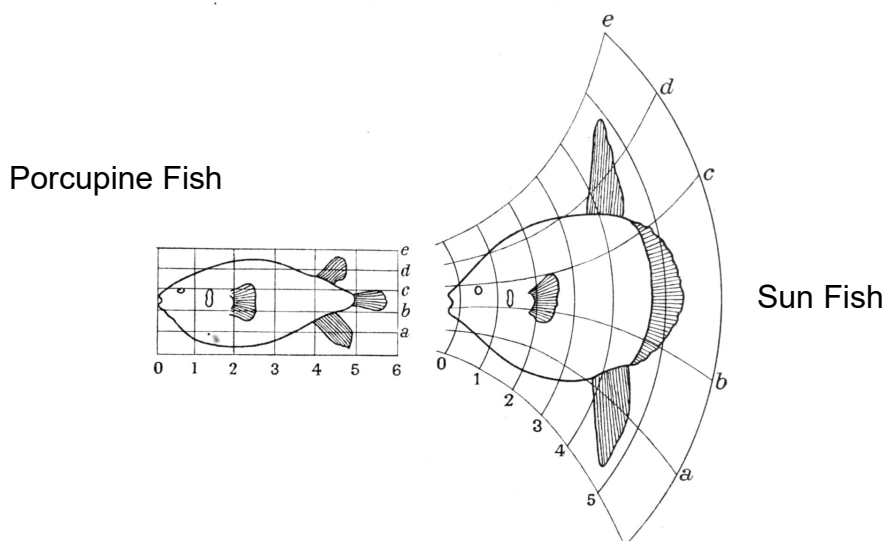
### I THREE UNORTHODOX APPROACHES

#### Current Debate

The current debate on evolutionary theory has focussed on the relative merits of Creationism and Darwinism. It would be unfortunate if this debate drew attention away from other alternative theories. Once Lamarck was scoffed at and Haeckel belittled. Not much has been said about Steiner or Tielhard de Chardin. Both of these visionary cosmologists have sought to understand human evolution within a cosmic framework. The painstaking Cartesian transformations of D'Arcy Thompson are conveniently overlooked in discussions on evolutionary theory, while Rupert Sheldrake's contributions are usually ridiculed.

#### The Cartesian Transformations of D'Arcy Thompson

D'Arcy Thompson sought to describe organic forms with the rigour of mathematics. He used Goethe's term 'morphology' but not the word 'metamorphosis'. In fact, Thompson issued a warning against the 'grave sophism' of making one animal into another KIND of animal by the mere alteration or deformation of co-ordinates. To many naturalists, Thompson was a heretic who did not elevate natural selection as a determining principle of evolution. His book '*On Growth and Form*' has very few references to the importance of genes. He is primarily concerned with the functional aspect of form.



Ref: P. 301. '*On Growth and Form*' by D'Arcy Thompson.



## Rupert Sheldrake and Morphic Resonance

According to Rupert Sheldrake all matter has an associated 'field of memory' which plays an active role in guiding the formation of structures and processes of matter and living beings. Morphic fields are formative patterns which operate through resonance, as in the sympathetic vibration of taut strings. Resonance effects non-material fields such as gravity and magnetism without the transfer of energy.

Orthodoxy attempts to explain life and evolution in purely genetic terms. Sheldrake's theory advances the case for the supplementary role of morphogenetic fields. This view of Sheldrake's is not the same as Steiner's field of formative forces even though there are similarities.

## Rudolf Steiner's Morphogenetic Field of Formative Forces

The new zoology recognises that the architectural form of living things is not solely the outcome of genetic combinations. 'It was Rudolf Steiner who first among scientists insisted on this concept of an INVISIBLE BODY OF FORMATIVE FORCES present in all living bodies'. He called these forces etheric forces. (See p. 9, 'A New Zoology' by Hermann Pöppelbaum).

## Applying a New Form of Mathematical Thinking to the Organic World

Rudolf Steiner often drew attention to the inadequacy and inappropriateness of Euclidean geometry to an understanding of both the organic world and the inorganic world. He sought to find his way from a quantitative mathematics to a qualitative mathematics. He found that projective geometry met this requirement in part. It allowed a student to move from statics to dynamics and led to kinematics. Steiner advocated that students gain familiarity with mobile transformations of the circle into an ellipse, a hyperbola and the curves of Cassini. These transformations may be observed when altering the a and b co-ordinates of an ellipse. While the circle is the curve of the constant quotient, the ellipse is the curve of the constant sum, the hyperbola the curve of the constant difference and the curve of Cassini, in its various forms, is the curve of the constant product. In these examples, arithmetic becomes kinematics!

