

## **On the Mysteries of Organic Organisation: The Microcosm and Macrocosm**

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### **Abstract**

Biological organisation and psychic organisation are closely linked and subject to constant review in the scientific literature. The study of these phenomena sheds light on the nature of life and how it differs from inanimate matter. The organisation of the psyche and the flow of psychic energy have a long established history in the esoteric literature. Such organisation has been illustrated as chakras and centres in a “subtle body.” Could the organisation of this “subtle body” be more than just a subjective experience and have an objective existence, even if this organisation does not match the appearance of the physical body? Could the organisation of the “subtle body” reflect the organisation of something universal as the ancient philosophers believed? This paper suggests that it does, discusses the organisation of human beings as described by scientists and mystics, and considers the differences. Both the esoteric and the scientific literature describe an immaterial body that maintains a gradient between the material and immaterial worlds.

## **Les Mystères de L’Organisation Biologique : Le Microcosme et le Macrocosme**

**par Daniel Harris, BSc MRes**

### **Résumé**

L’organisation biologique et l’organisation psychique sont intimement liées ; ce phénomène est constamment analysé dans la littérature scientifique. L’étude de ces phénomènes met en lumière la nature de la vie, à savoir la différence entre celle-ci et la matière inanimée. Or, l’organisation du psychisme et la circulation de l’énergie psychique sont depuis longtemps étudiées dans la littérature ésotérique ; elles ont été par exemple décrites comme les chakras et les centres psychiques présents dans un « corps subtil ». L’organisation de ce « corps subtil » pourrait-elle être plus qu’un simple critère d’expérience subjective et donc posséder une existence objective, même si elle ne correspond pas à l’apparence matérielle du corps physique ? L’organisation du « corps subtil » pourrait-elle refléter le principe universel en lequel croyaient les anciens philosophes ? Cette recherche laisse entendre qu’il en est ainsi, examine l’organisation des êtres humains telle que décrite par les scientifiques et les mystiques et examine de près les différences. En effet, soit la littérature ésotérique que la scientifique décrivent un corps immatériel qui constitue un niveau intermédiaire entre les mondes matériel et immatériel.

## **Sobre los Misterios de la Organización Orgánica : El Microcosmos y el Macrocosmos**

**Daniel Harris BSc MRes**

## **Resumen**

La organización biológica y la organización psíquica están íntimamente unidas y sujetas a la constante revisión y la literatura científica. El estudio da luz sobre la naturaleza de la vida y cómo difiere de la materia inanimada. La organización de la psique y el flujo de la energía psíquica hace mucho que ha establecido la historia en la literatura esotérica. Esa organización ha sido ilustrada como chakras y centros en un “cuerpo sutil.” ¿Puede la organización de ese “cuerpo sutil” ser más que solo una experiencia subjetiva y tener una existencia objetiva, incluso si esta organización no encaja con la aparición del cuerpo físico? ¿Podría la organización del “cuerpo sutil” reflejar la organización de algo universal como creían los antiguos filósofos? Este texto sugiere que sí, discute la organización de los seres humanos como son descritos por los científicos y místicos, y considera las diferencias. Tanto la literatura esotérica como científica describen un cuerpo inmaterial que mantiene una inclinación entre el mundo material e inmaterial.

## **Sobre os Mistérios da Organização Orgânica: O Microcosmo e o Macrocosmo**

**Daniel Harris BSc MRes**

## **Sumário**

A organização biológica e a organização psíquica estão intimamente ligadas e sujeitas a revisão constante na literatura científica. O estudo desses fenômenos esclarece sobre a natureza da vida e como ela difere da matéria inanimada. A organização da psique e o fluxo de energia psíquica têm uma história muito estabelecida na literatura esotérica. Tal organização foi ilustrada como chakras e centros em um “corpo sutil.” A organização desse “corpo sutil” poderia ser mais do que apenas uma experiência subjetiva tendo uma existência objetiva, mesmo que essa organização não corresponda à aparência do corpo físico? Poderia a organização do “corpo sutil” refletir a organização de algo universal, como acreditavam os filósofos da antiguidade? Este artigo sugere que sim, discute a organização dos seres humanos como descrito por cientistas e místicos, e considera suas diferenças. Tanto a literatura esotérica quanto a científica descrevem um corpo imaterial que mantém um gradiente entre os mundos material e imaterial.

## **Das Rätsel der Biologischen Organisation: Der Mikrokosmos und der Makrokosmos**

**BSc MRes. Daniel Harris**

## **Zusammenfassung**

Es gibt eine enge Verbindung zwischen den biologischen und den psychischen Strukturen, wobei die wissenschaftliche Literatur diese Themen fortwährend überarbeitet. Das Studium dieser Phänomene beleuchtet die Natur des Lebens und ihre Unterschiede im Vergleich mit der unbelebten Materie. Die Organisation der Psyche und der Fluss der psychischen Energie

sind bekanntlich seit alters her in der esoterischen Literatur dokumentiert. So stellen die Chakren und die Zentren des „feinstofflichen Körpers“ etwa eine organisatorische Funktion dar. Könnte aber das Wesen des „feinstofflichen Körpers“ nicht mehr sein als nur ein subjektives Erlebnis und dennoch ein objektives Dasein haben, auch wenn er die Struktur eines physischen Körpers nicht entspricht? Könnte die Beschaffenheit des „feinstofflichen Körpers“ womöglich einer Widerspiegelung von etwas Universales sein, wie es die alten Philosophen glaubten? Diese Abhandlung deutet dies an, bespricht die Struktur des Menschen aus der Sicht der Wissenschaft und der Mystik und erwägt ihre Verschiedenheit. Sowohl die esoterische als auch die wissenschaftliche Literatur beschreiben einen immateriellen Körper als Vektor zwischen der materiellen und nicht-materiellen Welt.

## Introduction

The beauty and intricacy of the organisation of living things has always fascinated philosophers. This is not just because it is mysterious, but also because of the sense that there is something fundamentally important or sacred about it. If only it was simple to ascertain exactly what it is about it that is special and not found in inorganic matter. Both practitioners of empirical science and theosophy have identified this special property of organisation in living things as form<sup>1</sup>. This is because despite the constant renewal of matter and the change an organism's body undergoes, it maintains a recognisable form. Form in this sense is arguably sometimes of a non-material nature and so is organisation, as they often can be maintained independently of the changing matter in a system<sup>2</sup>.

