

PREFACE TO CHAPTERS 9, 10 AND 11

The common thread binding the next three chapters is Gurdjieff’s declaration that we live in one, continuous and harmonic cosmos. For many centuries mankind has lived a kind of diplopic life, viewing the world as if there were some cosmic veil that divided it immutably into two incommensurable arenas of forces and forms. Gradually, over the past six hundred years, that veil has begun to be parted in many and diverse fields which is revealing a cosmos of such grandeur and subtlety—of such tightly interwoven and interdependent energies, that past myth, imagery and analogy pale in their ability to convey its real dimensions.

This essay on ‘hydrogens’ is focused on an exploration of Gurdjieff’s presentation as reported in Ouspensky’s *In Search of the Miraculous*, on pages 167-176. Because the material deals with a perspective on energies and forms that underpin the entire cosmos, it is necessarily quite complex and multilayered. It is a view that took into consideration the state of scientific knowledge at the turn of the twentieth century and is thus addressed, primarily, to the third (intellectual) brain. In the chapters, “The Arch-absurd” and “The Arch-preposterous,” of *Beelzebub’s Tales*, Gurdjieff considers the same energies and forms—but from a different perspective—one that penetrates into, and reverberates within all three brains.

WHY ‘hydrogen’?

Hydrogen, as the “simplest” of atoms, is the initiating step (or lowest DO) in the modern chemical table of the elements. It can be taken as the basic building block for all atoms and, hence, molecules. It seems clear that Gurdjieff chose the term, “‘hydrogen,’” because it highlighted both the octavic organizing principle of the atomic table, and the continuity of matter (matter being a continuous yet multi-leveled ‘complexification’ of simpler forms).

We have to keep in mind that the neutron (also necessary in the complexification of matter) was not discovered until 1932 and that the electromagnetic underpinnings of chemical bonds were only fragmentarily understood in the early decades of the twentieth century. Thus, the term “‘hydrogen,’” as Gurdjieff applied the word, stands for, or is a verbal image of, the separated but octavically continuous, categories of matter, even when the matter being considered extends into those states which have no mass (as in electromagnetic fields, the photon, etc.).

Gurdjieff clearly implies that a continuity of energies and the octavic principle *apply equally* to these non-mass states. Hidden in the extension of these two principles is the “equivalence” of energy and mass as reflected mathematically in Einstein’s formula $E=mc^2$.



“Now, my boy, listen further very attentively.^I *G.I. Gurdjieff*

“And so, my boy, the Omnipresent-Okidanokh obtains its prime arising in space outside of the Most Holy Sun Absolute itself, from the blending of these three independent forces into one, and during its further involutions it is correspondingly changed, in respect of what is called the ‘Vivifyingness of Vibrations’ according to its passage through what are called the ‘Stopinders’ or ‘gravity-centers’ of the fundamental ‘common-cosmic sacred Heptaparaparshinokh’.^I

G.I. Gurdjieff

“And all the results of the ‘evolution’ and ‘involution’ of these active elements, actualizing the Trogoautoegocratic principle of existence of everything existing in the Universe by means of reciprocal feeding and maintaining each other’s existence, produce the said common-cosmic process ‘Iraniranumange,’ or, as I have already said, what objective science calls ‘common-cosmic-exchange-of-substances’.^{III}

G.I. Gurdjieff

CHAPTER 9

GURDJIEFF'S 'HYDROGENS'

“What is necessary to understand and what the ‘table of hydrogens’ helps us to grasp, is the idea of the complete materiality of all the psychic, intellectual, emotional, volitional, and other inner processes, including the most exalted poetic inspirations, religious ecstasies, and mystical revelations.¹

Never one to shrink from colossal undertakings, Gurdjieff places before us, in his elaboration of the ‘hydrogen’ table, a view of the Universe that establishes an octavic continuity that links the highest and lowest, the finest and the coarsest, the smallest and largest, the most physical and the most spiritual. It is a splendidous and bold statement which underscores that we live in *one*, densely interwoven and related Universe. It, simultaneously, lays down a gauntlet, challenging both the materialistic and the religious/spiritual perspectives that have dominated man’s diplopic view of reality for thousands of years.

From the time of the Renaissance there has been a progressively widening gulf between the seemingly incompatible perspectives of the world of materiality and energy and the world of spiritual qualities and attributes.

1 Ouspensky, *In Search*, p 197.

Gurdjieff reminds us again and again, however, that we live in *one* world and that our perception of it as two separate, irreconcilable worlds is faulty in the extreme. When he discussed the table of ‘hydrogens’ and the ‘three story factory’, he emphasized the physical (mass-based) materiality of H3072 through H96 and spoke about the digestion of food in a manner quite parallel to the physiological understanding of that time. Throughout his presentation he noted the *continuity* and the progressively inward movement toward the ‘finer’ of the table of ‘hydrogens’, moving from solid macromolecular structures to smaller and more refined constituents. This brought to mind his representation of the ‘atoms’ of successive worlds, of how, for example, World 96 was composed of 96 ‘atoms’ of the Absolute and of how this atomic perspective continues up to the singular ‘atom’ of World One.

An inference, from this representation, is that the infinite potency of World One is, somehow, still present within each atom of World 96. We understand this mysterious and paradoxical presence as a *willed* (self-imposed) restriction or sacrifice undertaken by HIS ENDLESSNESS in order to bring about the creation of the Megalocosmos. Each mass-based particle in our cosmos would then be a coalescence (self-confinement) of those materials/vibrations that are free only in the infinitely rarefied atmosphere of World One.

Deep within that confinement, however, modern science has demonstrated the presence of materials/vibrations (energies) of orders of magnitude far beyond those naturally manifested in our earthly world. For millennia, in our everyday experiential world of objects and motions, the only identifiable forces have been gravity and electromagnetism. Only since the early 20th century have there been demonstrations of cosmic forces (the strong and weak nuclear forces) that lie at the bedrock of our mass-based world. World 48, which you and I perceptually and experientially inhabit, is a world of mass, gravity and electromagnetism, with the complex of laws that define the many levels of their interaction. At the innermost reaches of electromagnetic phenomena lie the empowering materials/vibrations of our brains (H48–24–12–6). At the apex of these ‘hydrogens’ (in H12–6) lies the *possibility* of the coalescence of a *willed* (or directed) *attention*, the germination point of all our possibilities.

As he does with many Work ideas, Gurdjieff presents a quite foreshortened version of the ‘hydrogens’. Hints and single examples are given regarding ‘hydrogens’ 3072–1536–768–384–192–96, but then he says only that “‘hydrogens’ 48–24–12–6 are matters unknown to physics and chemistry, *matters of our psychic and spiritual life on different levels.*”² Keep in mind that these words were spoken circa 1915–20. In the same vein, it should be remembered that the first electrocardiogram was taken in 1922 and the first brain wave study in 1929 (with the author of that first study having been thoroughly ridiculed by the scientific community for maintaining that our

2 Ouspensky, *In Search*, p 175. (author’s italics)

brain somehow produced ‘electricity’). Since that time a great many facts and considerable knowledge have accumulated which concern brain function and the electro-physiological functions of the nervous system. It is our contention that the various levels of ionic wave and electromagnetic field phenomena that have been focal points of investigation since 1929 are intimately related to Gurdjieff’s ‘hydrogens’ 48–24–12–6. The aim of this chapter is to explore ways of viewing these higher materials/vibrations (electromagnetic phenomena) as the functional mechanisms whereby our psychic and spiritual life are conducted. Included in this exploration will be the development of a perspective on the digestion of impressions (and of air beyond MI48), and the nature of the first conscious shock, as involving the directed interaction between different levels of electromagnetic phenomena.

It is also our aim to explore the development of a perspective on the ‘hydrogens’ as “twelve categories of matter”³ that may be helpful in understanding the enormous complexity and the subtlety of efforts needed in the struggle toward individual transformation.

Several quotations from Gurdjieff’s talks, recorded in *In Search of the Miraculous*, will help to qualify and focus the aim, are listed below.

“... ‘hydrogen’ means simply matter not limited in space. A ‘point’ [in the Universe] is always limited in space ... [and] can be designated by the *number* of the ‘hydrogen’ which predominates in it or is central to it.

“These twelve ‘hydrogens’ represent twelve categories of matter ... from the Absolute to the moon⁴

“All matters from ‘hydrogen’ 6 to ‘hydrogen’ 3072 are to be found and play a part in the human organism. Each of these ‘hydrogens’ includes a very large group of chemical substances known to us, linked together by some function in connection with our organism.⁵

“... with H96 ends what is called matter ... by our physics and chemistry.⁶

MASS AND NON-MASS

With this last quotation in mind, we can propose a first division of the table of ‘hydrogens’. The “categories of matter” that we ordinarily view as having mass, include H3072 to H96. The “categories of matter” having no mass, but having energy (vibration) and form, include H48 to H6. Based on this division into mass and non-mass categories, Gurdjieff’s compressed description⁷ becomes:

3 Ouspensky, *In Search*, P 172.

4 *Ibid.*, P 170. (author’s italics)

5 *Ibid.*

6 *Ibid.*, P 175.

7 *Ibid.*

Having Mass:

H3072: 'a piece of iron'

H1536: 'a piece of wood'

H768: 'food' for man

H384: water

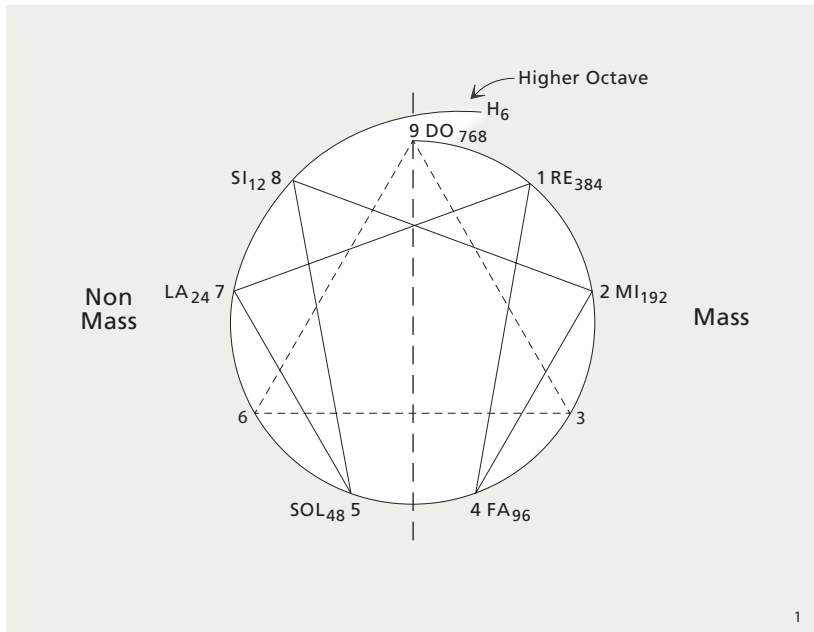
H192: air of our atmosphere

H96: rarified gases, vitamins, hormones, bodily emanations

Having No Mass:

H48-24-12-6: "matters of psychic and spiritual life on different levels"

This division is also echoed in the enneagrammatic form presented by Ouspensky,⁸ the right half having mass and the left half (H48-6) having no mass. The two dimensional, circular representation of the enneagram may be misleading, as H6 appears to be on the right half of the circle. A helical form, like that hinted at below, implying a third dimension, would show H6 at a level of higher vibration.



