

NATURAL ORDER - UNIVERSAL RELATIVITY

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The foundation of the Theory of Rational Evolution of the Universe and of the Terrestrial Species is composed of the Theory of the Unity of a Logical Universe, the Holon-Pholon Concept, the Psycho-Physical Reality, the Integrarchic System Theory, the Theory of the Self-configuring Open Natural Order, and the Theory of Universal Relativity.

My thesis presents the Universe and universal creation as the continuous outcome of a never resting Mind of infinite Consciousness, through Its differentiated fractions of inherent and transcending Ordering Principles – individuated Selves – of each and all material manifestation, where, while the material manifestations are finite, the underlying individuated Selves are eternal and infinite. I reject the idea of an acausal, explosive, cataclysmic beginning, and an implosive, cataclysmic end of the Whole, that is ruled in-between-time by blind chance and probabilistic equations.

I see the Universe as One Living and Conscious Unity of Timeless Being, differentiating into delegated Selves, fractions of I, individuated minds, underlying the Spatial and Temporal Becoming and Manifestation, characterized by change. The individuated Self underlying the Becoming and Manifesting aspect of the Infinite I on all levels of existence is called the Psyche. Being the Underlying Principle, essence and cause, and thus the sine qua non of all material existence, the Psyche is an objective Reality.

According to this 'holopanentheistic' cosmivision, "Being" is the absolute, inherent and transcendent Life-Ground, Underlying Principle, of Summa Existence. Nothing can precede it, because "Non-being", the absence of "Being", is a contradiction in terms: a concept demanding a subject, the subject the concept is referring to is a "Being" by conceptualisation. As neither Space nor Time can exist by itself, without a content, and position and precedence referring to spatial and chronological order, they could not have preceded "Being", nor could "Being" be contained in, or be a function of Space and Time. Thus "Being" exists as an atemporal present, without beginning and end, without it ever having to have been created or appeared out of "Non-Being". As Being is the fount of all Becoming, it is a *causa sui*.

Being represents Life and Consciousness. Without life and consciousness there is neither being nor becoming. Knowing Itself as Being, and knowing Itself as the *creator* and the *created*, It is the *source* of all life, consciousness, harmony, wisdom and power. It is the oneness, universality, timelessness, changelessness, formlessness, boundlessness, within and out of which space-time, form, individuality, diversity, temporality and transformation – becoming – transpire; where the infinite expresses itself through the finite. It is here where creating, being created and the created – the Creator (*Natura naturans*) and Creation (*Natura naturata*) – are one.

Pure Being is pastless and futureless: It simply IS. Being is static and contains – and thus transcends – all Becoming represented by substance, accident and mode – structure, event and process. Becoming is dynamic, manifested in the movement, change, and the spatial, chronological and causal order of energy and matter, while matter itself is not a conglomeration of "things" but consists of by its Underlying Principle ordered "processes" in interwoven and interdependent system-relationships of energy-quantums.

Space and time are contained by "Being" as conditions and dimensional constituting elements of Becoming. Only through the existence of the dimensions of Time and Space – representing an inseparable, four-dimensional space-time continuum – may exist movement, change, and spatial, chronological and causal order. Thus all Becoming is time- and space-dependent. Inversely, without movement and change there exists only a static state without content, devoid of space, time, matter, and energy, which are thus co-emergent, co-existent, interdependent, interacting and co-evolving constituents of a dynamic universal process.

Creation, movement, change, causality, physical, chemical and biological processes are dynamic phenomena, constituent elements of Becoming. Their dynamic systems and dynamic rules are not rigid predetermined, pre-existing delineations, according to which the created and evolving content of the Universe must work, but also co-emergent, co-existent and co-evolving integral constituents of it. Neither time nor space "flows" or "moves": matter and its movements are interacting with space-time according to their constitution, dynamically readjusting each other's geometries and qualities.

The Summa Universe, being the intrinsic Self of each and all It contains, is self-configuring structure, substance and event in a constant dynamic process, being thus the subject, instrument and originator of Its own creation through all Its individuated selves, each of which becomes thus also the subject, instrument and originator of its own, particular creation. "Self-configuring" implies thought out, intelligent process, the Intelligent Self-Creation of an evolving Universe in dynamic equilibrium.