## II

## RUDOLF STEINER'S APPROACH TO EVOLUTION

If one is to gain an understanding of Steiner's thought, it is necessary to enter into his style of thinking. He is fundamentally an ARTIST who provides INSIGHTFUL CLUES to hidden relationships.

*'Man must not only be studied merely according to logic but according to a reason only acquired when intellectual perception has passed over into artistic perception.'*

*'Man as Symphony of the Creative Word'.*

Many of Steiner's statements cannot be proven or confirmed. For example when Steiner says:

*'Any one who thinks about the nature of biography becomes aware that every human being, from a spiritual point of view, is a species in himself'*

There is no question of proving it correct, yet it may still be perfectly insightful. Again, Steiner's claim about the causal relationship between astronomy and embryology is not capable of being tested scientifically:

*'If you understand nothing of astronomy you will never understand the forces which are at work in embryology.'*

### **Form As Frozen Process**

A useful starting point in understanding Steiner's approach to the relationship of the kingdoms of nature to each other is to think in terms of processes rather than fixed forms. Thus the present forms are 'frozen processes'. These processes took a long time to gain fixity of form. A stone was once in a plastic form and before that it was fluidic and before that it had a gaseous state and before that it had a warmth condition. These conditions of stone may be applied to the kingdoms of nature.

### **Evolution Non-Linear**

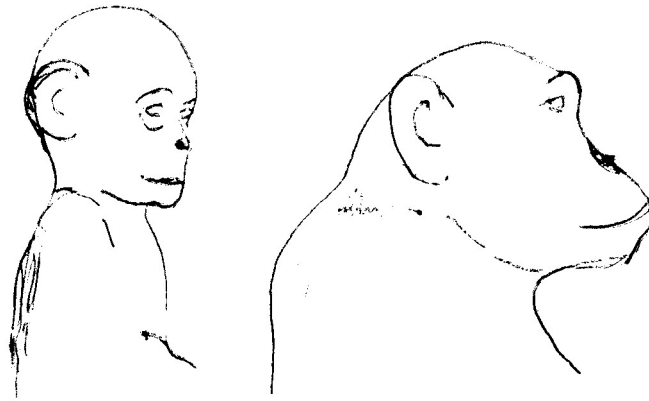
Rudolf Steiner did not perceive a direct linear progression from the mineral kingdom to the plant kingdom to the animal kingdom until finally man appeared.

In Steiner's view, man is a combination of the three kingdoms of nature viz the animal kingdom, the mineral kingdom, and the plant kingdom. However, these kingdoms are not combined in substance or structure so much as in processes. And, again, these processes are united in different ways. The mineral kingdom must not proceed to a crystalline stage. The body's tendency towards plant formations must be checked. The animalising proclivities of man must be controlled if man is to be truly man. None of this, of course can be proven. It can only be discerned or perceived.

### **From Human Archetype to Animal**

Rudolf Steiner reversed the places of man and animals in his theory of evolution. He saw the animals as descending from man and not vice-versa. The primeval man from which the animals descended was an archetypal or spiritual form which acted as a 'blue-print' from which animal shapes were metamorphosed. Man, in his present physical form, was the last of the animals to appear! It is man, however, who retains the closest resemblance to the spiritual archetype. The animals are 'man' too eager to incarnate. Or, to express it in another way: 'the animal world was expelled from the cosmic blue-print that man might be'! Some of the animals proceed BEYOND the form of man. The baby chimpanzee is unable to retain the likeness of the form of man!

## The Animalisation of the Chimpanzee



(After Poppelbaum '*Man and Animal*' p. 8).