Rarified Gases H96

Gurdjieff's brief description of 'hydrogen'96 gave us the first hint as to what may lie behind the "categories of matter." Initially, we were simply confused, wondering what rarefied (hot) gases, vitamins, hormones and bodily emanations had in common. While studying what is known about the chemical mechanisms of enzyme and hormone action, we noted that it is a *charged*

8 Ouspensky, *In Search*, P 377.

atom (either electrically positive + or negative –) or an electron that is the carrier of the critical energy difference involved in hormonal or enzymatic activity. The molecular portion (of hormone or enzyme) is largely a docking mechanism, aligning the critical charged atom with the cell wall (in the case of hormones) or with the material to be enzymatically cleaved apart or welded together (in the case of enzymes). This charged atom or electron is, chemically, an *ion* and hence, regarding its specific functional capability, it is in the same state as a hot or rarefied gas.

The same mechanism operates with respect to neurotransmitters (chemicals that transfer the energy of a nerve impulse) and is true of the minute quantities of hormone and hormone-like substances secreted by our skin into the air. Perhaps most remarkable is the manufacture of ATP (adenosine triphosphate) and its relatives. This family of molecules plays the role of the fundamental energy storage and release mechanism within all cells. They do so by capturing a high energy electron in a special chemical bond, storing it until the energy of that bond is transferred (via the electron) to another cellular process that is in need of energy to fulfill its function. Most of the ATP in our cells comes, ultimately, from the taking apart (digestion) of sugar molecules, capturing the bonding energy locked up in the molecule via the transfer of electrons.

By means of a charged atom or an electron a very large category of matter emerges with quite different external features (regarding size and type of molecule in which it is found and there is a difference in sites of action or lack of a molecular component altogether) but with a *common arena of functions* in the human organism.

‘Air’ H192

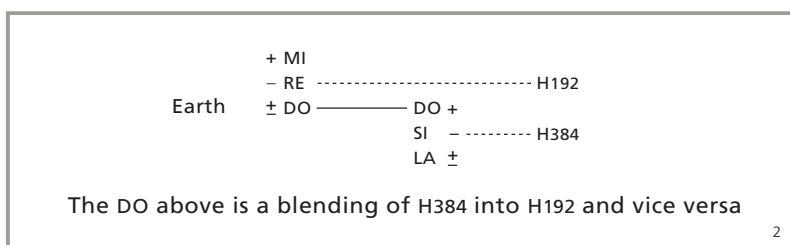
Having decided, tentatively, on the ionic state (a charged atom or electron) as the category of matter called H96, it became apparent that H192, what Gurdjieff referred to as “air,” could be understood as atoms in their stable or electrically neutral state as, for instance, oxygen (O₂) or nitrogen (N₂), etc., in their gaseous form. This gaseous state exists not only in our atmosphere but also as dissolved gases in our blood and tissue fluid (and in the waters of the ocean and lakes, rivers, etc.). A large “category of matter” emerges, neutral in its electrical state and having immense potential (as witnessed by the ionic state into which it can be transformed) commensurate with the need to ‘fill’ the MI–FA interval of the Food Octave.

‘Water’ H384

The next denser category is that of ‘water’, H384. On the Earth, and for nearly all of life, water is the great medium of relationship. The unique physical characteristics of H₂O, (i.e., freezing and boiling points, surface tension, its capacity as an electrochemical medium that permits a multitude of substances to enter into solution and be proximate to one another) make it possible for a host of interactions to take place that can occur nowhere else.

That we have, in our blood, tissue fluid and cell interstices, an analogue to the oceans of the Earth is far more than a poetic parallel, as water is the liquid medium-of-life itself. A portion of the immense potential of H768 (our first food) is released via the dissolution of certain types of bonds made possible by the electrochemical properties of water. These properties have an unique and dynamic three dimensionality to their action which acts on the fixed forms of H768 and begins the unfolding or breakdown of these forms toward the final simplicity of amino acids, simple sugars and fats. These simple forms blend into the electrically neutral state of H192.

The term “blend”⁹ is used to express a characteristic of the ‘hydrogen’ table. Recall that each ‘hydrogen’ is itself a combination of three notes or densities-of-matter (active +, passive −, and neutralizing ±) and that the passive is more dense than the active or neutralizing. See an example from the ‘hydrogen’ table below:¹⁰



In *Beelzebub’s Tales to His Grandson*, Gurdjieff gives this formulation in somewhat different words:

“ ... the higher blends with the lower in order to actualize the middle and thus becomes either higher for the preceding lower, or lower for the succeeding higher.”¹¹

‘Food’ for Man — H768

H768, or food for man, encompasses many thousands of life-forms (both plant and animal) that share a cellular/macromolecular nature (although few are truly alive when consumed by us). Again, we find that the energies that bind these creatures together are of an order quite different from those of the watery world of H384, although they derive ultimately from various aspects of the electromagnetic and gravitational forces. Essentially, the category H768 is a category of wholes; single organisms or their germinal essence and various macromolecular products of their functioning (e.g., egg yolk and other foods that nurture the seed). Most members of this category have membranes and structural components of various sorts: nuclear membranes to isolate the cell nuclei, cell membranes, the outer skin itself, as well as scaffolding structures

⁹ Ouspensky, *In Search*, pp 170, 174.

¹⁰ *Ibid.*, p 174.

¹¹ Gurdjieff, *Beelzebub’s Tales*, p 751.

(semi-rigid to rigid support units of macromolecular/cellular design). Many but not all of these membranes and structural components can be broken down by the enzymes and chemicals of the human digestive system.

That the human body cannot form the structurally simple but essential amino acids, sugars and fats from smaller molecular and atomic forms is a point to be emphasized. Life raises the minerals, gases, water and other atoms to a level of complexity that is the minimum for human consumption. Our dependence on ‘lower’ life-forms is not just profound—it is *absolute*. This is a powerful reminder of the interdependence of all life and a clear example of the immense span of time and of complex processes that Nature has invested in support of the human body.

‘Wood’ — H1536

Higher concentrations of macromolecules, like lignin and cellulose, appear to separate H 768 from H1536 or Gurdjieff’s ‘wood’. While the cellular/macromolecular nature of wood is part of the living kingdom, many of its binding energies and forms make it too coarse to serve as human food. H1536 is clearly ‘food’ for many other creatures, illustrating the specificity of Gurdjieff’s categories of matter. The construction of a table of ‘hydrogens’ for other forms of life would be quite different than the one he presented as applicable to man.

‘Iron’ — H3072

With H3072, or ‘iron’, we leave the categories directly associated with cellular life (although a number of minerals, in small quantities, play essential roles in all living creatures). Their bonding energies (metallic bonds) and characteristic crystalline forms lock the atomic constituents into a group of relationships that prohibit any but the slowest penetration by water. In the less dense aspect of this category lie the myriad combinations of rocks (volcanic, sedimentary, etc.), variably resistant to the actions of water, heat and impact. At the least dense end of H3072 are found the finely crushed particles of rock and mineral that become a major ingredient of soil (lacking the microscopic world of bacteria and one-celled creatures and the *particle-lized* bodies and remnant parts of larger dead organisms).

The bonding-energy laws of category H3072 are the most inflexible and restrictive of all the ‘hydrogens’. While some of this category permit the conduction of the vibratory levels of electricity, sound (via impact) and heat (via radiation), they are, for the most part, resistant to the more subtle intermolecular, inter-atomic and subatomic laws that gradually hold sway in the less dense categories. All the same, we have to recall the diagram of the ‘atoms’¹² of each level in the Ray of Creation. While an Earth ‘atom’ is 48 times as large and dense as an atom of the Absolute, it is made from 48 atoms of the Absolute! Inferred by this simple diagram with its straightforward

12 Ouspensky, *In Search*, p 87.

explanation is a mystery of immense subtlety. Somehow, we must try to understand how 48 ‘atoms’ of the Absolute undergo a *containment* that underpins the materiality of our earthly world and yet remain individually indivisible atoms of the highest plane.

In Sum

This way of viewing H96 through H3072 takes the various kinds of electromagnetic bonding energies (metallic, covalent, hydrogen and Van der Waals)¹³ as a fundamental basis of differentiation between these ‘hydrogens’. As particle size (from massive rock formations to individual ions) decreases, and as water becomes a more predominant medium, a grand mixing of the elements can take place; opening, with each category, a near infinitude of possibilities for interaction, energy exchange, relationship and the emergence of novel forms. With H96 we reach the apex of the categories built on mass and electromagnetic charge. With the separation of individual atoms into singular component nuclear cations (+), anions (−) and electrons (±), the highest materials/vibrations of matter (in the “scientific” sense) are reached, energizing and making possible the myriad, transformational processes which underpin life.

Note that the digestive process, from H768 through H192, is a process of *taking apart*, stage by stage, the cellular/macromolecular nature of the creatures that are food for man. We begin with the entire form of the creature (recently dead) and sequentially take it apart down to those neutral micromolecular forms of simple sugars, fats and amino acids. Anything more complex than these forms may be quite foreign to the human cellular nature, unusable and potentially dangerous to it. The final common level of organized electrically-neutral, micromolecular substances is comprised of these three elemental forms. Within the bonds that hold them in their respective forms, there is sufficient energy, such that, when released and directed, they can empower and maintain the entire cellular/macromolecular nature of our planetary body (including the cells that make up the nervous system but *not* the higher vibratory potentialities of those cells). Those higher ‘material/vibrations’ bring us to category H48, i.e., that which opens into the “psychic and spiritual life on different levels.”¹⁴

THE PSYCHIC AND SPIRITUAL ‘HYDROGENS’

Ionic Waveforms — H48

Although we are unable to be aware of it subjectively, the various transformations that convert forms and energies of the external world into nerve impulses represent the entry into the category H48. The nerve impulses that are conducted into the brain via our sensory nerves, which become the basis for the images we experience as sight, sound, smell, taste, touch and balance

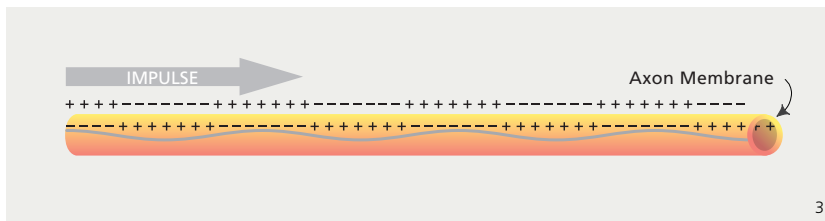
¹³ See the glossary for Van der Waals’ bonds.