Many thinkers in history have suggested that living things were imbued with a vital energy different from that found in inanimate matter<sup>3</sup>. Scientists now know that living things are subject to the same laws of physics as everything else but also possess a vital energy, and one is still left with that mysterious immaterial organisation<sup>4</sup>.

The literature of the ancient philosophical traditions is full of references to an immaterial or very subtle organisation in living things, and this is particularly important in human beings. This immaterial organisation includes concepts such as chakras and the flow of psychic energy. This is particularly interesting as organic organisation includes human subjective experience while at the same time suggesting a correspondence between this organisation and the organisation of the objective universe.

This paper begins with the objective material form of living beings described by classical biology. Biologists have come to the conclusion that biological organisation is maintained by a gradient between two physical opposites. For example, biochemical pathways involved in respiration are maintained at far from chemical equilibrium. All of the main attributes biologists use to distinguish life are due to this maintenance of a gradient between opposites. This leads to the conclusion that the living/non-living distinction or puzzle of living can be clarified by considering this as a gradient between the immaterial and material. Life is the union of the material and immaterial. However, vitalism is not the answer as this implies that life possesses a force or energy not found elsewhere. The psyche also works on gradients between opposites, especially between the conscious and subconscious. It is the interaction of

psychic opposites that provides subjective experience of the “subtle body.” Someone may develop an awareness of his/her “subtle body” by practicing meditation, which increases metacognition. This psychic organisation is what offers insight into the Human body’s relation to the universe as a whole.

This paper starts by considering some aspects of organic form, then whether there are any discernible differences between the form of living and non-living things. It is found that this sheds light on the nature of organic life. It is concluded that although there is not a life force unique to living beings, there is an organisation that may be characteristic of life. This is described in the section on the organisation of the psyche. The section contains a discussion of the psyche as described by scientists and tradition as having a shared organisation throughout humanity. How this organisation can be perceived subjectively is considered using the illustrative power of meditation and chakra symbolism. Finally, it is hypothesised that life depends on the interaction of an individual’s mental organisation, and a shared mental organisation that appears abstract or immaterial.

## Objective Biological Organisation and Form

A list of some of the attributes that organisms possess, that make them different from other objects or artefacts, might include:

- ☐ Self-organisation (the ability to organise without outside help, and maintain that organisation when the environment changes)<sup>5</sup>.
- ☐ Have many layers of emergent phenomena to their organisation, making them “more than the sum of their parts”<sup>6</sup>
- ☐ Autonomy (behaviour not determined by finite set of rules)<sup>7</sup>
- ☐ Capable of evolution or subtle adaptation<sup>8</sup>
- ☐ Respiration<sup>9</sup>
- ☐ Far from equilibrium systems (biochemical pathways maintain energy gradients)<sup>10</sup>.
- ☐ Do not operate in an algorithmic fashion and have irreducible qualities that cannot be explained using reductionist epistemology (they are more than the sum of their parts as described below)<sup>11</sup>.

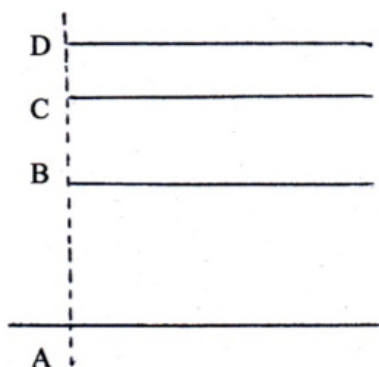
There are also the obvious attributes that are taught at school, such as sensitivity, excretion, heredity, movement and nutrition. All seem important, but some are more important than others. Reproduction, for instance, is often considered a minor one, because not all living things can reproduce (some are sterile for various reasons), and thus being able to reproduce is not a prerequisite for life. Most living organisms grow from the inside in an outward direction, beginning with a single cell, whereas, crystals grow by agglutination with simple addition of identical molecules from the outside. There were even some people who believed that there was a geometry that was unique to organisms; this included the ratio called the Golden Ratio.

The Golden Ratio  $\phi$  is:

$$\frac{1 + \sqrt{5}}{2} = 1.618 \dots = \phi$$

In the Golden Ratio, the ratio between the greater and the smaller part is equal to the ratio between the whole and the greater part. This proportion is also called the division into mean and extreme ratio.

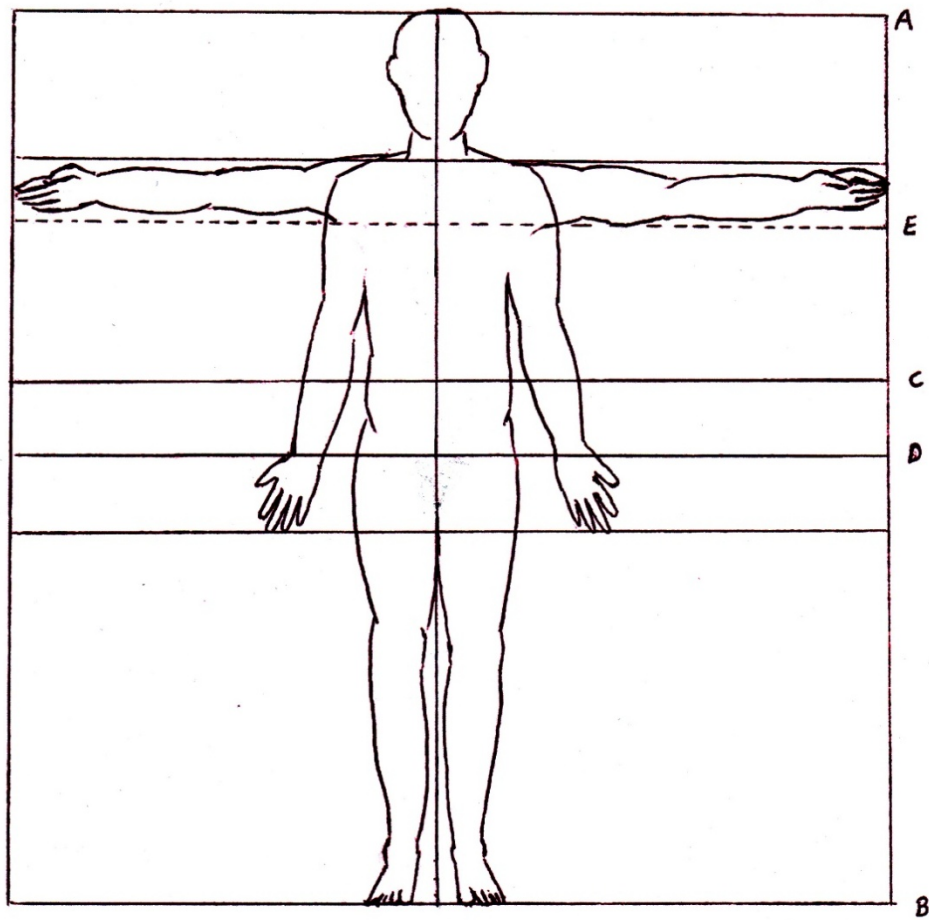
Fig. 1a shows how, starting from the greater segment AB, one can construct the smaller segment BC such that  $AB/BC = \phi$ , from which follows  $AC/AB = \phi$ . Equivalently, starting with segment AC, one can place point B to divide the segment into two segments AB and BC with lengths related by  $\phi$ .