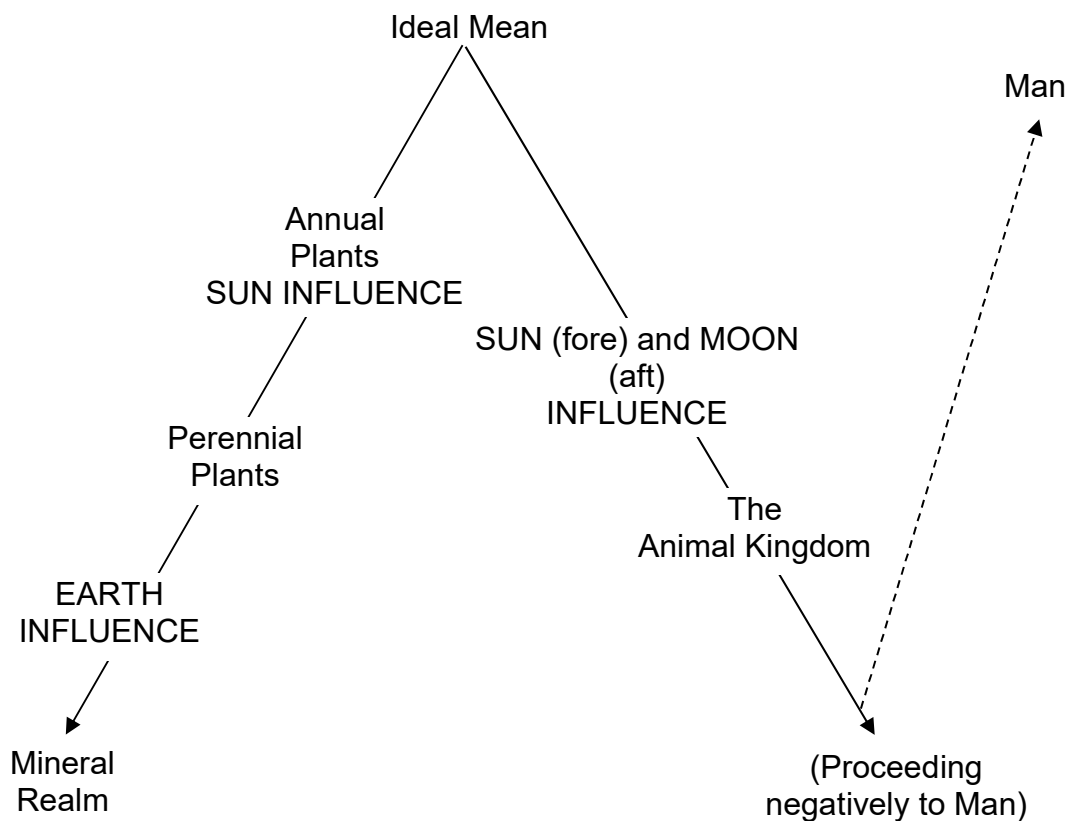
### Warmth, Air, Water and Earth

According to Steiner the mineral composition of the earth has undergone a massive metamorphosis which corresponds to those outlined above. Beginning with an attenuated WARMTH substance the germs of life, including man, were imprinted. This 'substance' evolved to a more AIR or gaseous consistency then to a more FLUIDIC and plastic medium which had a primal albuminous quality.

This medium eventually hardened into grotesque plant-like formations which excreted the mineral kingdom. 'Man' was not only the outcome of these processes; but his foundations were at the beginning! Thus man evolved through the four elements viz. fire, air, water and earth.

### Polaric Relationship of Plants and Animals

The processes of interdependency gives the clue to the manner in which these kingdoms are related. It is misleading to characterise the relationship as one of competition. It is best understood as one of mutuality, of balance and adjustment. It is not a relationship of predators and victims. Plants exhale oxygen which animals need. Animals exhale carbon dioxide which plants need.



The mineral realm is a formative process which is a direct continuation of that which manifests as the annual plants and then as the perennial plants.

The animal kingdom also is a continuous formative process leading to Man but it 'proceeds negatively'.

### Steiner's Extension of Haeckel's Biogenetic Law

Steiner adopted Haeckel's 'biogenetic law' but applied it in a way that would have amazed Haeckel. The biogenetic law asserts that phylogeny follows ontogeny i.e. the development of the embryo is a condensed recapitulation of the development of the species.

Karl Konig, one of Steiner's Students, took the biogenetic law a step further than Haeckel and asserted that:

*'The development of the human embryonic sheaths and appendages is a reproduction of cosmic events in a material medium' (Man and Animal, Hermann Popplebaum, p. 70).*

Popplebaum expresses this relationship in these words: "Microsmogony is a reflection of the macrosmogony". This is summarised in the following Table.