¹⁴ Ouspensky, *In Search*, p 175.

(the external senses) are all of the *same fundamental nature*; namely, they are types of *ionic wave forms*. Similarly, the nerve impulses, that originate in the brain and travel outward to initiate and guide all *motor* or moving expressions, are ionic wave forms. The trillions of interconnections that form the many *associative* parts of the brain and spinal cord are also dependent upon ionic wave forms.

When invited to picture a nerve impulse, most of us visualize something like a spark, or a focus of energy, traveling very quickly along the fiber-like extension of a nerve cell (the axon) to its distant destination. In actuality, it is a much more complex and interesting process than that. It involves what is called a depolarization wave based on a very rapid movement of *ions* across a nerve membrane.

A slight difference in electrical potential exists between the inside and the outside of the nerve (axon) membrane. This is because of an uneven distribution of sodium and potassium ions on the two sides of the membrane. A chemical mechanism, called the “sodium-potassium pump,” produces this unequal distribution. A sudden chemical change inside the neuron inactivates the pump and sodium atoms move rapidly from the outside to the inside of the membrane producing a slight change in electrical potential (called depolarization), as shown in the following illustration.



In a depolarization wave, no ‘thing’ (with mass) moves along the direction of the impulse. The massless ionic wave form carries a tiny but consistent amount of electrical energy in a particular form (a ‘charge’). What makes this neural impulse possible is the highly structured and coordinated *movement* of specific ions.

In the category H96 the active element (the ion) is a singular entity with mass—acting alone, as in a hot gas or at a highly selective site within a molecule (as in vitamins, enzymes, etc.). In the category H48, however, the individual ions become highly organized and function cooperatively to produce the wave forms that underpin the massless functioning of the entire nervous system. As can be seen in the illustration, the outside-to-inside movement of the sodium ion occurs at right angles to the direction of the impulse. The impulse itself is *without mass*.

Many millions of these ionic wave forms constantly travel within the sensory, motor and associative nerve cells of the brain and spinal cord, and while there are a number of different ions and so-called channels that allow for their organized, directed movement, they have in common this function of a depolarization wave (an ionic wave form).

Within each of the sensory centers in the brain, the real magic of image creation takes place. It is difficult, in our ordinary subjective state of mind, to accept that the reality of the external world is appreciated by us only in the form of *images*. The sensory cortices (centers) create these images from the continuous flow of resonant impulses coming to them. While the individual sense (vision, hearing, etc.), is subjectively experienced as a portion of the forms and energies of the outside world, the nerve impulses that carry this data to the sensory centers are all ionic wave forms. The result is a **resonant representation (an image)** of what each individual sense, via its transformative interface, opens to in the outside world. From a material/vibrational point of view, these *resonant representations* involve the following forms and energies:

- ~ **vision**—photonic (light), reflected in the outside world
- ~ **hearing**—molecular/atomic vibration (wave form)
in air and also in water and solids
- ~ **smell**—molecular/atomic forms in air to liquid
- ~ **taste**—molecular/atomic forms in liquid
- ~ **touch**—macromolecular forms (direct contact)
- ~ **balance**—gravitational orientation to the Earth

Each of our other senses is sensitive to a very small (but lawfully resonant) portion of all classes of forms and energies. By way of these senses our brain creates a resonant representation (a *micro-image*) of the world.

The motor nerves, extending from the brain all the way to the muscle fibers of the trunk and extremities, are similarly dependent on the ionic wave forms as the source of the neural impulses that control the musculo-skeletal system. The trillions of neural interconnections within the brain, that underpin our mysterious and magical capacities to explore, contemplate, feel and create abstract images of faith, justice and so on, make similar use of the ionic wave potential for sharing data. The gamma system (the monitoring and modulating part of the nervous system that subtly invests the entire musculoskeletal system and underpins our vocabulary of facial expressions, postures, gestures and tones of voice) is also activated by the ionic wave forms of neural transmission. Finally, the entirety of our autonomic nervous system that controls digestion, breathing, heart function, elimination and other organ functions, is linked together by a network of nerve cells and their extensions that have ionic wave forms as their primary means of communication.

H48 includes, then, the many forms of ionic waves that serve the sensory, associative, motor and autonomic functions. Together, they represent the transition from the mass-based world of the prior categories of H768, H384, H192 and H96 to the massless but energy-based categories of H48, H24, H12 and H6.

From a modern scientific perspective, our senses are collectively sensitive (to varying degrees) to *all* the known classes of forms and energies that exist beyond our bodily surfaces. The qualification, to varying degrees, is a useful way to look at one aspect of Gurdjieff's *macrocosmos-microcosmos* analogy.

To clarify this analogy, we point to the following: our visual system’s sensitivity to photons (visible light) extends over approximately one octave of vibrations (frequency of the wave form). There are at least eighty octaves in the electromagnetic spectrum. This means that our visual octave is restricted to *one* out of those eighty octaves. While we cannot see in the octaves which include radio, microwave, infrared, ultraviolet, X-rays or gamma waves, they are equally a part (by far the *largest* part) of reality. Fortunately for us, the octave we are sensitive to is lawfully *resonant* (being an expression of the Law of Seven and the Law of Three) with all of the others. Thus we can rightly say that our visual system registers a *microcosmic* image of the macrocosmos of electromagnetic radiations.

While it may be somewhat difficult at first to appreciate that our subjective experience of the outer world is based on images created within our brain and that these images are *microcosmic* lawfulnesses of the macrocosmic world, it is far more difficult to appreciate that the experience of our inner world is equally the product of image formation. To understand that our inner sensations, (e.g., hunger, fatigue) and feeling, (e.g., anger, fear, happiness) are *images* created from neural and biochemical blendings, (e.g., hormones, neuropeptides) can be extraordinarily perplexing. However, the evidence that this is the case has been accumulating for a number of years and is a perspective that appears to be consistent with Gurdjieff’s description of bodily sensation and mechanical emotion.

It seems a bit easier to appreciate that our thought processes are image based. We readily see that letters, words and numbers are abstract images or symbols that stand for something else. An entire thought can thus be understood as an abstraction, a blending together of several levels of superimposed images (letters, words, concepts, sentences). Even abstractions of human values, such as justice, compassion and hope, need grounding in images—either descriptions using less complex abstractions or images of persons (like the Buddha or Christ) or artistic structures (like the Statue of Liberty or the picturing of Blind Justice, as a goddess holding a balance).

The point is that the capacity to create images (resonant representations), whether physical, emotional or intellectual, lies in the miraculous functioning of the neurons in our brain. How to view this creative process? With this question we come to a consideration of the nature of H24.

Electromagnetic Fields — H6

Integrating the separate streams of data from the senses, which represent very different aspects of the world, is a formidable challenge. Photons, after all, travel at the speed of light and there are billions upon billions of them that impact the retina each second. Sound is a vibration in air, traveling around seven hundred miles per hour. Taste and touch involve the cellular docking of individual molecules while touch is based on macromolecular surfaces. Balance is essentially an *internal* monitoring system (assisted by vision) that orients us to the gravitational force of Earth. These disparate

sources of data must be *blended* into a flowing present moment. This need implies a common vibratory state that can seamlessly integrate these very different sensory sources. The first step in that direction took place when neural impulses (ionic waveforms) became the common, but resonant, carriers of data from the various sensory end organs (retina, cochlea of ear, receptor cells in nose and mouth, touch receptors in skin, and fluid receptor cells in the inner ear). The neurons of the sensory centers of the brain, via an associative process that is just beginning to be understood, create electromagnetic fields of enormous subtlety and complexity. The electromagnetic *fields* produced in this way are, from the perspective being developed here, the entry into the category H24.

ELECTROMAGNETIC FIELDS OF THE BRAIN

All electrical phenomena involve the generation of electromagnetic (EM) fields. Neurons have massive voltage differences across their cell-membrane and voltage is, of course, a measure of the EM field's gradient. But this field will extend beyond the neuron. The fields generated by one hundred *billion* neurons must overlap and superimpose, to generate an extraordinarily complex EM field inside our brain.¹⁵

At this point, it may be useful to keep in mind that nerve cells have been a functional unit, complexifying to a remarkable degree, for over four hundred million years. As a class of living cell, they have been functioning (exploring, expanding and coordinating) within the massless electromagnetic world for that entire time. It should not be at all surprising, when we consider the biochemical complexity developed within the single cell organism over the first *three billion* years of life on Earth, that electromagnetic phenomena have been an integral part of that exploration from the beginning. The highly specialized neural cell is a relative newcomer in that lengthy process. Contrast these facts with man's exploration of the laws and phenomena of the electromagnetic world—a journey lasting barely one hundred and fifty years.

Being massless, an electromagnetic field appears to us, in everyday life, in mysterious and paradoxical guises. As they are immaterial, electromagnetic fields, having different frequencies that can interpenetrate each other and coexist in the same space, and because they are energetic, they can produce dramatic and forceful motions in both the worlds of mass and charge. We cannot see, touch, hear, taste or smell an EM field. With that in mind, we have to remember that the appearance and development of language, of material *and* spiritual concepts, as well as man's common-sense notions of reality, have taken place in an experiential context largely determined by the external senses (physical objects and their motions). No wonder, then, that man for centuries ascribed unknowable spiritual powers to phenomena for which, at the time, he had no physically based explanation.

15 Johnjoe McFadden, *Quantum Evolution*; (London: W.W. Norton, 2000), p 297.

Image Creation — H24

The process by which the various cortical regions of the brain create images is a question for which there are no definitive answers as yet. Research has collected many facts, and bits and pieces of the overall process are slowly coming together. A comprehensive understanding of the entire process is, however, lacking. That means that what is set down from this point on is conjectural—at best a theory which will require much time to flesh out and test. The theory appears to be consistent with: ~ Gurdjieff’s presentation on the ‘hydrogens’, ~ the basic processes in the digestion of ‘physical’ food and, ~ the known properties and attributes of electromagnetic phenomena.