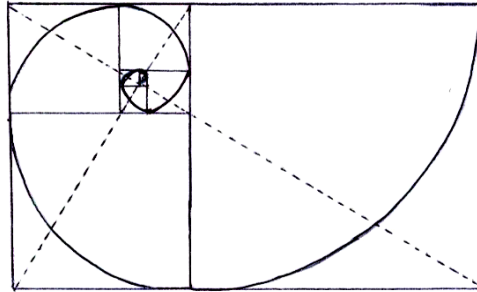
**Fig. 1a.** Geometric explanation of the Golden Ratio and its relation to harmonic patterns related to growth.  $AC/AB = AB/BC = BD/BC = BC/CD =$  Golden Ratio. (Redrawn from Ghyka, M., *The Geometry of Art and Life* (1977), p. 11, Fig. 9)<sup>12</sup>.

It is often said that this is the most pleasing division of the line for the human observer from an aesthetic point of view. In other words it is objectively beautiful. The  $\phi$  ratio can be found in botany, animal life and in the human body (Fig. 1b). The Golden Ratio has the property of producing, by simple addition, a succession of numbers in geometrical progression or of similar shapes (Fig. 1c). The Fibonacci series also produces gnomonic growth (in which the growing surface or volume remains homothetic, that is, self-similar, as in fractals)<sup>13</sup>. These types of growth, in which successive shapes have to remain similar, always have a logarithmic spiral as a directing curve. In the human form the Golden Ratio is seen in the ratio of the total height to the vertical height of the navel (Fig. 1b). This shape is associated with the star pentagram, as a regular pentagram consists of 'golden triangles' with base angles of 72 degrees and a vertex angle of 36 degrees. When the triangles' sides are taken as one unit, their base is 0.618 units long<sup>14</sup>. It was believed, by some, that pentagonal forms or lattices do not and cannot appear among non-living things such as minerals<sup>15</sup>.

The configurations of crystallised matter correspond to stable or relatively stable equilibrium determined by an intelligible causality. The chemical reactions of the elements can be explained by a tendency of the electrons to combine with each other in the most stable arrangements possible and, therefore, they reach the lowest energy configuration. In many cases (for crystalline systems as well as for the more complex ones of organic chemistry), the minimum amount of superficial potential energy corresponds to the solution that for a given volume produces the smallest surface agreeing with the linking forces.<sup>16</sup>



**Fig. 1b.** A harmonic and geometric analysis of the ideal male.  $\phi$  = Golden Ratio in which case  $AB/CB = AD/ED = \phi$ . In ancient times the building of temples had to comply with certain sacred rules which often included those illustrated here as harmonic measurements or ratios. (From Ghyka, M. 1977. *The Geometry of Art and Life*, 105)<sup>17</sup>



**Fig. 1c.** A logarithmic spiral constructed using squares that increase in size by the proportion of the Golden Ratio. This kind of spiral is found in the shells of many sea creatures (From Skinner, S. 2006 Sacred Geometry, 39)<sup>18</sup>.

### Growth of Living Organisms

Not many biologists had pursued the idea of there being laws of organic form uniting living organisms until the work of D'Arcy Wentworth Thompson, and, as Stephen Jay Gould put it, "Few had asked whether all the patterns might be reduced to a single system of generating forces" and "Few seemed to sense what significance such a proof of unity might possess for the science of organic form."<sup>19</sup> The illustrations in his book compared falling droplets of liquid forming elegant tendrils, to jellyfish of an eerily similar form, suggesting similarity of causes. Although some have said that Thompson ignored chemistry and did not understand cell biology or genetics, his work has been highly influential and is still worth reading.

Living organisms grow from the inside out, beginning with a single cell, whereas, crystals grow by agglutination with simple addition of identical molecules from the outside to a starting structure. Each particle settles at the place that is most easily reached such that a minimum energy distribution results.

The naturalist D'Arcy Wentworth Thompson produced a book that is famous among natural historians, *'On Growth and Form'*<sup>20</sup>. Sir Peter Medawar called it, "Beyond comparison the finest work of literature in all the annals of science that have been recorded in the English tongue"<sup>21</sup>. In the book, Thompson gave a careful discussion of cause, in particular, the cause of organic form. He differentiated between final cause and efficient or physical cause. Final cause is that which is based on design for a purpose, whereas physical cause is mechanical. This distinction is not always easy, because it is not always obvious whether an object is the way it is out of physical necessity or because of the needs or wants of a sentient mind<sup>22</sup>.

Charles Darwin established a worldview in which the form of organisms was dictated by natural selection, and twentieth century biologists assumed that natural selection acted on the final product as opposed to genes or embryos<sup>23</sup>. The ‘adaptationist’ would explain the form of an organism or the function of an organ by invoking the final cause, but its physical cause remained unexplained (how it was constructed chemically and physically). To Thompson it was imperative that biologists considered physical cause, and he maintained that although some biologists would explain a leaf in terms of natural selection, natural selection alone did not explain why leaves grow in a limited number of shapes<sup>24</sup>. He believed that neither accident nor purpose could explain the striking connections between forms in nature.