	<b>Polarian epoch</b>	<b>Hypoborean epoch</b>	<b>Lemurian epoch</b>
Microcosmic	Undivided morula	Trophoblast + embryoblast	Trophoblast + magma reticulare + embryonic nucleos
Macrocosmic	Undivided primal body	Sun + moon-earth	Sun + moon + earth

### **Steiner's Evolutionary Theory and the Relationship of Man to the Kingdoms of Nature**

Modern evolutionists usually present the Kingdoms of Nature in an ascending series of: Mineral Kingdom → Plant Kingdom → Animal Kingdom → Man. In this scheme each Kingdom is related to the next by a connecting link or transitional type.

Unfortunately for Darwinian evolutionists these transitional linkages are 'missing'. Steiner's much more comprehensive theory of evolution is able to make sense of this missing linkage. Indeed, he enjoins his students:

*'We must be on the lookout for points of discontinuity, not for missing links.'*  
(*The New Consciousness*, Hermann Poplebaum, p. 146).

**The growth which in man is only incipient, develops in the animal into a physical organ. In man the creative force thus economised is embodied in the treasures of his faculties of soul and spirit. The very thing that impoverishes him physically, makes him creative as a human being.**

***Man and Animal* (p. 21)  
Hermann Poppelbaum**

## CHAPTER 6 THE NATURE OF MAN AND HIS RELATIONSHIP TO THE KINGDOMS OF NATURE

### I MAN AND HIS RELATIONSHIP TO THE KINGDOMS OF NATURE

Steiner often referred to the following diagram when explaining the relationship of Man to the Kingdoms of Nature:

	<b>Mineral</b>	<b>Plant</b>	<b>Animal</b>	<b>Man</b>
Higher spiritual world	Ego			
Lower spiritual world	Astral body	Ego		
Astral world	Etheric body	Astral body	Ego	
Physical world	Physical body	Etheric body Physical body	Astral body Etheric body Physical body	Ego Astral body Etheric body Physical body

#### **Man as a Compendium of the Kingdoms**

Thus Man combines within his own nature aspects of all the Kingdoms of Nature without invoking transitional missing links. Man has descended from the spiritual world to the material world more completely than the other Kingdoms. He has done so because of the sacrifice of the other Kingdoms whose essential spiritual natures (their egos) remain in higher spiritual realms.

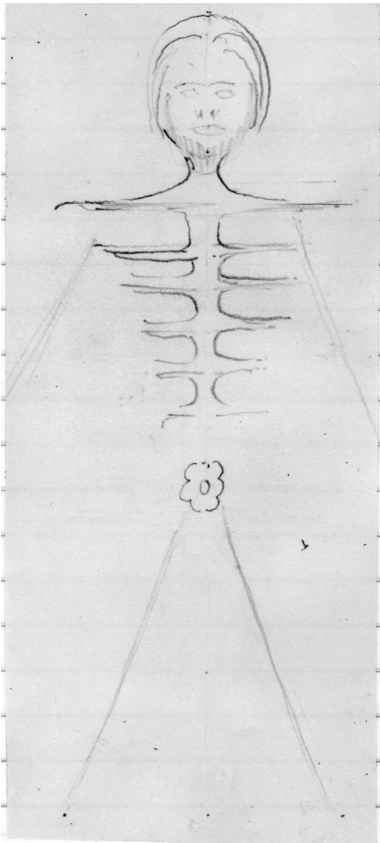
#### **Relationship of Reciprocity, Elimination, Checking**

Again, Steiner does not simply perceive a direct linear progression from mineral Kingdom to man. While each Kingdom is related to the one above it the relationships involve different processes. The Plant Kingdom and the Animal Kingdom are related in a polaric process. This is evident in the reciprocal processes of assimilation. The Plant Kingdom is related to the Mineral Kingdom by a process of elimination. The Animal Kingdom is related to the Human Kingdom by a process of checking and reversal. These relationships are not linearly ascending and may be depicted diagrammatically as follows:

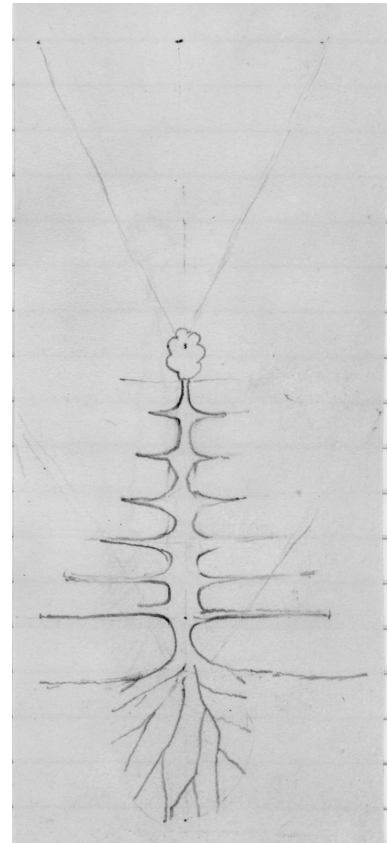
#### **Man as a Picture of Inverted Plant**

It takes imagination and perception to infer that man is a picture of an inverted plant. It can never be discovered by using a microscope!

## MAN, AN INVERTED PLANT KINGDOM



**Diagram of Man**



**Diagram of a Plant**

The relationships between man and the plant kingdom are normally indicative rather than prescriptive. Steiner, however, takes these relationships seriously. Many of the pharmacological preparations of Weleda products combine these insights with the dynamisations of homeopathy. This approach is not simply an application of the Doctrine of Signatures espoused by medieval alchemists.

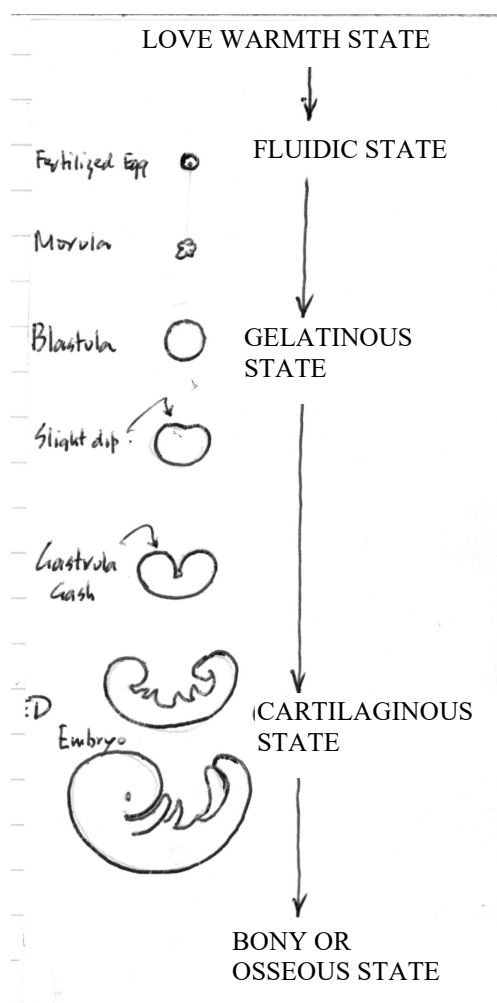


**MAN/PLANT RELATIONSHIP**  
(After R. Hauschka's '*Nutrition*')



## Spirit to Matter (Man)

The growth and development of man unfolds in an orderly pattern and sequence. It does so in accordance with the cephalocaudal law and the proximodistal law. There is even a pattern to dentition. No so readily noticed by commentators is the pattern of densification as the growing child proceeds from the embryonic stage to the foetal stage to the young infant, the growing adolescent, to the mature adult and the adult in decline.