Each physical entity itself, together with its actions, is the manifestation and expression of the Psyche, its particular "Ordering Principle" on the physical plane, which is the platform of Its change, development and becoming. By the very principle they incarnate, and for the very reason that they are brought into existence, all physical manifestations are time-dependent and finite. The world of the Spirit and the world of the physical manifestations are not polar opposites, but two aspects of the same unity. They form the Psycho-Physical Reality.

I further submit that the Universe is logical, and contains nothing self-contradictory; that it is a living organism, the heterogeneous manifestation of one unity; that Life is only one, and it is the Life of the Universe; that earthly man is an integral part of that Universal Life, like everything else that exists, none making sense within itself, none analysable without the whole; and that any natural law that applies to the whole, applies also to each and every of its fractions, or inversely: no laws, canons, dogmas or beliefs can be applied to any fraction – and to man in particular – if they cannot be applied to any other, or to the whole. To spell it out: if man "has" a Spirit, consciousness, intellect, faculties for rational thinking, creativity and volition, so have all the other minute particles of the Cosmos, each according to its own level of existence. The universe is not mechanical; neither is it there to serve as a backdrop for the antics of the naked ape, which stays mud-bound incarnation after incarnation, for all it can see in this magnificent expression of being is its own miserable, little carnal existence. No doubt, there are – according to our actual and infra-planetary knowledge of life – striking differences between the levels and expansion of consciousness, intellect and faculties of rational thinking and power of will of Homo sapiens and any other species on this planet, just as there are striking differences – relating to the same spiritual and mental faculties – within the individual members of the human species.

In this Natural System, each and every integral, healthy fraction of the universe forms in itself a unity with its own intrinsic stability and characteristic qualities, is constituted of unities of lower orders, and satisfies the conditions of being an essential constituent of another unity of a higher order, each and all with its own intrinsic stability and characteristic qualities. Integral means – in this context – of and essential to a whole, beyond meaningful separation; and healthy refers to a condition in which physical and psychical functions are soundly and harmoniously discharged. Sound means free from disease, of defect, of blemishes, of corruption, and harmonious is that which is forming a consistent, agreeable whole, in concord, free from dissent.

There are two, due to our deficient vocabulary misleading concepts in the above sentence: the words *fraction* and *part* refer, in our conception, to things which have no meaning within themselves, but only as constituents of a *whole*, which word, on the other hand, refers to something complete within itself as a closed and perfect system. In this context neither meaning is correct, because neither parts nor wholes exist in an absolute sense. Therefore I shall adopt the term **holon**, coined and formulated into a concept by Arthur Koestler, who called the thus constructed system the Self-regulating Open Hierarchic Order, or short SOHO. This name, however, contains once more a misleading word Koestler himself complained about: the word is *hierarchic*, which conveys continuous super-ordinated and sub-ordinated relationships right along the scale of the ladder, with a strong stench of human domineering and servility in it. The universal system has neither.

My concept of the holon incorporates the process of being *constituted* by holons of a lower order, being an *individual* element in its own right, and being a *constituent* of a holon of a higher order. The self-organizing part of this trinity is the *individual* element, that forms out of its constituting elements of a lower order "more than their sums", and that expresses – transcends – itself by being a harmonious constituting element of a holon of a higher order.

The self-organizing part of the individual element processes its constituting elements – holons of a lower order – into a structure, with their particular functions orchestrated into an integrated one; and its self-transcending part enters this structure as a constituting element into the process of the self-

organisation of the higher element – holon of a higher order –, completing with it its function in the process-structure-process flux of the multidimensional chain of the Natural System. It must be stressed that the holon is a process in its own right and not a static structure as a part of hierarchically superimposed static elements; it is a dynamic element within the fluid interconnections, interdependences and interactions of dynamic elements of spatially descending and ascending orders, where each element is an individual, an acting agent in its own right and responsibility, and at the same time an integral constituent of and essential to the whole.

Hence I call it an **Integrarchic System** – *integrity within integrality* – of the **Self-configuring Open Natural Order**, or short SONO. Any other logic leads to dualism.