### **Living and Non-living Distinction**

Considering organic form, people instinctively seem to be able to tell life from nonlife just by looking at it. How can a person instinctively tell life from nonlife? Instead of listing the properties of living things, Roberto Maturana and Francisco Varela developed a method of categorizing living things by asking what the organisation of a living thing was.<sup>25</sup> Whenever one observes an object, he or she decides that it is a particular kind of object depending on the different relationships that must be present between it and its environment, leading to the identification of it. To recognise an object, one must recognise a relationship between its parts and things around it; what substance it consists of has nothing to do with this. This act of implicitly, or explicitly, recognizing objects by their organisation is something people do on a regular basis.

One presupposes something in common among living things, which is why people categorize them as such, but it is hard to see how this is done. Maturana and Varela maintain that one of the things that people see in common among organisms is the fact that they are constantly self-producing. They call this process and organisation ‘autopoietic organisation.’ Even creatures that go through stages of stasis must sustain themselves autopoietically when active, and under this definition of life viruses are not considered living.<sup>26</sup>

Cell metabolism includes a dynamically related set of components in a network of interactions that are ongoing. According to Maturana and Varela, this autopoietic network is different from other molecular transformations because cell components produce the components of which they are themselves made and with which they are repaired.<sup>27</sup> Stated differently, this is what the philosopher Kant said, “The parts of an organism produce other parts.”<sup>28</sup> The cellular autopoietic network is enclosed inside a membrane that is a part of the organism as well as a producer of the organism’s parts, and of parts of itself.

This is in contrast to what is seen in machines as they are known, in which an enclosing shell or skin would simply limit the extension of the system inside. The membrane of a cell does not do this alone; it also participates in the network it encloses, which builds its own components. In such a system, all parts work as a unity. It is not the case that first there is a dynamic, then a boundary, and then a dynamic. To Maturana and Varela, organisms are the same in their organisation but differ in their structure. They all, therefore, have an autopoietic organisation but differ in their forms and adaptations.

The ability to reproduce is a characteristic of most known life forms, but not all. Some living things are sterile, but this does not stop them from being alive. Even though the concept of sexual reproduction may not be as serious a characteristic of life as others, it is worth considering the reproduction of parts inside an organism, and reproduction on the cellular



level as contrasted with that of replication etc. In mechanical objects the reproductive mechanism is operationally different from the product. The products are independent of, and almost always causally ineffective towards, the reproductive mechanism. In living beings the offspring are not completely operationally different in their form and function from their parents.

Reproduction is different in organisms because they have a historical background whereas objects produced by replication (mechanical reproduction) don't. The notion of a copy also has interesting implications. If a model or plan is used to produce successive copies of an object, the individual copies have their own individual histories. If, however, one of these copies is taken and used as a model, some historically connected objects can be produced. This makes a kind of phylogeny in which individuals bear resemblance to the one that was used as their model. In living organisms this inheritance is also due to genetics. Over time, this means that objects can be checked to see how they had changed, observing that, eventually, objects which had originated from different models would be different in structure and appearance, showing a kind of heredity. The process demonstrates in a simple way that a kind of inheritance can work and how evolution operates<sup>29</sup>.

The way some organisms reproduce is qualitatively similar to the way that when a piece of chalk is broken, two pieces of chalk with the same qualities are produced. The pieces will belong to the same organisational class, but will be different in form. This illustrates that in a sense, reproduction is a common phenomenon to both living and non-living things. What is unique to life is a shared immaterial organisational process.

### **Puzzle of Living**

One other important aspect of reproduction and growth is genetic information. The central dogma of molecular biology means that the idea that genes encode all the information to make an organism is misleading. It confuses the phenomena of heredity, found in organisms, with that of replication of pre-specified industrial products found in machines and replication of DNA. It also confuses the participation of DNA in encoding biological structures with unique responsibility<sup>30</sup>. DNA does code for an organism's specific proteins, but not all of the organism's characteristics, as some are determined by physical laws and chance events. This is why clones that have identical genomes may nonetheless have differing outer appearances. This leads to the conclusion that some of this responsibility lies elsewhere.

### **Vitalism**

The property of living has always been a puzzle for philosophers, and some simply ignored it or said, as Descartes did, that organisms are just complicated machines. This did not satisfy most naturalists, however, who believed that life forms contained something that was not part of inanimate matter. They believed that there existed a force unique to organisms that they called the "lebenskraft" or "vis vitalis" that moved organisms in an occult manner similar to the force of gravity as Newton had presented it<sup>31</sup>.

Unlike gravity, no experiments found any evidence for the existence of this life force, and it fell out of favour with biologists. Vitalism developed because it was obvious that the problems of biology cannot always be solved by Cartesian philosophy. Such questions included: how can two machines fuse into a single one in the same way that two gametes fuse

to produce a zygote, and how could a machine repair itself and replace its own broken parts?<sup>32</sup>

If ancient philosophical texts such as the Bhagavad Gita or Corpus Hermeticum are consulted, they too deny the existence of such a thing as the lebenskraft.<sup>33,34</sup> They deny that there is such a thing that is unique to organisms and not found in inanimate matter because the authors believed that the human being is organised in the same way as the universe as a whole in regard to organisation.

### **The Universe and Life Force**

It has been repeatedly suggested that the universe as a whole consists of a substance that interacts with matter to produce life. Many are familiar with it being called ‘spirit’<sup>35</sup>. It is worth noting that such a substance may exist and may even be similar to what scientists have called the aether. Despite the fact that many experiments have failed to establish its existence, the aether is assumed by many physicists to exist because it is necessary for certain physical phenomena<sup>36</sup>. These are complex issues, and the aether and spirit are not necessarily the same. The investigator is faced with considering the idea of something present in both inanimate and animate matter but only realised in animate living things. This is what is commonly called spirit, and to explore this spirit one must look inwardly, into his/her subjective experiences. It seems the substance of life is everywhere, but is only ‘alive’ when provided with a material body of sufficient organisation.