Each cortical center concerned with a particular function forms *images* that are the expression of that specific function. Briefly, what we are saying is:

△ all sensations, feeling and thoughts are flowing images (or resonant representations). In the case of thoughts, they are subtle interweavings of varying levels of *abstract* images;

△ the images, being dependent on the sensory data that flows into the individual center, have unique attributes that reflect the world to which the sensory instruments are open. By this we are referring to the specific sensitivities of our visual system to photons, of our hearing system to sound waves, etc..

The EM field generated by each cortical center provides the energized screen on which a specific ionic wave input is displayed. A rough analogy to this process is experienced when we view the northern lights. This is a phenomenon that results from the interaction of charged (ionic) particles from the Sun with the electromagnetic field of Earth. This energetic interaction leads to the emission of visible light photons which we see as the changing, cloud-like, colored sheets in the northern sky. In this analogy, the ionic-wave input to the brain is like the cloud of solar-originated, charged particles (ions).

The electromagnetic field of Earth is ‘like’ the EM field created by the neurons of the brain. The interaction of the ionic wave forms and the electromagnetic fields produces the image we perceive.¹⁶

The Impartiality of Images — H12

The resultant image that we perceive is a display of the *entire* input to that center. The retina/visual center registers light equally from *all* sources (very bright light excepted). The inner ear/hearing center registers equally *all* sound waves (very loud sounds excepted). The other senses do likewise. What each person ‘sees and hears’ is thus far *less* than the entirety of what that sense actually registers as a total image within the brain. Many factors, from the

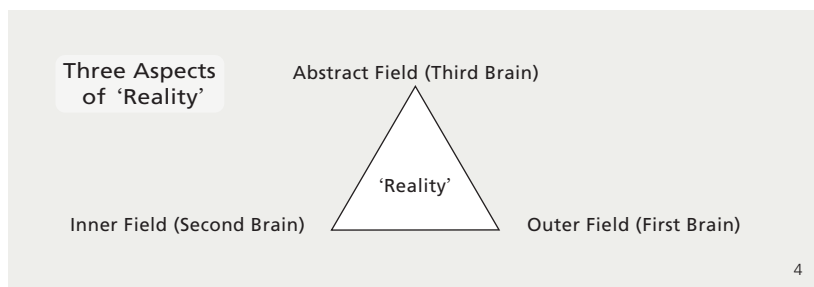
¹⁶ It is now known, from MRI and PET scan studies, that our visual cortex becomes intensively active when we look at something with our eyes open, when we close our eyes and visualize, and when we dream.

quality of attention in the moment to habits and instinctive reflexes, limit what a person is ‘aware of’ when compared to the totality of what the individual sense registers.

The sensory, motor and varied associative functions are well localized in the human brain, and while there is considerable adaptability in the instance of injury and/or disease, specific functions remain so well localized that it is possible to construct a quite accurate map, (e.g., the visual cortex occupies the occipital lobe in the back of the brain, the speech and language centers are found in the temporal lobes on the sides, the centers that concern planning the future and forming concepts like justice are found in the prefrontal lobes behind the forehead).

Each relatively distinct functional area has the capacity to create electromagnetic fields and on these fields to display the input that is unique to the function of that area, (e.g., images of sound are displayed on the field produced by the hearing cortex; images of abstract ideas are displayed on the fields created by the prefrontal or parietal/temporal cortex, etc.). Since electromagnetic fields can be in superposition and, thus, mesh seamlessly together, the images do not interfere, but blend, making possible the creation of a simultaneous representation of the ‘flowing present moment’. The blending of the images produced by different cortical centers is one of the functions of H12, namely the third function—that of creating relationships.¹⁷ (More on this capacity of H12 later.)

In this manner, each of our worlds (outer, inner and abstract) is synthesized from its sensory sources into a flowing whole, but these wholes are held perceptually separate under normal life circumstances. Thus, three distinct but intimately related brained functions form a perceptual triad that could be called the “composite field” of a three-brained being’s Reality.



Each field is a resonant representation of the particular world to which its sensory instruments open. Notable here is that the separation between these perceptual wholes is held quite clear under normal life circumstances. In certain abnormal psychiatric and neurological conditions, this perceptual boundary breaks down, and portions of the images deriving from these three worlds blend inappropriately—one portion of ‘reality’ being substituted for, or

¹⁷ See next page under “The Entry of Attention” and chapter 11, “The Emergence of the Possibility of Individual Reason” for a more complete explanation.

overlapping with, another. Even our so-called “ordinary” life contains many examples of this substitution or invasion of one field’s reality for or by another. Much of our neuroticism and anxiety seems to be the result of this wrong mixing of the three aspects of our reality. It is also possible to understand many of the consequences of Kundabuffer¹⁸ as being due to this unlawful blending of the images of the outer, inner and abstract aspects of reality.¹⁹

The Entry of Attention — H12

Sound waves enter the ear and are transformed into complex ionic wave forms (nerve impulses). These wave forms are the data which becomes a sound image when displayed on the screen of the hearing center. In ordinary life, sound waves enter our ears from *many* sources but we rarely *attend* to all of them. Depending on the circumstances, (e.g., in conversation with a friend, in a busy restaurant, walking alone in the woods, playing an instrument in a band), we usually pay attention to specific sounds. In effect a *filtering* process has been engaged, choosing which sounds to listen for and giving less or no significance to other sounds. This capacity, this *paying of attention*, is a power totally separate and different from the processes that create the image. Attention has the power ~ to focus ~ to discriminate or separate and ~ to give significance or meaning to a portion or the entirety of the image presented.

In that sense, we can say that attention is a power that can enter within the whole image, in effect, choosing what to focus upon and to attribute meaning. Analogies to a searchlight, i.e., shining a focused beam where we choose and for a specific purpose, can be useful here. The searchlight doesn’t alter what it focuses upon but it certainly separates some items from others and brings a singular significance to some.

It is similarly so with respect to our senses of smell, taste, touch and balance. With each of these, there is the creation of a resonant representation (the image) by the cortical center, and the possibility then emerges that a quality of attention may enter that image with its discrete powers of focus, discrimination and attribution of meaning. The attention that can enter here is a mechanical or automatic attention, the direction of its powers being determined by survival priorities. We can apply the same line of analysis to the inner and abstract images produced by the second and third brains. Attention has the power (in potential) to see into these images and to focus, separate, and give singular meaning to them. With the recognition of the distinction between the displayed image and the *power of attention*, we touch on the essential transition from H24 to H12.

The Powers of Attention — H12

One cannot *pay attention* without simultaneously performing an act of separation. We focus, or place our attention, not on everything before us (whether object, feeling, thought), but on some selected portion of all that is

18 See chapter 4, “Kundabuffer” in this volume for details.

19 Ouspensky, *In Search*, pp 154-60 for a more detailed discussion.

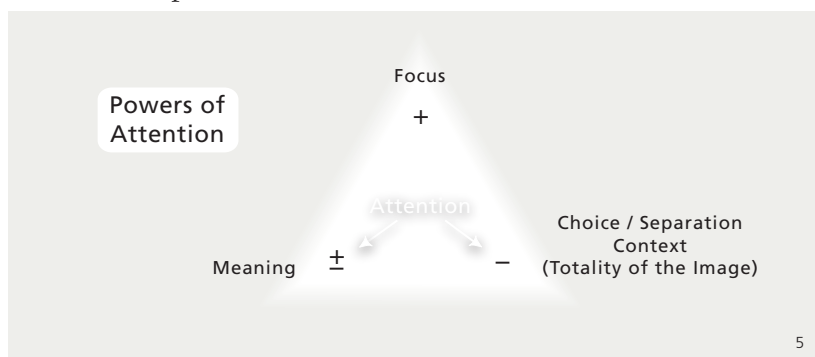
possible for us to be aware of (the totality of image). This act, as noted before, is distinct from the images themselves and reflects a power that can have great influence. At the same time that the separation between ‘what is attended to’ and ‘what is not attended to’ takes place (clearly a kind of *choice*), a *third action* is set in motion. This third action concerns the *meaning* or *significance* of the prior two actions. The overall significance of the event will determine whether this third action is apparent.

For instance, if I focus my attention on the face of one of my grandchildren, my peripheral vision—which I have *not* focused on but which lies within my visual awareness—is the determiner of the *context* within which their face is central. If a chair is tipping over toward the child (part of the context of the event), attention quickly moves to it and then a significance or meaning leaps out at me. I must move to protect the child!

In another event I may be trying to follow the implications of one of Gurdjieff’s statements about Justice through a warren of human circumstances that I have conjured up in my mind. I try to keep a portion of my attention focused on his statements and, simultaneously, to explore their application to the various human circumstances. I do this by *dividing* my attention (a choice), then by comparing, analyzing and trying to understand a host of implications. I look for inconsistencies and consistencies, weighing alternative possibilities; but always, there is a searching for meaning and significance. A moment may come when I see a pattern—a possible manifestation of some underlying lawfulness. I quickly shift my attention to a testing of this pattern in other human circumstances—and there it is! I have ‘seen something’; that ‘something’ is a consistency in law, which I had not seen before. In that moment new meaning has been *created* within myself.

From this kind of event, the *creative* element that flows from and is an intrinsic part of attention becomes more evident. This is an example of *directed attention* (not an automatic function), and is closely related to Gurdjieff’s Reason-of-understanding, (more on this later).

The triad of actions that always flows from the concentrated *effort to attend* can be represented in this form, illustration 5.



A third example drawn from our emotional (inner feeling) world will illustrate similar principles.

A close friend enters the room where I am sitting. When I look up and see him approaching, I notice (the *directed attention* being necessary here) that his shoulders are slumped and that he lacks the usual spring in his walk that I am accustomed to seeing. My gaze goes to his face, and there I see no smile, but a downturn to the margins of his mouth. His eyes lack the bright luster that is usual to them. He opens his mouth and speaks my name, and in his voice I hear a tremulous note, a hesitancy that is again uncharacteristic. A context immediately emerges from these separate ‘noticings’ and significance and meaning bursts forth. My friend is suffering. His inner world is in turmoil—that much I ‘see’. I rise quickly from my chair and embrace him, speaking his name as I move. I do not know what has happened in my friend’s world, only that he is anguished and suffering—and for the moment that is all the meaning and significance that I need to have.