Its model I imagine as a space-time concept: space represented by a sphere, time by its dynamic rhythm, change, becoming and transcendence; evolution. As the entity becomes more complex, it differentiates into two or more specialized entities, which either stay together as chemical or organismic entities constituting the original 'organisation' of a more complex sphere, or separate, establish new centres of new connections, and regroup themselves, forming new, diverse organisations. Thus the original sphere becomes more and more complex, being constituted by progressively differentiating spheres of various order, each entity harmoniously interacting within its own sphere to form quasi-self-contained open systems – holons – on each order of differentiation. With each fractional evolution the original and all intermediate fractions evolve also in harmony, each according to its own 'being', each maintaining its identity and consciousness that expands with the complexity of the holon, forming the one original life. The model, while exhibiting order, does not exhibit hierarchy; allowing for infinite expansion and unrestricted variation, it has neither frame-work nor centre, neither super- nor sub-ordination, only unlimited spheres of interaction. Neither the pyramid, where each block is superposed on some others, and is supported but not constituted by them, nor the tree with interwoven and outspreading branches, each growing out of and being supported by, but not forming the one below, both representing rigid, spatial frame-works, where only the structure may grow with time but never the diversity, would serve as suitable conceptual representations for the Integrarchic System.

Thus – in this context – a *holon* shall be defined as a concrete, individuated differential expression of the Universe. The order of its differentiation is $\omega - n$, where ω represents the order of the Universe in its entirety, and n the order of that holon on the integrarchic scale. Concurrent with the fundamental truth that the whole is more than the sum of its parts – where 'more' always refers to quality and not to quantity –, a holon of the n -th order is more than the sum of its constituting holons of the $n-1$ -st order by its ordering principle, which is not of material existence and is manifested on the material plane only by its effects. Conversely, only that entity is a holon, that is, by its ordering principle, qualitatively more than the sum of its constituting holons, which themselves are subject to the same criterion.

Accordingly, a holon of the n -th order (H_n) is expressed as:

$$H_n = \sum H_{n-1} + I_n \quad (1)$$

I_n representing the essence, the principle – Self, Spirit, consciousness, mind and will – that orders the parts, animates, characterizes and defines that holon at level n , which is the level of its being and manifestation. Correspondingly, the next level will contain units expressed as:

$$H_{n+1} = \sum H_n + I_{n+1}, \text{ and the previous one: } H_{n-1} = \sum H_{n-2} + I_{n-1} .$$

Considering further that matter is by a thought-form defined, and by a will catalysed and sustained energy-field – energy in ordered action – where the reciprocal conversion of energy and matter are expressed by the Einsteinian formula of $E = m.c^2$ –, the minutest particle of ordered energy, physical manifestation of a thought-form, the holon of the first stratum of the Natural Order is expressed as:

$$H_1 = E + I_1 \quad (2)$$

where E represents fluid free energy, and I_1 (substituting the 'virtual particle' of nuclear physics) the ordering principle acting on that energy – or, to be more correct, on a particular energy quantum – turning it into a structure – or, to be more correct again, into a structured process. On this first stratum of the Natural Order is where materialisation happens, where each particular matter, space and time co-emerge.

The complete mathematical model of a holon of the n -th order is:

$$H_n = E + \Sigma I_1 + \Sigma I_2 + \dots + \Sigma I_{n-2} + \Sigma I_{n-1} + I_n \quad (3)$$

or

$$H_n = E + \Sigma_1^n I_x \quad (4)$$

which expresses that *matter is a complex of by the mind ordered energy-fields at all levels of its manifestation*, and that the Universe – as any part of it – is formed by order imposed over the primordial Chaos by the Ordering Principle which pervades it. It also implies that action is by the mind directed energy exerted towards an accomplishment.

The model further expresses that free energy and differentiated Universal Mind are the two common denominators of everything in the Universe. Mind produces abstract thought, energizes it through the will into thought-form, which is the psychical manifestation of the mind, and then into physical expression – form or action. Both thought-form and physical expression are concrete: both have objective reality. Both psychic and physical energy are of the same origin. Will, thought-form and physical manifestation consist of energies of various frequencies and intensities defined by the mind, and in constant action maintain and recreate the Universe. This is a Basic Principle of the Psycho-physical Reality.