### **The Organisation of the Psyche**

Now consider an outline of the ‘subtle body’ or subjectively experienced body. This can be described in both a subjective and objective manner. It has similarities in all people and is experienced as the psyche in connection with the body’s physiology.

Human scientific perception divides reality into levels or theories as can be seen in the way that biology is explained by chemistry, and chemistry by physics which is seen as the most fundamental. However, there are logical gaps between each of these ‘levels’ as one cannot fully explain the other. For instance physics cannot explain chemistry, and chemistry cannot explain all of biology<sup>37</sup>. If the idea that there are levels of reality according to human reasoning is taken seriously, one can imagine that each level is understandable in terms of three principles. The three principles are of great importance to science because classical logic is founded on them. They are the following three axioms:

1. The axiom of identity; A is A.
2. The axiom of non-contradiction; A is not non-A.
3. The axiom of the excluded middle; There exists no third term T (“T” for “Third”) which is at the same time A and non-A<sup>38</sup>.

In science the knowledge of the coexisting microscopic and macroscopic worlds has led to pairs of mutually exclusive contradictories (A and non-A): wave and particle, object and subject etc. This suggests that it can be helpful to think of the relationships between the perceived parts of natural things rather than the individual parts alone. A relationship cannot be thought of as being constructed out of elementary particles. Whatever components are imagined to make up something, they must be sensibly distinct aspects of an otherwise flowing and continuous totality (organisation).

According to Basarab Nicolescu, to understand the natural world fully one should replace the principle of the excluded middle with the principle of the included middle which is described by the following axiom: “There exists a third term T, which is at the same time A and non-A”<sup>39</sup>.

If one excludes the middle principle, then crossing one level or theory of reality into another would not be possible. The included middle or ‘hidden third’, as Nicolescu calls it, between two levels is considered to be the zone of ‘non-resistance’<sup>40</sup>. This zone is the area that is resistant to human analysis, in other words the zone where one theory loses explanatory power and must be superseded by another.

In everyday experience each level or theory of reality contains two principles; the subject and object. If one tries to unite subject and object under the same logic he/she must then conclude that both are subject to the three principles above (A, non-A and hidden third). Then the person must unite subject and object with his/her own ‘hidden third.’ One who assumes that there is no hidden third cannot reconcile object with subject, and the subject cannot fully understand the object.

Nicolescu suggests that the human mind may cut across the multiple levels of reality. By joining the subject and object with hidden third, the human psyche can cut across the levels of reality seen in both object and subject uniting human mental processes with natural processes. It has been said that people are usually unconscious of the way in which subject and object are united.

Mark Changizi has noted how things such as language and music may mimic nature because at their roots, human minds are connected, and in accord with the objective natural world, ‘outside’<sup>41</sup>. Human minds detect the microstructure of natural phenomena as they really are, but individuals are not always aware of this because human consciousness filters out what it does not usually need. With practice, however, one can recover his/her subconscious experience of phenomena and make it conscious. As an artist may practice detecting and reproducing the form of things he sees until he has mastered the art. With such practice a cycle of communication is established between centres in the conscious and unconscious mind. The organisation of the human psyche allows human beings to unite their subjective processes or ideals, such as those found in music, with natural objective processes present everywhere in the universe. In this sense a human being can be a ‘little universe.’

Knowledge gained this way is not relative like information gained from a single level of reality through analysis. This sort of know-how is pure because it consists of qualitative information that joins all levels of reality.

Following the logic of the included middle led Nicolescu to the conclusion that there are seven level independent principles. As has been shown, both object and subject contain the three fundamental principles of A, non-A and hidden third, producing six fundamental principles in total. The hidden third is achieved by changing the ‘excluded middle’ into the ‘included middle.’ This happens twice to produce seven principles, because including or excluding the third principle is an individual choice that may allow one to cross levels or become stuck on one. Nicolescu maintains that in the mystical tradition, Jacob Boehme called the seven level independent principles ‘planets’ or the seven spirits present in all things<sup>42</sup>.

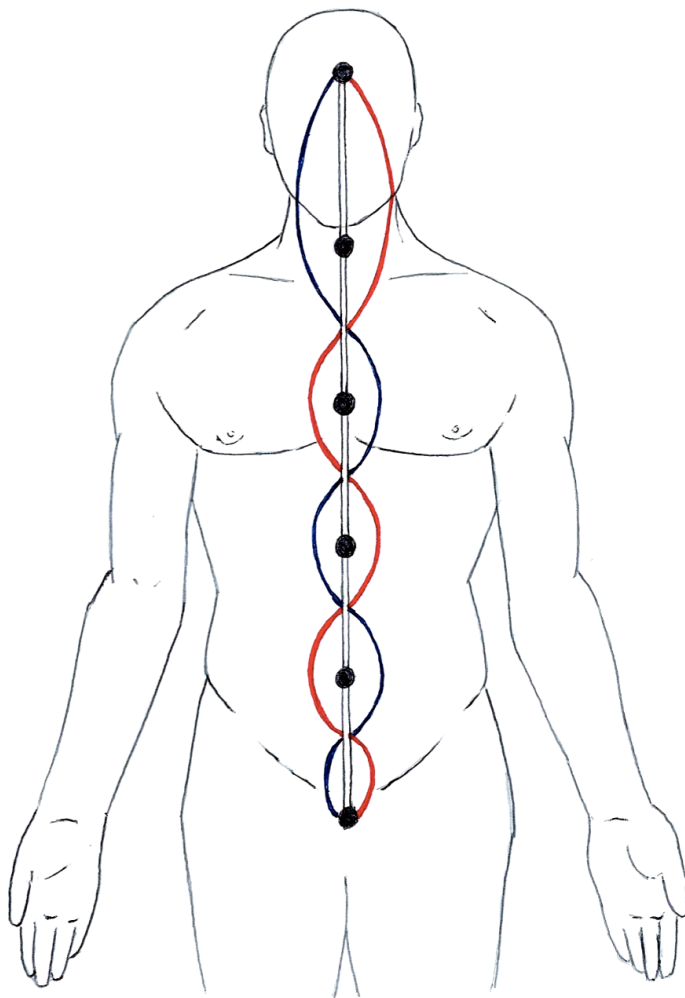
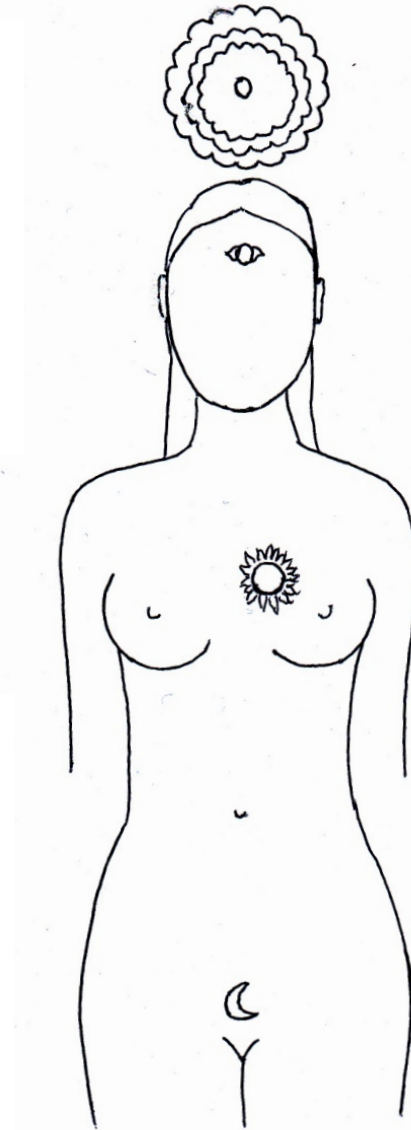
## Chakras