All of this—the noticing of bodily clues, the gait change, the tremor of the voice—become, successively, points of attention. These separate points of attention merge and a meaning, in the context of the whole event, emerges. Attention is the power behind the meaning of this feeling event and seems clearly to illustrate the triadic aspects: focus, separation/choice and meaning or seeing relationships.

The powers of attention (to focus, to separate and to see/create relationships) have been present within brained beings for approximately four hundred million years. Even before brained life appeared, it is possible to identify evidences in life-forms of the ability to react to particular wavelengths of light, vibrations in the air, particular molecules in the surrounding air or water, etc.. We might call these the predecessors of the capacities that become finely honed in brained beings.

The point to emphasize is that Nature, with its constant thrust to explore possibilities, came very early to organize and perfect the advantages implicit in attention—even the mechanical or automatic attention. Even though its nearly exclusive concern was preservation of the physical body (relative to food, foes and mates), the triadic aspects of attention were present and had undergone progressive refinement as brained beings became more complex in form and behavior. With the emergence of two-brained life (warm-blooded creatures) the laws of Nature provided for the entry of attention into the world of inner sensation and feeling, coupling the inner and outer worlds into a dynamic relationship that underpinned family and social behaviors. These increasingly complex interactions and behaviors continued to be automatic. The attention present in one- and two-brained beings is firmly controlled by laws that allow for no uniquely individual expression of decision. It is as if the *sensory* aspect (the seeing) feeds into an associative cortex (brain) that is wholly conditioned in its moving center alternatives. It *must* choose the behavior that is the best alternative—either in terms of physical survival (first brain), or in terms of its social/family survival (second brain).

The alternatives open to a cold-blooded creature (one-brained) are pretty much restricted to the present moment (with a tiny tail into the past and

little or no extension into the future). With warm-blooded life comes a great development of memory, and the result is a very long tail into the past and a slightly longer extension into the future. The alternative behaviors built into the associative cortex of both one- and two-brained creatures are conditioned in a major way by their relative degree of awareness of past, present and future time.

The point is that the triadic attention, unfolding from the *instinctive will*, appears as a distinct capacity in early brained life and is applied, via the laws of Nature, to each brained development, up to and including three-brained beings. All of this attention is *automatic*, and its multiple and increasingly subtle manifestations underpin the immensely varied interactions between life-forms of *all* three-brained systems.

The sudden, and in anthropological terms, recent appearance of three-brained beings of our genus (*Homo sapiens*) was accompanied by an enormous expansion of our third brain (as well as further modifications of the first and second brains). Attention is also extended, in its triadic capacity, to the third brain and, when it first appears, it undergoes a comprehensive development in the lower aspect (the moving part) of what in work terms is called the “intellectual center.” It is this part that, in early work literature, may have been referred to as the “formatory apparatus.” It is still all automatic, lacking the possibility of real choice or individual decision. Gurdjieff emphasizes this point again and again.²⁰

It is with the emotional and intellectual parts of intellectual center that other possibilities emerge which have to do with attention and its uses with respect to the digestion of impressions. Before moving to a consideration of those possibilities²¹ we must briefly go into the relationship between our conception of *attention*, *will*, and the ‘hydrogen’ vibratory categories.

ATTENTION — A POWER?

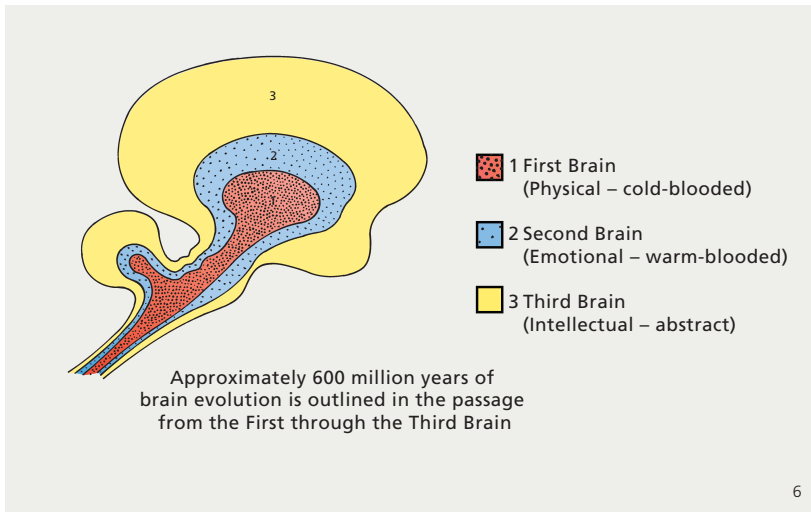
The expression “power of attention” has been used throughout the prior section but it may not be quite so straightforward an issue. Because we can identify different qualities and attributes (the triadic aspects) in the states the word “attention” points to, perhaps it would be more correct to say that there is a separate power within or behind the attention itself, a power that energizes or drives the manifest attributes. Looked at this way, the attention (in its three aspects) is a functional expression of a power that lies behind or within but is *not* the same as the *triadic attention* itself. For example, when I attempt to pay attention, as is required in a Movements class where an especially complex Movement is introduced, the effort or expression of my little will to ‘do’ this nearly impossible task is clearly separate from attention itself. It is similarly so when a reminding factor appears and I make, from

20 The early manuscripts of *All and Everything* had ‘man-machine’ as the chosen expression for three-brained beings under the influence of Kundabuffer and egoism. In *Search of the Miraculous* and *Life is real only then, when “I am”* are replete with similar references.

21 See PP 139-147 of this chapter.

somewhere inside, a singular effort to observe myself, or to call an inner 'stop' in the midst of a negative expression. It seems impossible to qualify or describe this thrust or effort any further than that, as it appears to be an indivisible something that energizes or is the singular source-of-action from within myself. This is as close as I can come to a pointing toward my little will.

It is this singular thrust or energizing from within, we propose, which points to the nature of H6, the highest "category of material/vibration" found in three-brained beings. Its primordial location lies within instinctive center,²² but it is also the source that energizes the triad of attention in its variously powered manifestations throughout the unfolding brains.



In sum, a progression of electromagnetic phenomena has been associated with the ascending categories of H48–H24–H12–H6 as:

Ionic Wave forms	H48	Neural Impulses
Electromagnetic fields	H24	Images
Photonic activity (carrier of the EM force)	H12	Triad of Attention
The EM force itself	H6	The Will

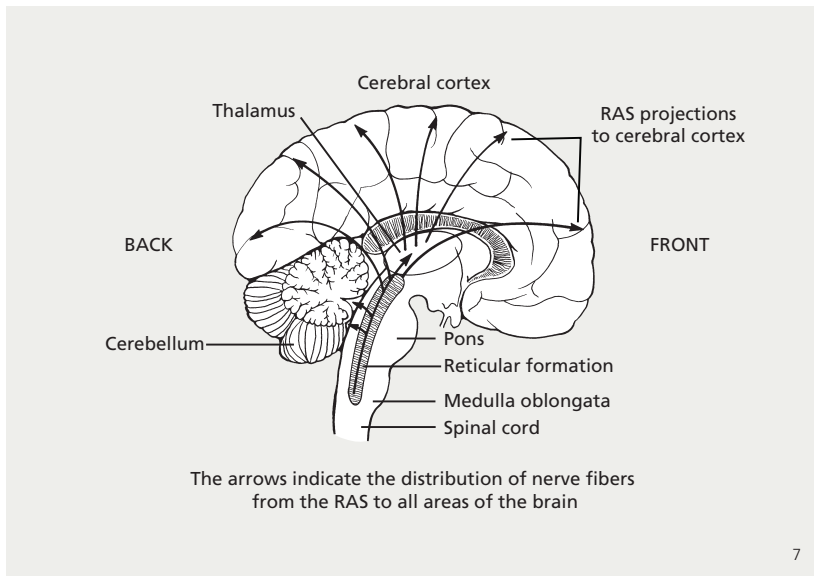
With these proposed assignments for H48–24–12–6 in mind, it is now necessary to discuss the anatomical structures of the brain through which these non-mass energies operate.

The Reticular Activating System (RAS) — H12

The part of the brain that lies just inside the skull, and in direct continuity with the spinal cord, is called the medulla (illustration 7). Within this root segment of the brain lie multiple centers that monitor and control breathing, heart and circulatory function, digestion and other vital functions. It is the primary home of our instinctive center.

²² It is interesting in this connection that Gurdjieff once said, "I trust my instincts before God."

In the center of the medulla lies an elongated concentration of nerve cells (formed like the lead in a pencil), whose sole function appears to be to wake up the brain and to keep it alert. As the brain develops, this concentration of nerve cells continues to elongate and extend forward eventually to the mid-portion of the brain. From here and along the pathway of its growth, it sends fiber extensions (axons) to *all* parts of the growing brain, serving as the primary alerting or waking-up impulse. From its apex in the mid-brain it sends axons upward and outward into all parts of the second and third brain. This patchy and elongated grouping of ‘wake up and pay attention’ cells is called the “reticular activating system” or RAS.



The critical function of the RAS is best demonstrated in those situations wherein the neurons are injured, or their extensions are cut off. Severe head injuries, tumors, hemorrhages, etc., can kill the neurons of the instinctive center (medulla) and/or parts of the RAS. If instinctive center is destroyed or severely injured, death is the result. If the RAS is cut off, then all parts of the brain *above* the injury no longer have an impulse coming to them that will wake them up and feed their attention capacities. This is what is referred to as the vegetative state—a deep coma from which the person never emerges. The point here is that the entirety of the second and third brain may be in perfect health, able to function in all its modes—but nothing happens! All of our higher brain functions are absolutely dependent upon of the constancy of this impulse to *wake up and pay attention* that derives from the reticular activating system.

For the above reasons we posit that our attention (H12), with its triadic capacities of focus, separation and seeing relationships, derives ultimately from the *will* of our instinctive center, with its centrally located origin in

the RAS. We also posit that the photon, the ‘carrier of the electromagnetic force’ is the vibratory nature of the category H12. Jane Heap put this point very well when she said:

In lower brain of each one of us is a particle—the germ of a soul.
A representative of God in the Essence—the “I”... We must release
it—make it free to Be.²³

Photons — H12

Over the past twenty-five years, a number of investigators have confirmed that, under a variety of conditions, very low frequency (low energy) photons (called LEP—low energy photons) are emitted by living cells. The exact function of these photons has not been established, but it is known that cell structures increase the number of these emissions when the cell itself is placed under stress (such as the presence of heat or noxious chemicals).