Contemplating the model it becomes clear that the only constant in its quality is the free energy (E), all the others are ordering principles of ascending levels of consciousness and intelligence. The higher the order, the higher is the number of the groups of the variable components, and the greater is the complexity, stability and also the freedom and diversity of the holon. The system applies to all possible manifestations, processes, systems, organizations, behaviour patterns etc.

Every element of every component, being variable, is an infinite and open function of the distinctive individual character – personality –, which includes psycho-physical constitution and potentials of its constituents, of itself, and of that which it composes. Each and every element is dependent for its being and functioning not only on the one which it constitutes, but also on each and every of those, which constitute it. There is a complete interdependence and interplay – feed-back and feed-forward – between all strata, each being the function of the whole: any inadequacy reflects, has repercussions, on the sum total.

This is the theory of mutual interdependence – Universal Relativity: the essential correlation and affinity of all existence; the Pythagorean "Harmony of the Spheres", the Hippocratics' "Sympathy of all Things", the old Chinese's "Break a blade of grass and you shake the Universe", and the physicists' each entity and unity seen as part of the total, beyond meaningful separation.

The mathematical model and the above statements express that evolution, growing – creation – is an open system, and happens on every level of the Natural Order, where *all are the subjects, the instruments and the originators of Creation*, each continuously remaking itself in the image of its own values, which come out of its own perception of its part of Reality as an individual and as a constituent – through successively higher orders – of the whole. In natural growth it is in harmony with the rest, and keeps its measure with it. In harmony it is tuned to the Supreme Ordering Principle, the Universal Mind, and its own values become universal: the fraction expresses the Universe.

The graphical representation of the Natural Order is a section of an organo-geometric form, where the holon of the n-th order is represented by a conical cylinder, symbolizing a wave, formed by smaller conical cylinders of the same proportion (n-1-st order), and so further ad infinitum. The outside circle and the inside circle are proportionally identical, thus representing the infinite extensions in both directions (fig. 2 - 1).

Above, how high, progressive life may go!
 Around, how wide! How deep extend below!
 Vast chain of Being! Which from God began,
 Natures ethereal, human, angel, man,
 Beast, bird, fish, insect, what no eye can see,
 No glass can reach; from Infinite to thee,
 From thee to Nothing. --

from Alexander Pope's An Essay on Man

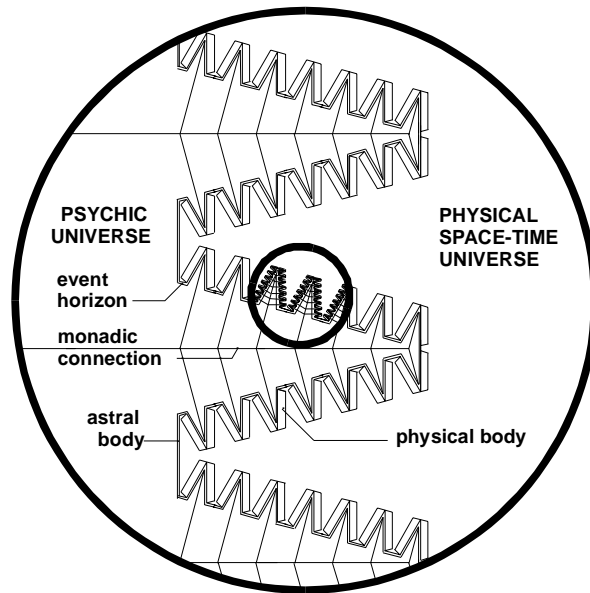


FIGURE 2 - 1 NATURAL ORDER (graphical representation)

Every holon is shown to have an inside core, an intermediate layer, and an outside skin, representing respectively: Being, Mind and Manifestation. Being contains identity and its consciousness – represented by a line branching out from the nucleus, and penetrates mind and body – thought and action –, as mind penetrates body. The physical world is the expression on the outermost shell of a supreme Ordering Principle. Mind creates the material body to express Becoming on the physical plane. Such is the psycho-physical constitution of the Sum of Being; the Atman, the immanent eternal Self is one with Brahman, the Absolute Principle of all existence, and *tat twam asi -- that art thou*. In that which is the subtle essence, all that exists has its Self. Thus is expressed the unity of all Being.