Chakras have become popular in the West. Although they are usually associated with Asia, they have played an important part in Western esoteric traditions as well. They are usually depicted as seven in number (Table 1), but distinct from the ‘planets’ of astronomy or astrology. They have been called the eyes of the soul. Some have said that they are also equivalent to the seven seals that must be opened by humanity as a whole<sup>43</sup>. The brow chakra, often simply called the third eye, is illustrated by the symbol on the forehead below (Fig 2), called Ajna, which consists of two petals. Its opening allowed access to the sixth sense possessed by seers<sup>44</sup>. Above the head is Sahasrara, which is depicted outside of the body as Ajna’s link to the collective universal spirit.

The psyche is recognised to consist of two great aspects. The first is the conscious and the second is the subconscious. By using the sixth sense (looking inwards), one may (by becoming aware of his/her conscious biases and quietening the intellect) start to integrate unconscious content into the conscious. Doing this, the psyche begins to flow, maintaining a gradient between the conscious and unconscious. The meditator’s concept of ‘self’ remains independent of these two opposites but is more intelligible to him/her when there is a healthy gradient of movement and communication between the conscious and unconscious.

These three centres are perceived to have a location in the human body (people report feeling certain aspects in certain places). For instance a worrying feeling may well up in one’s abdomen due to a conscious bias; however if he/she finds a correcting concept intellectually in the head, the idea may seem to soothe the negative feeling in the lower body. The interaction of the elements was used to describe the movement of psychic substance in the above manner and opposites were depicted as Ida and Pingala (Fig. 2 and 3). Traditionally the more knowledge one has of how this works, and the more one recognises how the outside world influences this, the more he/she understands the subtle body and its centres. A brief discussion of chakras will help the reader appreciate some of these centres.

**Fig. 2.** The three main centres of the subtle body according to ancient tradition. The brow chakra, or third eye, is where knowledge of the outside is sorted and compared with inside. The heart chakra mediates between the two in the wise individual and is the true self. The chakra above the head is the realm of abstract, objective things. They are depicted here on a female but are the same for a male.



**Fig. 3.** The interplay of Ida and Pingala. When the mind is focused in accord with the elements the spirit rises up the chakras with each union of Ida and Pingala, and when it reaches the top of the head, it is rejuvenated and flows back down to the subconscious, rejuvenating it and the vegetative self.

The brow chakra has been associated with the pineal gland, which is situated on the tip of the brain stem between the two cerebral hemispheres. The third eye may be opened through meditative practices such as those of yoga or meditation. It is a form of metacognition that encourages the integration of unconscious mental and bodily content with consciousness. It has been discovered that the pineal gland is larger in children than it is in adults and that after puberty it begins a process of calcification and shrinks<sup>45</sup>. Scientists have found that this gland produces melatonin, a chemical associated with pleasure and that is also involved in the maintaining of waking and sleeping rhythms, or circadian rhythms, as well as in those of animals. The ancients believed that it was an organ that allowed the perception of higher realities.

An ancient Egyptian hieroglyph entitled the 'Ru' is thought to symbolise the brow chakra and was also called the birth portal<sup>46</sup>. This is interesting because Descartes, the philosopher, claimed that the pineal gland was the starting point of thought and consciousness.

With the coming of modern science, the word 'planets' was ascribed solely to the material bodies of the solar system, while the elements were ascribed to the four main states of matter. However, traditionally they were also aspects of the psyche. It is a crucial fact that this psychic organisation is shared by all peoples, and therefore, must be that way for some objective physical reason. It has universal significance.

## **Meditation**

Most of what is known of the subtle body comes from meditation or meta-cognition. Even now much of the modern scientific studies of meditation do not use methods that allow it to be studied properly because they are too objective. Studies such as those discussed below have shown, however, that even the simple meditation and meta-cognition techniques investigated scientifically produce significant physiological and psychological changes<sup>47</sup>.

However, much of the scientific literature is based on very simple meditation techniques that may be too simple to produce proper results. These techniques may cause relaxation but do not necessarily have the desired effect (in this case becoming conscious of the organisation of the psyche). Such over simplified techniques include repeating, 'SA, TA, NA and MA' verbally whilst concentrating on breathing<sup>48</sup>. There are different reasons for meditating but to gain knowledge of the Chakras methods involve the questioning of the psyche, in which an idea must be weighed against its opposite until the questioning mind is unable to criticise further. This amounts to correcting the biases of the intellect and allowing metacognition.