Our reason for making mention of this phenomenon is only to affirm that photonic emission by structures within cells is a well-established fact. While the role(s) played by these photons are not yet understood, it is not inconsistent to assume that cells of the brain have the same capability and that this capability may be intimately related to the category H12.

We posit that photonic emissions by certain types of brain cells (primarily located within the RAS) are much involved in the three powers commonly referred to as attention (focusing, separation/discrimination and seeing relationships or meaning) which succinctly could be called “*making 1s, making 2s and making 3s.*” (See pages 125-26 of this chapter.)

The Partitioning or Fragmentation of Attention

The instinctive center (medulla), with the RAS at its core, appears to be the primal and singular source of *all* levels of *attention*. As the brain of cold-blooded creatures grew and became more elaborate and refined in its functions, (i.e., as vision and hearing improved and as all sensory and motor functions became more sophisticated), the primal attention flowed outward in more directions, gradually lessening in its simultaneity of function and breadth of power.

With the coming of warm-blooded (two-brained) life, more centers of brain function appear which primarily concern self-warming (requiring an enlargement and increasing sophistication of instinctive center functions) and new personal and group behaviors which are the fundamentals of family life. The core of attention is further partitioned by the separated appearance of new functions and the fact that not all of these functions are required by life circumstances to be active or attentive all of the time (e.g., a nurturing behavior like breast-feeding is episodic, as are the rest and relaxation periods in the life of a warm-blooded creature). The attention must then flow into very diverse sensory and motor situations, dividing and *diluting* the singular constancy that is an absolute in instinctive center.

23 Jane Heap, *The Notes of Jane Heap*; (Oregon: Two Rivers Press, 1983), p 164.

With the appearance and development of third-brain modules (or sub-centers), the singular, simultaneous attention arising from instinctive center is further fragmented in both physical and functional expression. We recognize this when we taste the different qualities and attributes of attention that we can bring to thoughts, feelings and sensations. It is the same attention, but there are subtle differences in how we experience it. In part, these differences seem to be due to a differing center-of-gravity in the triad of attention we noted before. Sometimes the choosing/separation is more prominent, while at other times focus or search for meaning is more central.

The primary point here is that, as brained development complexifies with the appearance of two- and then three-brained life (over a period of two hundred million years), the core source of attention becomes increasingly partitioned and to varying degrees more tenuous.

For example, most of us would have no difficulty in agreeing that the qualities of attention that we can bring to our inner, feeling world are not as strong or constant as the qualities of attention that we can bring to aspects of the outer world, e.g., I can focus and hold my attention on the pen lying on the desk in front of me far better than I can focus on a fleeting feeling of shame that appears when I remember that I forgot to call my wife an hour ago.

A moment's thought about the incredibly complex ability and power of the instinctive center to monitor all of our vital functions and to keep adjusting, from moment to moment (to preserve the optimum physiological state), should give us a benchmark against which to measure the qualities and attributes of the attention we are able to bring to our thoughts, feelings and actions. The capacity of the instinctive center to simultaneously focus, separate and see relationships, and to control manifestations at the cellular level in literally hundreds of functional directions is awesome. Would that our third-brain attention was so encompassing!

When we speak of "attention" in ordinary life circumstances, it is a distant derivative of the awesome *attention* residing within our instinctive center. Our half-awake state rarely allows a simultaneity of even two functions and is easily frayed or broken by the intrusion of other outer or inner events. All of this dismemberment, or partitioning and dissolution, of the primal attention is lawful in a mechanical or half-awake three-brained being.

This somewhat lengthy excursion into our biology serves to help us to be able to better focus on Gurdjieff's 'point of incoming impression' and the *new* qualities and attributes of the attention that must be brought to that point.



THE BURDEN OF LAW

From H768 to H96 in the digestive octave each step into finer material/vibrations has been marked by the actualizing of possibilities that lay hidden within the more dense category that preceded it; for instance, the *possibility* that bondings other than the metallic ones of crystals and metals do exist for the atoms locked in H3072. What is lacking is an environment in which the single atom can explore its various bonding possibilities.

Again, at the level of air (H192), the type of bonding produces an electrically-neutral or stable state, not one that seeks out and enters into new inter-atomic relationships. As the environment changes (with heating, agitation, and resultant breaking of the interatomic bonds) the *latent* bonding possibilities of the individual atoms are released and a host of new possibilities emerges in the H96 category. These possibilities are described by electrochemical laws — there is little alternative. This lawfulness, within each category, continues up to and includes H24 (image).

Given this burden of law, how can we speak of the entry of a free and impartial power that can enter into our perceptual life, within the brain itself, and literally take apart the images formed there to their elementals (analogous to the amino acids, sugars and fats of H192)? Even more formidable would be the task that follows — namely the creation, from those elementals, of a *new body*, a Kesdjan or Higher Being-body, which takes its substance from the world of electromagnetic fields (images). It sounds quite ridiculous.

A different analogy may be of help here. Gurdjieff frequently spoke of man as being *half* asleep, and like the saying about the cup being half-empty or half-full, we can appropriately point out that Gurdjieff implied that we humans are also *half-awake*. The implication is that there already exists in man a power to wake up — a little. And, while in ordinary life it is insufficient to produce the full waking state — it is sufficient *to begin* that long and hazardous process.

All efforts to self-remember, to observe our life of image impartially, to stop mechanical thought and unbecoming manifestation, to sense with greater and greater constancy into the physical body we inhabit, and to intentionalize the movements of our body in accordance with a higher order of law, other than what “automatic moving” requires — all of these efforts enable the gradual waking process that slowly engages more and more of the functional aspects of the brains.

The Transition from H12 to H6

Only an independent Will has the potency to intentionalize the attention, to move it to the point of incoming impressions and energize the gradual taking apart of our three worlds of images. As we are, however, our *will* is not ‘one’. It is, by the laws of Nature, a partitioned and evanescent power, here for the briefest of moments and then disappearing, caught up in the welter and turmoil of our inner world.

By contrast, a useful example of the right inner separation from the thinking (abstracting) process is found in the opening pages of the chapter “Form and Sequence.” Here, Hassein has reached an important stage in his inner development, and this is partially demonstrated when he says, “In me *it* began to think, concerning these ill-fated three-brained beings ...”²⁵ The third brain, functioning associatively, is the *it* in this sentence. There is a clear separation between the emerging I of Hassein, and the associative functioning of his third brain.²⁶

With the first conscious shock, the image nature of both our *inner* and *abstract* worlds begins to be perceived for what it really is and the process of digestion in both octaves can proceed.

Only the *will* (however fragmented and partitioned from *itself* it may be) can direct attention to the point of incoming impressions. Within the perspective we are presenting here, the *will*—that individual *thrust* toward *being* and *doing*—is the electromagnetic force itself. Only this force stands higher than the ‘carrier of the force’, the photon.

Of interest here is the *lack* of comment by Gurdjieff on his placement of LA₆ in the progression of the Air Octave after the first conscious shock. No explanation is given or inferred for its presence. For example, if a process of Harnel-miatznel were present here, it would require a higher (higher than H₆) ‘hydrogen’ to transform SOL₁₂ into LA₆. But no such level is spoken of in *In Search*. Many related questions also arise that concern the MI₁₂–FA₆ interval of the Impressions Octave, the nature of what *fills* this MI–FA and how the Air and Impressions Octaves continue their progression from this point.

Consciousness — H₂₄–H₁₂

Up to this juncture, we have not made use of the word “consciousness.” The reason for this is simply that the term, as used presently by multiple disciplines, shares no common qualities and attributes that could make for a reasonably shared understanding; consciousness has become a hot topic in recent years, being a focal concern of many spiritual disciplines, and of neurobiologists, philosophers and psychologists. Definitions abound and conflict, which has inevitably led to considerable confusion. The process seems to be a fine example of how to construct a tower of Babel.

However, in the context of our consideration of the higher ‘hydrogens’ (H₄₈–6), it is inevitable that the question of consciousness will be raised— if it hasn’t been already—by the reader. And while it may well be that our effort to clarify the notion of consciousness will add to the confusion, it has, for me, the advantage of a *consistency of relationship* between Gurdjieff’s concepts and modern science.

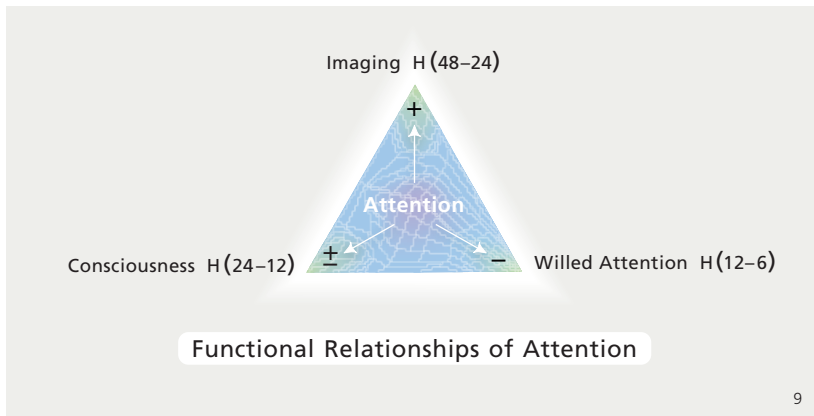
²⁵ Gurdjieff, *Beelzebub’s Tales*, P 1162. (author’s italics)

²⁶ This meets a primary requirement of the “Reason-of-understanding,” PP 1166-69 of *Beelzebub’s Tales*.

The approach is, once again, to make use of a triadic perspective, one that separates the attributes of brained function into distinct but intimately related aspects. These aspects are:

- ~ Imaging (H48—24)
- ~ Willed Attention (H12—6)
- ~ Consciousness (H24—12)

The triadic form is:



Imaging — H48–H24

The neurons of our brain create a basal state we refer to as “imaging.” By this we point to the plethora of overlapping electromagnetic fields (H24) produced by the various centers in the brain and to the interaction of these fields with the ionic wave nerve impulses (H48) which bring data to each of these centers—the end result being the images displayed on the screen of the respective fields. This is a bio-electrochemical process; one that occurs, variably, in *all* brained beings. We could say that it is a product of Darwinian evolution (or, as in the descending Ray of Creation, “involution”); a playing out of the mechanical laws that govern our level of the Megalocosmos. It is tightly integrated with simple and complex reflexes that produce a variety of protective and defensive movements that are seen most readily in one-brained creatures, but present in us as well.