The model also expresses that all fractions of the Universe are linked together – in a spacio-temporal immediacy – on the psychic plane. The separation of a physical manifestation from its essence means also its disintegration on that plane.

A holon thus consists of and constitutes holons; the lowest elements are the elementary particles that derive from and dissolve into energy (see eq. 2); the highest is the Universe. Each is a concrement – has objective reality – with its own mind, consciousness, volition, character, relative stability, limitations and freedoms, corresponding to its own level and kind. While the heterogeneity in their manifestation is infinite, the Principle is one, which is expressed in its mathematical model by the fact that the variables are the Principle's (I) own harmonic progressions, represented by the growing order of its indexes (see eq. 3), and that the symbol of the sum total of the variables is the sum of the variable orders of this one Principle (see eq. 4). The symbol of the Universe is accordingly:

$$H_{\omega} = E + \sum_{\alpha} \omega I_x \quad (5)$$

The model also implies that any I_x is an integral part of the H_{ω} , ergo no x can ever close a system within the Natural Order, except as ω , which is the symbol of the universal infinity. ("I am the alpha and the omega")

Consciousness, mind, volition and character (nature, qualities) form the essence of a holon. No manifestation exists without mind, consciousness and will on the level of that manifestation. Character defines the motive, mind the plan, and will the triggering energy.

The relative stability of a holon is a function of the relative stability of the whole integrarchic system; its potentialities of evolution are the functions of the freedom of its own mind. The established characters represent the dynamic rules (not static, fixed, invariant codes!), the freedom the flexible strategies within these rules, which possibilitate the evolutionary change in the integral character of the holon. The rules of various levels can be – and are – different, but never contradictory. Evidently, this character change alters the dynamic rules of its constituents, and of the one it constitutes, and challenges them all to establish a new relative stability and new harmony, and produce their own

evolutionary change within their new possibilities. The cause-effect chain of interaction is multidimensional and continuous, notwithstanding the fundamental truth that every individual holon is the unique agent for its own reactions and consequently change.

Due to the fact that all dynamic rules imposed on one level are flexible strategies on one or another of the lower levels of the Natural Order, there exists, within the integrality of the holon, an absolute freedom, which is at the disposal of an integrated mind – integrating all the levels composing that particular holon –, guided only by the fundamental Principle of all existence.

It has to be pointed out and emphasized that while a will can be weak or strong, the "free will" that every holon – and so man – possesses, represents a free autonomous mind. It is the mind which measures up each situation, reacts on it, and is responsible for that entity in every sense of the word; the mind that defines its own flexible strategies as functions of its intellect, imagination, creativity and will, which are inherent on all levels of the Natural Order, and which mark the evolutionary trend and pattern of each individual holon, which expresses its being accordingly, with a multi-dimensional effect.

Under natural and healthy conditions – to which all the above statements and mathematical models refer –, there is an absolute unity in the holon's expression of its being as a collective formed of the by itself co-ordinated elements of a lower order, as a unique individual, and as a constituent of an entity of a higher order. There can be – under the foregoing conditions – no meaningful separation of this trinity, for it represents the very being, the life-assertion, the universality of the holon. Neither can there be, within this trinity, any relationship of possessing, belonging or surrendering identity, sacrifice, subordination, domination or submission to demands, for these anthropomorphic concepts are incompatible with the concept of universal unity.

The principle of the free mind in action, and the bearing of the consequences, are dominant characteristics of every manifestation on every stratum of the Natural Order. It removes the *element of chance*, rendering all manifestations to be the compound results of premeditated and willed actions.

Not the dynamic rules represent the real restrictions for an entity, but its own lack of intellect, imagination, creativity and power of will: its own ignorance and impotence. The ignorant has no flexible strategies – freedom –, because it is unable to formulate them in its own mind; the impotent cannot use its freedom, for it lacks the energy and the capacity for action.