If opposites such as the conscious and subconscious are not balanced, then the psychic energy (or libido, to use C.G. Jung's concept of psychic energy, rather than Freud's term for sexual energy<sup>49</sup>) may become dammed up because some conscious content builds up in an unpleasant way. During the progression of libido (the progression of psychic elements toward conscious coordination), the pairs of opposites are united in a "coordinated flow of psychic processes"<sup>50</sup>. During damming the opposites are separated (Fig. 3).

**Table 1. THE BASIC QUALITIES OF THE MOST WELL KNOWN CHAKRAS<sup>51</sup>**

<b>Chakra</b>	<b>Position on body</b>	<b>Qualities</b>
Sahasrara	Above head	Organises the three centres and links the brain with higher consciousness. It centralises the three minds spiritual, higher and intuitive. It is the objective good or Brahman.
Ajna	Brow	Centre of intellect and thought activity
Visuddhi	Throat	Centre of outgoing, expressive mind, fulfilled word of healthy cognition.
Anahata	Heart	Centre of emotions and mediator between conscious and unconscious.
Manipura	Navel	Centre commanding passions and desires.
Svadhishthana	Abdomen/below navel	Sense of self and commands subtle desires and smaller vital movements.
Muladhara	Base of spine	Subconscious simple being, the true nature of matter.

This consideration and questioning of reality has sometimes been called insight or mindfulness meditation defined by McGee as, “A psychological state of active passivity and creative quiescence in which the meditator purposefully and non-judgementally pays attention to the present moment, attending to the multitude of sights, sounds, sensations, feelings and thoughts that simultaneously present themselves to his or her awareness in each moment”<sup>52</sup>. Again it involves, ‘meta-cognition’ or an awareness of one’s own thought processes.

This form of meditation must be distinguished from concentrative meditation in which the meditator concentrates on a single stimulus such as a mantra. The simple forms of meditation have been shown to have positive effects, but more work must be done in this area because no one has yet demonstrated that they produce effects different from those of simple relaxation. The meditation that is worthwhile, and involves what McGee calls, ‘mindfulness meditation’ is much more than just relaxation. Under meta-cognition, thoughts and feelings become the object as well as the subject of awareness. This induces a subjective experience of higher awareness and awakening. According to McGee, although meditation is simple, it “Is nearly impossible for the untrained mind to do well for more than a few seconds”<sup>53</sup> and a “state of empty awareness” must be reached that ignores outside influence. This empty awareness is like stillness as Do Hyun Choe described it:

*“Stillness is what creates love.  
Movement is what creates life.  
To be still and still moving, this is everything”<sup>54</sup>.*

This experience is almost unspeakable and brings one into the reality of a previously inconceivable present moment that consists of all that is real.

Meditation may well have beneficial effects on mental health, in particular, under the right circumstances. Meditation by a well-meaning individual can lead to ultimate mental health. Studies have found an increase in the amount of grey matter in meditators, “particularly in the prefrontal cortex, right anterior insular and putamen”<sup>55</sup>, which are the areas of the brain historically associated with attention, interoception and sensory processing in response to meditation. This occurs in people who meditate and suggests that meditation can increase neural plasticity.

Narcissistic people may try to use meditation for their own benefit and gain enlightenment simply for their own pleasure. To gain anything really useful from meditation, however, the practitioner must use selfless thoughts and must banish all influence of the ego. If someone attempts to force altered states or enlightenment, it can lead to psychological damage due to alteration and detachment of areas of the psyche. This negative consequence of meditation for selfish purposes can have serious consequences, and Carl J. Jung has referred to the detachment of areas of the psyche from one another as karmic effects <sup>56</sup>.

### **Questions to Ask**

The deepest needs of a human being can be met by answering the deepest questions about life to a satisfactory level. This answering of the most fundamental questions leads to the opening of the third eye and actualisation. For example answering the question “What am I?” provides the individual with full, accepting, attention that has been yearned for and is yearned for by all sentient beings. It can be painful to view one’s past doings, but after acceptance of one’s doings, and one’s own ego, and acceptance of the fact that everyone has an ego that is less than perfect, healing can begin. The practice of meditation, therefore, encourages one to be disciplined, to recognise one’s actions and to be committed to one’s own care as well as that of others.

Being more aware of one’s habits and urges, one can attend to them and gain a sense of control, and increased freedom is realised. This can allow one, with practice, to face and bear experiences that one might otherwise avoid. This improves the individual’s capacity for compassion because when one is able to attend to one’s own suffering, the suffering of others can also be attended to. It can increase awareness and alertness, as well as reaction time, and one’s ability to interpret the faces of other people <sup>57</sup>.

### **Tantric Symbolism**

In tantric symbolism the Kundalini serpent represents the ascent of the spirit as it moves up through the chakras, opening them one at a time until it reaches the final seventh chakra, often called the ‘thousand petalled lotus’, depicted above the head and brow chakra in illustrations (Fig. 2). Chapter 5, verse 27 of The Bhagavad Gita gives advice on the context, which allows the third eye to be opened: “Having excluded outside contacts, fixing his gaze between his eyebrows, making the inward and outward breath even within the nostrils.”<sup>58</sup> One is advised to find a quiet place in peace with no outside influences, whatsoever, to concentrate on the text.

### **The Third Eye**



The biological interpretation of the third eye is interesting to note. Robert Moore from the University of Chicago found that the SCN (suprachiasmatic nuclei) was involved in the circadian timing of the neurosecretion of melatonin. In humans, the SCN and the pineal gland are in distinct parts of the brain. The SCN is located between the eyes. It can be localised by dividing the head into four areas by imagining a line drawn from the bridge of the nose to the base of the skull and then imagining another line that runs across the skull, about two centimetres in from the eyes<sup>59</sup>. The SCN is a tiny group of cells, “less than a third of a cubic millimetre in volume.”<sup>60</sup>

This SCN interacts with the pineal gland in a complicated way with biochemical pathways, which results in secretion of melatonin by the pineal gland at certain times<sup>61</sup>. This is interesting because a literal chemical change must also happen to the individual when they awaken the third eye chakra.