Willed Attention — H12–H6

It is difficult, perhaps impossible, to refer to *willed* (directed) *attention* without including the thrust or energy of the *will*. We say this because all life (even one-celled bacteria) has a will-to-live, an organizing anentropic (against entropy or running down) thrust that clearly differentiates life from the inorganic world. However mechanical and constrained by law it appears to be (note the paradox in the expression ‘mechanical will’), it seems nonetheless necessary to speak of it this way. Gurdjieff set before us a similar paradox when he spoke of Tetartocosmos with “*independent automatic*

moving from one place to another on the surface of the given planets.”²⁷ We are saying then, that there is *will* within, energizing all attention, hence the fusion of H12 and H6, and that for our purposes here, they are not separated.

It is the willed (directed) attention that focuses, separates, and gives meaning to the vast arena of images created by the various brain centers. For example, as I write, my brain centers are constantly creating a multitude of different images from *all three* brains. There is, thus, a constant flowing collage of sounds, sights, smells, touches, tastes, feelings, inner sensations, words, brief thoughts—each of which is accessible and real—if I notice it by bringing my willed attention to it. In ordinary life we usually treat this collage as a feature that interferes with our concentration or that diverts our attention from what is important, but in Gurdjieff’s terms, they are part of the vast plenum of the Food of Impressions that our possibilities depend upon.

Associatively, what comes to mind is Gurdjieff’s habit of writing in very busy, noisy circumstances. He had the capacity to open to this plenum of impressions as an *energetic source*, one that *enhanced* his willed attention rather than diminished or fractured it (as is so often the case with us).

Complicating the issue of the willed (directed) attention are the ever present, and frequently conflicting, levels of *need* that are built into us by Nature. The fundamental physical needs to survive, to eat, to rest, etc., are often in conflict with the needs to belong, to be nurtured, to ‘be’ someone, and these in turn frequently come up against our need to explore, to understand, to become a unified whole. Each of these brained needs has the willed attention appropriate to it (and constrained by it). Sorting out the automatic from the truly intentional is one of the most challenging reconciliations facing us. The attainment of an *impartial*, willed attention (implying a seeing-through-the-laws) appears to be an absolute prerequisite for this reconciliation, for only then is the *will* freed of the constraints of World 48 (and even, at a later stage, of the constraints of World 24).

Being-Consciousness — H24–H12

Being-consciousness (H24–12) would imply, from this perspective, a full reconciliation of the imaging (H48–24) and the willed attention (H12–6), as illustrated in the triad on page 140.

From this perspective, consciousness is a three-become-one, a state of balanced fusion of what the planetary body (via Nature) can produce at its highest levels of function (the imaging) with the germinal gift-from-Above (the willed attention) that is the true harbinger of our *individuality*.

“ ... that the beings having this three-brained system can, by the conscious and intentional fulfilling of being Partkdolg-duty, utilize from this process of Djartklom in the Omnipresent-Okidanokh, its three holy forces for their own presences, and bring their presences to what is called the ‘Sekronoolanzaknian-state’; that is to say, they

27 Gurdjieff, *Beelzebub’s Tales*, the chapter “The Holy Planet ‘Purgatory,’” p 762. (author’s italics)

can become such individuals as have their own sacred law of Triamazikamno and thereby the possibility of consciously taking in and coating in their common presence all that 'Holy' which, incidentally, also aids the actualizing of the functioning in these cosmic units of Objective or Divine Reason.²⁸

The *imaging* (H48–24) is the highest product or creation-from-*below*. The willed attention (H12–6) is the highest force from *Above*. Being-consciousness (H24–12) then becomes, as the carrier of the Holy-Reconciling force, the *consciousness* that inhabits Gurdjieff's Kesdjan Body and Higher Being-body.

There is the implication, in referring to H24 as being specially related to Kesdjan Body and H12 to Higher Being-body, that there is an important difference between the 'consciousnesses' within these bodies. One way of seeing this is in terms of the degree of understanding of the cosmic laws. The consciousness possible for a Kesdjan Body is a consciousness of the images of law (where images are *embodiments* of the cosmic law—of Faith, Hope, Love and Conscience—in personages, symbols, icons, etc.). While each of these images contains great truth, they lack the ultimate universality and impartiality of the laws themselves. By implication then, it is standing-in-the-*presence* of the cosmic laws themselves that becomes possible for the consciousness of Higher Being-body. In this state there would be *degrees* of understanding (or Reason)—perhaps the Sacred Anklad, Podkoolad, Ternoonald and Degindad—depending on the individual results of the impartial application (the *doing* or actualizing) of the understanding of the cosmic laws.

DIGESTION IN THE HIGHER BODIES

Having considered one perspective on the higher 'hydrogens', it is necessary now to return to more specific considerations of digestion.

“... Inner growth, the growth of the inner bodies of man, the astral (Kesdjan), the mental (Higher Being-body) and so on, is a material process completely analogous to the growth of the physical body.²⁹

“The three-story factory represents the universe in miniature and is constructed according to the same laws and on the same plan as the whole universe.³⁰

“... because each three-brained being arisen on this planet of yours represents in himself also, in all respects, just as every three-brained being in all our Universe, an exact similarity of the whole Megalocosmos.³¹

28 Gurdjieff, *Beelzebub's Tales*, p 145.

29 Ouspensky, *In Search*, p 180.

30 *Ibid.* p 191.

31 Gurdjieff, *Beelzebub's Tales*, p 775.

The first three steps (DO-RE-MI) in the digestion of food have two characteristics which need, for our purposes, to be highlighted. First—the food we eat is taken apart in successive steps to its elementals: the simple sugars, fats and essential amino acids. Second—this process does not take place *within* the cellular matrix of the physical body, but in a tube that runs *through* the body. And third—only when the sugars, fats and amino acids cross the membrane in the gut and enter the blood stream and lymph channels can we say food has entered the body it is intended to sustain.³²

The term *digestion* (as Gurdjieff appears to use the term) incorporates three consecutive processes that are quite ‘opposite’. First there is a taking apart down to the elementals we noted. The second process is a building up, using the elementals to form new proteins, complex fats and carbohydrates that fit the needs of the cellular structures of the body. Third, a creative action takes place that goes far beyond the maintenance/repair functions of the physical body, namely, the *non-mass* based functions of the brain in which categories H 48-24-12-6 participate. The ionic wave forms, electromagnetic fields and resultant images are participants in the mechanical *re-creation* of our outer and inner worlds. The third (abstract) brain also has its mechanical re-creation functions but, in addition, has the potential to go far beyond re-creation, having the capacity (with the active participation of H12 and H6) to actualize wholly *new* creations—namely, the understanding of cosmic law and the application of that understanding to events that take place in the outer and inner worlds. But that is getting a bit ahead of our story. For now, it is enough to emphasize that brained activity takes place in a world that has no mass but does have energy and form. The laws governing events and processes will appear to be quite different here.

Although the DO-RE-MI of the Impressions Octave occurs at a much higher vibrational rate than the DO-RE-MI of physical food, the “complete analogy” mentioned by Gurdjieff still holds with respect to two of the three processes noted.

△ Just as the DO-RE-MI of physical food is a progressive taking apart of the macromolecules down to their elementals, the DO-RE-MI of Impressions and the DO-RE-MI of Air should represent a taking apart of Impressions and Air down to their elementals.

△ Just as with food, these steps take place *outside* the body that is to be served by it, so it is with Impressions and Air. What this implies is that the initial steps in the digestion of Impressions and Air take place outside the *body* they are intended to serve, namely the potential Higher Being-body and the potential Kesdjan Body.

32 There are perspectives that put the note MI₁₉₂ within the bloodstream and/or liver. We understand the note MI₁₉₂ to be primarily concerned with breaking the bonds between molecules down to the simplest components that are true food for the cellular body. This process takes place wholly within the gut. It is at the end of this process (the ‘inner octave’) between MI and FA, where we would place the absorption of the elementals into the bloodstream and lymphatic channels.

THE IMPORTANCE OF ELIMINATION

In the analog between the DO-RE-MI of the Food Octave and the DO-RE-MI of the Impressions and Air Octaves, the parallel processes of elimination must be emphasized. With respect to our food it is obvious that Nature has gone to great lengths to prevent substances foreign or injurious to the body from crossing the gut membrane and entering the bloodstream. Much energy is expended to identify, neutralize, or block a host of foreign proteins, poisons, bacteria, etc., from entering the inner world of the planetary body. It can be catastrophic for the whole being if such substances get loose in the watery interstices of our cells. It is similarly so with respect to the DO-RE-MI of the Impressions and Air Octaves.

Elimination is a very high priority function and essential to the growth, development and maintenance of the entire body. Our instinctive center invests a large amount of energy in protecting this interface with the outer world. It also acts to prevent the wasting of higher energies needed by the physical body. It does this by digesting the food in a most efficient manner; not allowing partially digested food to pass out of the gut. It also *reabsorbs* fluids, minerals and other molecules that have played earlier roles in the digestive process, so that they may be used again.

The parallel processes, with respect to the DO-RE-MI of Impressions and Air Octaves, concern:

△ the prevention of the wasting of higher energies needed for the coating of Kesdjan Body and Higher Being-body (which waste occurs with mechanical talking, frivolous flights of imagination, unnecessary muscle tensions, habits of posture and gesture and automatic expression of mechanical feeling) and,

△ eliminating the poisonous potential of negative emotions (including the dependant processes of negative thinking and negative motor manifestations). Allowing them to be incorporated into the nascent Kesdjan Body and Higher Being-body could be fatal to their harmonious development and maintenance.

What are these substances that can be catastrophic to the health of the Higher Being-bodies and that must be blocked, neutralized and/or eliminated *prior* to the passage from MI₁₂ to FA₆? The most important of these substances, as noted above, appears to be *negative emotions*. If allowed to enter into the early coalescence of either Higher Body, they could poison its interior and potentially bring about the death of the body itself. In many places Gurdjieff points out the importance of this effort against negativity—in both the outer world of manifestation and the inner world where the negative emotion itself takes form.³³ Also of paramount importance at this critical MI-FA interval is the blocking, neutralization or elimination of mechanical talking, of harmful and violent outside impressions, of false “I” (egoism in almost all of its many forms).

33 Gurdjieff, *Beelzebub's Tales*, P 144, “Always guard against such perceptions as may soil the purity of your brains.”

Suggestibility, with its resultant flights of unreal, subjective imagination and with openings to a host of physical, emotional and intellectual vulnerabilities, is confronted from the first strong sounding of DO₄₈, because, by seeing the images of all three brains for what they are and by allowing the nascent I to remain separated and free of entanglement with them, leads (in the passage from DO₄₈ to RE₂₄ to MI₁₂ of Impressions and MI₄₈ to FA₂₄ to SOL₁₂ of Air) to the strengthening of the nascent I and to an equivalent diminishment of our vulnerability to our greatest weakness.