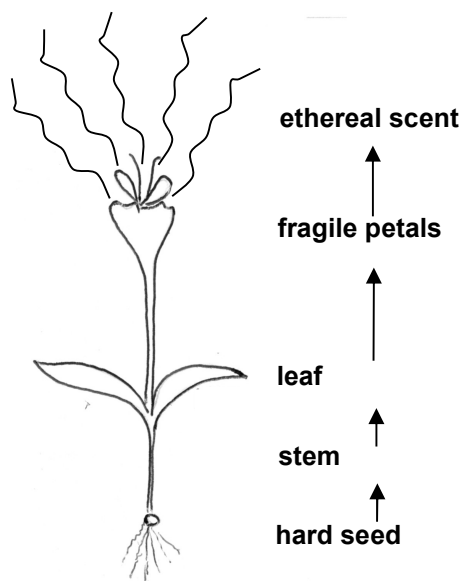


## Embryonic Development

The fertilised egg passes through several stages including meiosis, mitosis until the cell division passes from morula to blastosphere. With the appearance of the gastrula gash the process of invagination begins. In these processes it is easy to overlook the formation of the embryonic sheaths and appendages i.e. the yolk-sac and allantois. The embryo is nurtured by these surroundings. For Steiner, these embryonic beginnings are a repetition of earlier cosmic events in the formation of the earth. For him the life history of the human embryo is a reflection of four epochs in the formation of the earth. The stages of densification proceed from a primal warmth condition to a fluidic stage and then to a cartilaginous and eventually an osseous state.

## Matter to Spirit (Plant)

The growth and development of plants also unfolds in an orderly pattern and sequence. Again, it also has a pattern of densification but with plants this proceeds negatively!



### IMAGE OF UPSIDE DOWN MAN

The seed is the hardest portion of the plant. Then the stem follows with its leafy appendages. The most fragile parts of the plant are in the blossoms where the etherealising scents bestow their fragrance. Man descends into matter whereas plants ascend into spirit. In the very act of exhaling man outbreathes the carbonic acid so necessary for plant growth. Man and plant stand in a reciprocal relationship.

## II

### MAN AS A BEING OF BODY, SOUL AND SPIRIT

#### Steiner's Views On the Nature of Man

Steiner's views on the nature of Man are not only central to his educational thought, they also form the foundations of his social policy.

Steiner regarded Man as tri-partite, i.e. a being of body, soul and spirit. These three elements, although present in the newborn child, progressively unfold in the course of a person's first 21 years. In a sense, a human being is born not once but four times! At about 21 years of age the fourth 'birth' occurs!

<b>Phase 1</b>		<b>Body development</b>
<i>Birth</i>	<i>Age</i>	<i>Task</i>
1 Physical body 	0-7 years (cutting of second teeth)	To lay the foundations of the physical body through the sculpturing of the formative etheric forces
2 Etheric body 	7-14 years (to puberty)	The metamorphosis of the formative etheric forces into the inner soul activity of the astral body
3 Astral body ↓	14-21 years (to adulthood)	The birth of the I or Ego. The emergence of the individuality and self-direction of the person
Controlling ego		

### Ego

Once the ego has emerged phase 2 of the overall developmental cycle can take place. As the ego develops the individual shapes his own biography.

<b>Phase 2</b>		<b>Soul development</b>
The sentient soul	(21-28 years)	The astral body is now worked on by the ego from within
The intellectual soul (or mind soul)	(28-35 years)	The outer sheath of the etheric body is now worked on from within by the ego
The consciousness soul (or spiritual soul)	(35-42 years)	The outer sheath of the physical body is now worked on from within by the ego

The development of the three souls corresponds to the development of the three bodies of the first 21 years, but the process is in reverse order. It culminates in the birth of the spirit.

<b>Phase 3</b>		<b>Spirit development</b>
Spirit self	(42-49 years)	Transmuted Astral Body or Manas
Life spirit	(49-56 years)	Transmuted Etheric Body or Budhi
Spirit body	(56-63 years)	Transmuted Physical Body or Atma

## **Polarity in Head and Metabolic/Limb System**

Steiner used many terms derived from the medievalist writings of alchemy i.e. the spagyrics. The terminology of Paracelsus was also utilised by the occult physicians Dr Gerard Encausse and Dr Franz Hartmann. This terminology was also adopted by Steiner even though he gave the terms an up-dated content.

Steiner spoke of the head as the 'cephalic pole' or 'salt pole' in which the nerves-sense system predominated. He understood the metabolic-limb system as the 'pole of metabolism' or 'sulphur pole'. The skull and limb system are polaric in the same way that spheroidal and radial are polaric in the new mathematics of space.