In Hinduism and Buddhism the third eye is called the ‘gyananakashu’ or ‘The eye of knowledge’ and the seat of the antar-guru<sup>62</sup>. People able to utilize the third eye have been called ‘seers’ by some. According to some traditions, the third eye was connected to the autonomic nervous system and would allow the reconnection with the inner worlds that the more primitive animals of the past had. It is believed that when this reconnection is accomplished, humans will again have this ability. However, this will be in a grander form than it was in the past because it will be under the control of the will and the voluntary nervous system. In this case, something that is learnt and practised gradually becomes second nature.

Many modern scientists also claim that it was one of the first, if not the first, area of the brain to develop in animals, and even now some animals’ brains consist largely of the midbrain and pineal gland<sup>63</sup>.

Some esoteric and occult authors have described bizarre, but fascinating, accounts of their version of organic evolution including a gradual increase in the ability of living things to learn.

This path of increased knowledge or wisdom is depicted in the chakras. The qualities of the seven most popular chakras are presented in Table. 2. According to The Book of Revelation, the soul of humanity must learn to traverse the seven seals to achieve liberation, and according to Manly P. Hall, “During each period of earth life reality, thus dwells in unreality, to be liberated from it temporarily by death and permanently by illumination”<sup>64</sup>. When claiming that reality dwells in unreality he is stating that the reality of the immortal dwells in the unreality of the mortal.

### **Selfhood and Body as Temple**

The evolution of the human race has been towards its own selfhood, so whilst under the spell of a materialistic worldview, individuals are the greatest distance from themselves. Although the human body may be material, it has also been seen as a temple, and the ancients planned their temples carefully so that they contained the ‘good’ qualities that were contained in the healthy human body. Just as gods or goddesses are said to be worshipped at their temple, the human soul is worshipped at the body.

The idea that there exists a realm of shared or objective psychological organisation, to which human minds can connect and symbolised as the seventh chakra above the head, has been presented above. This indicates that because human behaviour and knowledge come from a place within the human mind that is also, in a sense, independent of our material bodies, the environment must be significant for human spiritual development and health. It would therefore be interesting to consider what relation the human mind has to the world as a whole and vice versa.

### **Humans as Images of God**

The concept of analogies between the human being and the cosmos as a whole is found in many cultures. In western cultures, thinkers are faced with the problems posed by the Biblical text that states “God created man in his own image.”<sup>65</sup> It is confusing because humans are limited in their corporeal forms, whereas God is not limited. How then can humans be images of God?

In India a similar concept arises in the Upanishadic texts “Thou art that”, which implies that man in his phenomenal Self is equivalent to the whole universe. The founder of the Advaita Vedanta, Sankara, pointed out that if this Self or Atman who is one with Brahman was real then man would have created the world, but man did not; it was God<sup>66</sup>. Perhaps the answer is that it is not the ego or any particular human personality that created the world according to the Upanishads, but a shared independent Self. In other words it is not the human body that is like God but the human soul or immaterial organisation (Atman is like Brahman).

### **Humankind and the Universal Soul**

In ancient Greek cosmology, Plato claims that the elements in mans’ body are derived from those in the cosmos. He spells this out in his *Philebus*<sup>67</sup>. Socrates asked “whence can a human body have received its soul, if the body of the universe does not possess a soul”<sup>68</sup>. Man as a whole is different from the universe because apart from the immortal soul, he dies and is dissolved back into the elements. This cannot be said about the universe as a whole. There is some conflict between big and small but “are there in fact two universes with mutually incompatible rules, although mysteriously they have much in common?”<sup>69</sup>

This mysterious connection is summed up well in two maxims. The first is from the Hermetic Emerald Tablet, “The thing that is on high is like the thing that is below” (see ref 23). The second is the Sanskrit line, “As without, so within”<sup>70</sup>.

### **Conclusions**

Organic organisation differs from inorganic organisation in that living beings are organised in such a way to be still in one aspect and moving in another. This is what led to the theories of the vitalists who concluded that life must be animated by something not found in matter. One may tentatively conclude that life is not animated by a force or energy only found in living things, but that it is animated by maintaining a gradient between that which is still (organisation or soul) and that which is moving or changing (matter). Biology tended to concentrate on the constantly changing material body of living things while mystics tended to concentrate on their unchanging spirit or psyche.

By concentrating on quantitative research, empirical science developed a worldview constructed of irreconcilable levels or theories. It has therefore become impossible to develop a self-contained complete theory of everything. The human psyche is arranged in a way that allows for individuals to mentally cross the levels of reality imposed by quantitative science.

At a fundamental level, the organisation of human minds may match that of nature in the sense that it is ordered by the same physical laws. At this fundamental level the subject and object are one. At higher conscious levels, human minds are not aware of those lower level workings because of the need to process stimuli, and they must make an effort to become conscious of them. Practice and methods of meditation may help to this end.

With practice, people can become conscious of how the lower and higher levels of human minds work together and organise psychic functioning. The psyche is organised accordingly into patterns experienced as chakras, mandalas, and the seven-fold cycle described by Nicolae Bănuț and by Jakob Boehme.

There are many biological explanations for organic organisation that depend on physical necessities and structure selected by natural selection. However, it also seems that living things have a seemingly immaterial organisation that is interdependent with the material body, not the product of natural selection alone, and permanent as energy is. Philosophers of ancient traditions described this shared organisation as the Cosmic Man whose body made up the heavens.

Both mystics and some biologist agree that there is an abstract or immaterial aspect to living beings that contributes in some way to their form. It has been noted by biologists that life inhabits the middle of two material opposites: hot and cold, solid and liquid, order and chaos. It can be concluded that although this is true, a deeper insight may be gained by investigating how life maintains itself between the two great interdependent aspects of the universe: the material and immaterial.

## **Glossary**

**Agglutination:** Attracting molecules to a seed structure, and settling at an energy minimum.

**Algorithm:** A finite set of logical rules.

**Emergent:** A property of a system not predictable from knowledge of the system's parts alone.

**Epistemology:** The branch of philosophy concerned with how to justify and define knowledge.

**Phylogeny:** The lines of descent and biological relationships between a group of individuals, which allows their common ancestor to be determined. Not to be confused with phenotype.

Reductionist: The belief in being able to reduce high-level phenomena to low-level explanations (explaining a systems behaviour from knowledge of its parts).

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