An ignorant and impotent element degenerates psychically, and fails to maintain the rational, dynamic and coherent process within the trinity, consequently segregates and turns its orientation completely towards the structural, static self, degrading all its motivations into that part, and becomes an atrophied, disintegrated personality, that will negate any natural unity. This element fails as a part of integral life, ceases to be a constituent of a next complex in the Natural Order, and attempts to express and assert its inadequate personality on its degraded plane only: *ergo it ceases to be a holon*. Because this type always, in every manifestation, maintains its *appearances* towards its environment, I have named it a phoney-holon, a pseudo-holon, a **pholon**. Its mathematical model is:

$$pH_n = \sum H_{n-1} + [pI_n] \quad (6)$$

expressing that it is not more than the sum of its parts but with a pseudo, a phoney identity only, which can never constitute a real identity: it is regressive, for it closes the system below its own level. It also can be defined as entropic.

A pholon is characterized by the lack of individualizing progressive and integrative faculties, and by being degraded through its actions, emotions, opinions, tastes and intentions – expressions of character –, by all being submitted to be programmed and conditioned – with no place for variation – by a mind not its own, rendering it to be one of a mass – as against an organism –, the model of which:

$$mass_n = \sum H_{n-1} + \sum [pI_n] \quad (7)$$

expresses that it is not more than the agglomeration of its parts, that is, it has no substantial being at the level of its appearances, and that – regardless of its volume or numbers – it is of a lower order in the evolutionary scale, than one singular, healthy, autonomous individual holon, the appearance of which – but not characters – its parts superficially possess. The mass functions and behaves as a conglomeration of its elementary parts: it is the mass-expression of elementary units of behaviour, where the *mass-mind* equals the towards *mass-behaviour* conditioned reflexes of its elements, and does not function on any intellectual level. The egoism of a

conglomeration is the direct expression of the egoism of its constituents, which feeds on the altruism or well-intentioned, unsuspecting honesty of any natural system.

In an intermediate, comparative résumé: every holon on every level is a universal, natural free and alive, unique being; an individual and integral part of the Universe, the self-expression and integrality of which are indivisible, and are functions of the faculties of its own mind. It identifies itself with a higher order. It is being *constituted* by holons of a lower order, it is an *individual* element in its own right, and is a *constituent* of a holon of a higher order. Its particular identity makes it more than the sum of its constituents, through none of which can it be derived at. – The pholon is a dichotomous, unnatural, obsequious and undead non-entity; a potentially pathogenic agent, which is *in* and not *of* the Universe, but an anonymous, dependent part of a substanceless conglomeration of its own kind, the degradation of which is a function of its own ignorance and impotence. It identifies itself with that conglomeration. It is not more than the sum of its parts but with a pseudo, a phoney identity only, which can never constitute a real identity: it closes the system below its own level. – Both can refer to all possible manifestations, processes, organizations, behaviour-patterns etc. on any evolutionary stratum, the one representing life confirmation, the other negation; one syntropy, the other entropy. The holon is self-constructive, the pholon is self-destructive.

I must note here, that juxtaposed, non-interacting elements – identical or not – forming but a heap, a mass, do play no role in the Natural Order, because they are not interacting as such – neither constructively nor destructively – in its flux.

The recognition of the existence of the pholon as a concretum which closes the system at its own level – thus removing it from the Natural Order –, and of the fact that its aggregation forms only a *mass*, which has no substantial being, has far-reaching consequences in the studies of biology, medicine, psychiatry and social sciences.

The foregoing defines also the criteria of being part of the evolving universal life, or rather: what is alive from a universal point of view. However, to be more explicit in the discussions that will follow, I shall examine the criteria of what is called organic life, more specifically. Once more, the definition will apply to all fractions of the sum total, including inorganic life, as there exists no real division between what is called animate and inanimate, only the same qualitative difference that exists on the whole evolutionary spectrum.