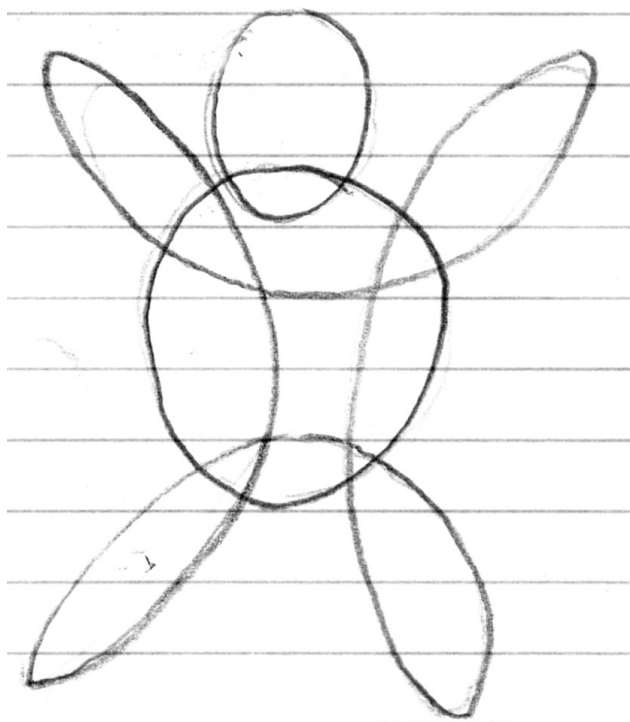
In Steiner's holistic physiology he also characterised the head as the 'thinking pole' and the metabolic-limb system as the 'pole of metabolism'. Although the nerve-senses system predominated in the head it was also found in the metabolic pole and vice versa. Steiner saw illnesses as relating to displacements of head and digestive-limb system functions.

## **Mediating Between Thinking and Metabolism**

In Steiner's holistic approach to medicine the thinking pole and the metabolic pole are mediated by the 'rhythmic system'. The pulmonary-circulatory processes of the heart and lungs comprise the 'rhythmic system'. Sometimes Steiner refers to these processes as the 'mercurial principle'. He thus re-interprets the Paracelsian terminology. The mercurial principle or system with its functions of breathing and blood circulation, is to be understood as one which strives to achieve a harmonious balance between the 'salt' and 'sulphur' tendencies. He does not intend that the terms – 'salt', 'mercury' and 'sulphur' be understood as identifiable substances. He is really referring to the processes they perform. 'Salt' is similar to 'sclerotic'; 'mercury' to something like 'gregariousness' and 'sulphur' to 'brood warmth'.

## **Head, Chest and Metabolic/Limb System**

Another triadic relationship expressed by Steiner concerns that of head, chest and limbs. This was yet another example of the threefold bodily nature of man. The relationships, however, are by no means straightforward. The head's 'spherical' shape is incomplete in the thoracic system. In the digestive-limb system the sphericity is turned inside out!



### **The skull 'head' is, in evolutionary terms, the oldest of the three 'heads'**

In a certain sense, certainly not in a literal genetic sense, Steiner suggests that the head gives rise to the whole animal kingdom. Likewise the trunk system gives rise to the whole plant kingdom. The task of the limb system is to counteract the tendency of the body to crystallise.

### **Three Heads Are Better Than One**

In the same manner that Goethe 'saw' that the leaf 'form' was not only in a leaf but in all the forms and parts of a plant (see Chapter 1), so, too, Steiner saw that the head 'nature' was not only to be perceived in the head but existed in the chest and limbs. Indeed, the whole of man could also be seen as a 'head'!

Indeed, each of the three systems contained hidden aspects of the other systems. Thus the 'head' has a digestive – limb system and a rhythmic thoracic aspect. In fact, every organ, including the skin, has a three-fold aspect.

### **Three 'Force' Bodies**

Steiner also taught that man had to be considered as being shaped and influenced by three interpenetrating force fields:

- the forces of the mineral kingdom which give rise to the substantiality of man's physical body;
- the forces of the plant kingdom which give rise to man's etheric body of form-creating forces;

- the forces of the animal kingdom which give rise to man's astral body. The astral body of man is, according to Steiner, a compendium of all animal natures.

### **Body (Soma), Soul (Psyche) and Spirit (Pneuma)**

Steiner taught that the nature of man was triadic in another sense apart from processes and forces. Man also has a spiritual nature in which the soul is a bridge between the body and the spirit.

Body ←————→ Soul ←————→ Spirit

Steiner also differentiated three aspects of these entities. There were three bodies viz. the physical body, the etheric body and the astral body. The soul too could be differentiated into a consciousness soul, an intellectual soul and a mind soul. The Spirit could also be differentiated into Spirit Self, Life Spirit and Spirit Body.

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