Such is the power of the *willed attention!*

THE FIRST CONSCIOUS SHOCK

Before impressions can be taken apart, they must first be registered with clarity and impartiality (this would include impartiality with respect to outer, inner *and* abstract impressions). When Gurdjieff spoke about the need to bring H12 ‘up’ to the point of incoming impression he was emphasizing the importance of this initial step, which so fundamentally involves the effort to *direct* attention.

“Before talking to you about the manner in which the cosmic substances entering into beings as their first being-food are transformed in them for the purposes of the common-cosmic Trogoautoegocratic process, and which enter into three-brained beings—if they have a certain kind of attitude towards this process—also for the coating and the perfecting of their own higher parts, it is necessary for you to bear in mind, for a clear representation of these processes, that in our Megalocosmos—from results which have already flowed from every kind of Trogoautoegocratic process—there are many hundreds of independent ‘active elements’ with various specific subjective properties which take part in new formations.³⁴

“... not one of you has noticed that *you do not remember yourselves.*” (He gave particular emphasis to these words.) “You do not *feel yourselves*; you are not conscious of *yourselves*. With you, ‘it observes’ just as ‘it speaks,’ ‘it thinks,’ ‘it laughs.’ You do not feel: I observe, I notice, I see. Everything still ‘is noticed,’ ‘is seen’...

“In order really to observe oneself one must **first of all remember oneself.**” (He again emphasized these words.) “Try to *remember yourselves* when you observe yourselves and later on tell me the results.³⁵

“... in ordinary conditions of life we do not *remember ourselves*; we do not remember, that is, we do not feel ourselves, are not aware of ourselves at the moment of a perception, of an emotion, of a thought or of an action ... Moreover, it very often happens that the additional sensation connected with self-remembering brings with it an element

34 Gurdjieff, *Beelzebub's Tales*, p 784.

35 Ouspensky, *In Search*, pp 117-18.

of emotion, that is, the work of the machine attracts a certain amount of ‘carbon’ 12 to the place in question. Efforts to remember oneself, observation of oneself at the moment of receiving an impression, observation of one’s impressions at the moment of receiving them, registering, so to speak, the reception of impressions and the simultaneous defining of the impressions received, all this taken together doubles the intensity of the impressions and carries do 48 to re 24.³⁶

“The third state of consciousness is *self-remembering* or self-consciousness or consciousness of one’s *being*.”³⁷

The analogy between the digestion of food and the digestion of impressions and air highlights a number of issues. First, the DO–RE–MI of the Food Octave involves a progressive taking apart of the cellular/macromolecular constituents of a very large variety of (previously) living plants and animals. As mentioned before, these ‘foods for man’ are *wholes*; living forms that have grown from their germinal essence (or are the germ itself), either from the soil or as more independent beings (one- and two-brained). Each has a relatively unique lifeline of experiences and a cellular/macromolecular nature that is specific to their genus. This great variety of wholes must be taken apart or *internally separated* down to their elementals—the essential amino acids, simple sugars and fats. By analogy a similar process should take place with respect to the DO–RE–MI of Impressions and Air. Each impression of the outer world, or mechanical feeling and sensation of the inner world (the image) would thus be viewed as a ‘whole’ of some sort, with great variety and with a history specific to that genus. One interesting parallel would place the animal, vegetable and fruit of food as being analogous to the impressions associated with automatic physical, intellectual and emotional processes. The analogy would imply that each category, of abstract impressions, feelings and sensations, would be taken apart down to its *elementals*, the equivalent to amino acids, simple sugars and fats of food. Could these elementals be related to features of our individual essence?

Each of us sees or experiences three worlds (outer, inner, and abstract) through experiential filters that have our individual essence at their core (who we are before personality encrusts us). Perhaps the digestion of impressions and mechanical feelings involves the progressive taking apart or breaking of those linkages that ordinary life has forged and which produce that plethora of mechanical and Kundabuffer-derived features that we collectively call our personality. If it is like that, then the elementals of the Impressions and Air Octaves would concern those physical, emotional and intellectual features that lie at the core of our essential nature. No matter that these features become so encrusted by personality as to often seem their opposite in manifestation. The features, in their intrinsic ‘elementalness’, will be present.

³⁶ Ouspensky, *In Search*, p 188.

³⁷ *Ibid.*, p 141.

With respect to the Impressions and Air Octaves, the equivalent kinds of ‘digestive enzymes’ would be the wide array of tasks, struggles with mechanical manifestation, the introduction of friction, the experience of Remorse of Conscience, the interruption of manifestation by ‘stop’ exercises and many other work methods. All of these require *directed attention*, the creator and maintainer of the *environment* of all work.

A critical aspect of the note MI₁₂ is, as noted before, work on negative emotions. Gurdjieff identifies this as work which is *preparatory* for the second conscious shock. We separated work on negative emotions from the other types of effort noted above because it is, in part, analogous to the process of elimination in the digestion of food. In the intestinal tract there are a host of actions that neutralize, block and/or eliminate substances that would be injurious to the physical body if they were allowed into the blood and cellular matrix. There are substances that are simply indigestible (like the lignin and cellulose of plants and trees) as well as proteins, chemicals and bacteria that could disrupt vital functions. These *must* be identified and *acted* upon by the lining membrane of the intestine.

IN SUM

For the process of the digestion of impressions and air to proceed, the images produced by each of our brains must be separated from and seen into from a number of perspectives. This action or effort is closely bound up with the first conscious shock.

Parallel to the digestion of food, the digestion of impressions and air would require:

- ~ inner separation *from* the images (we are *not* the carrots, potatoes and meat that we swallow),
- ~ identification of the images with respect to the world they come from (outer, inner, abstract),
- ~ introduction of psychic/spiritual enzymes that can take apart these images.

“In order really to observe oneself one must *first of all remember oneself*.³⁸

SELF-REMEMBERING AND THE ‘HYDROGENS’

Gurdjieff places efforts to remember oneself at the leading edge of what he calls the “first conscious shock.” His explanations of this effort (see quotes two pages earlier) cannot beneficially be added to here, as that would be presumptuous in the extreme. What we would like to offer is a way of looking at the ‘hydrogen’ categories that appear to be fundamentally involved in this effort. Pre-eminently, the *attention* (initially SI₁₂; later SOL₁₂ and MI₁₂) must

38 Ouspensky, *In Search*, pp 117-18, author’s italics, “first of all.”

be brought to that place in us where external impressions and mechanical feelings and sensations are first registered. This must involve more than the automatic attention discussed earlier, simply because the automatic does not, of itself, come to the point of incoming impressions. (Recall that in the analogy of the three-storied factory the H12 category is produced in the lower story S112.) Only an act of the *will* (H6) (however reduced in potency, partitioned and dismembered it may be) can have power over an energy of the level of H12 (the photon) and *direct* it to the appropriate place. Since we have posited the photon (the *carrier* of the electromagnetic force) as the material/vibration of category H12, the next higher category having the requisite potency would be the electromagnetic force itself.

Gurdjieff told the members of the early group, of which Ouspensky was a member, “you do not remember yourselves,” and we all recognize the truth of that statement. Our early efforts demonstrate how difficult it is to sustain this state (at whatever level of self-remembering is possible for us at such an early stage). The moments, if they come at all, are so brief and rare that afterwards, in our usual state of half-sleep, we often doubt if they happened at all.

These experiences have all the marks of a *will* that is dismembered, weakened and dis-united to such a degree that it can only be sustained for extremely brief intervals and, in addition, has a very small arena in which it is potent enough to operate. Part of this state of affairs is due to the fact that our much diminished and fractured will must not only *direct the attention* (to ‘illuminate’ the images which comprise the impression), but must also *divide that attention* and direct a portion of it back toward the *will* itself. The Will, or *singular presence* (or nascent I), is paradoxically illuminated by one of its own powers. This would represent the fleeting but real germination of the process/state of self-remembering.

This process of illumination (or self-energizing) continues throughout the first three steps (DO₄₈–RE₂₄–MI₁₂) of the digestion of Impressions and throughout the MI₄₈–FA₂₄–SOL₁₂ of Air. At the passage from MI₁₂ to FA₆, where the second conscious shock enters, there is the implication that the Will (as real I) begins to actualize its independent *presence*. Discussion of these possibilities lies beyond the scope of this chapter.



SUMMARY

In our exploration of the possible nature of the ‘hydrogens’ we have moved progressively within, starting with the molecular forces that bind metals and rocks, moving then to the inter-atomic, atomic and ionic expressions of the ubiquitous electromagnetic force. At that point we left the world of matter and moved farther into the more subtle regions governed by laws that concern ionic wave forms, electromagnetic fields and finally the carrier of the electromagnetic force itself—the photon. At each level, an increasingly large category of material/vibrations emerges until, with the massless world, each category becomes a true infinity of possibilities. With each of the massless categories (H48–24–12–6), we have offered a consistent *extension* of the principles that appear to underpin the physical nature of our body and of the mass-based aspects of our cosmos. The result is the conclusion that we are, potentially, a microcosmic *image* of the *macrocosmic reality*:

“As above, so below.”³⁹

“And so, the three-brained beings of the planet Earth are not only, as we also are, apparatuses for the transformation of the cosmic substances required for the Most Great Trogoautoegocrat with the qualities of all the three forces of the fundamental common-cosmic Triamazikamno, but also, themselves absorbing these substances for transformation from three different sources of independent arisings, have all the possibilities of assimilating, besides the substances necessary for the maintenance of their own existence, also those substances which go for the coating and perfecting of their own higher-being-bodies.”⁴⁰

POSTSCRIPT

A number of impressions and possibilities concerning other work ideas follow harmonically from the perspective put forward here. Among these ideas are: the nature of the Sacred Impulses, the nature of the second conscious shock, and the continuance of the Octaves of the digestion of Impressions and Air. Closely associated are inferences as to the emergence of Real I and the meaning of the degrees of Objective Reason.

Each of the above will be an interesting and perhaps useful exploration, for the future.

³⁹ *The Emerald Tablets of Hermes Trismegistus.*

⁴⁰ Gurdjieff, *Beelzebub's Tales*, p 780.

I Gurdjieff, *Beelzebub's Tales*, p 752.

II Ibid., p 139.

III Ibid., p 759.