An entity is *alive* – *a the level of its own being* – if it has the potentiality to *metabolize, grow, evolve, reproduce, sense, respond rationally* to any physical and psychical *stimulus*, and to *generate its own energy* to do so; if it manifests the *will to live*, that is, to bring these potentialities into expression; and if it *forms integral part* of a living entity of a higher order, to the evolution of which it contributes, that is, its existence enhances the *universal life value* of that entity. These conditions make it a holon, and imply that it exists with dignity within the Natural Order. Expressed with other words: *from a universal point of view, an entity is alive if it partakes – at the level of its own being – as a subject, instrument and originator in Creation.*

von Bertalanffy's and Woltereck's *anamorphosis, i.e., tendency to create new forms of life*; Schrödinger's *feeding on negative entropy*; Herrick's *spontaneously developing states of greater heterogeneity and complexity*; and Szent-Györgyi's *syntropy, that is, innate drive in living matter to perfect itself*, are clear manifestations of the *will to live* and the *will to evolve*. My studies and long years of cohabitation with animals and nature had wholly convinced me that variations tend not only towards survival, but even more so towards progress, where progress means greater fullness and freedom of life marked by increased differentiation and integration, and with an associated emancipation of the mental aspect; with expressed tendency towards ethical ideals, in pursuit of the true, beautiful and good.

The most fundamental qualifying factor for a life is the *“level of its own being”*, which defines the exigencies for its physical and psychical manifestations within its dignity. Level, in this context, refers to both Natural Order and evolutionary scale. Its decisiveness in the Natural Order refers to the fact that, while an organism might not exhibit any life on its own, organismic level, all its organs could function in a biological sense, maintained artificially, *in vitro* so to say. Although all its parts exhibit life, the whole – as an organism – is dead:

$$X_n = \sum H_{n-1} + 0 \quad (8)$$

which means that it does not exist any more on that level. It also implies that not everything is alive that sends the EKG or EEG ticking. Life criterion on the evolutionary stratum refers to the physical and psychical development a species has attained, which potential is a sort of

noblesse oblige, the relinquishing of which removes the entity from the order of its species. Becoming unworthy, corrupted, it also fails as an element of integral life, and becomes a pholon (see eq. 6).

While a pholon is definitely antagonistic towards the Natural Order, holon and pholon are not polarities, if this word is used in the sense that physics and metaphysics use it. In *complementary polarities* the two poles complete – and not oppose! – each other within the Natural Order. They create a field and a flux around themselves, that do not exist when one of the poles is isolated. Complementary polarities are fundamental elements in the evolutionary process – one could even say evolutionary technology –; they are vital to the Natural Order. This is the sense in which the concept will be used, also in analogies.

It is a basic fallacy to confound the above concept with that of *antagonistic opposites*. To put some light on this subject of fundamental importance, I will examine the statement that I have often heard and read, proposing that the world is kept in equilibrium by antagonistic tendencies, opposing forces, like: creation and destruction, evolution and involution, progress and regress, yes and no, good and evil, integration and self-assertion, altruism and egoism, co-operation and competition, collectivity and individuality, Eros and Thanatos (libido and death-wish). The statements propose – I suppose on the ground of false analogy to complementary polarities –, that creation, evolution, progress are putting the world off balance, this being saved only by destruction, involution and regress from being turned over unto its improper end.

I suppose, these propositions came to existence more as an excuse, as did the one suggesting evil to be a fundamental condition for goodness to exist. Nor can any of these opposites brought into analogy with active and passive or centrifugal and centripetal, as will be understood in the subsequent chapter on physics. It will be also seen in this and other connections that there is in every manifestation one impelling primary force, one primary tendency that is active, that exists in its own right, and energizes the manifestation; one original cause, the only one that has an active quality in the process. All the others are reactions, restrictions, resistances to change: consequences and functions of the primary force, possessing only secondary, tertiary etc. properties. While the reactions are unavoidable consequences of the actions, there exists no parallel between them and natural polarities; nor can either of them be used as an analogy for natural versus unnatural processes.

Creation, evolution, progress, construction are positive life-tendencies, primary forces in their own right. They are generated into manifestations by the essence of all existence, inherent in every natural being: the holon.

Destruction, involution, regress are negative life-tendencies, expressions of that unnatural non-entity: the pholon. They are emphatically neither reactions nor resistances to change, and have neither concrete properties nor substance, but are the aberrations from the natural.

Logically, only that can be destroyed which has been created, ergo creation is a precondition for destruction: destruction *feeds on* and exists to the detriment of creation. Just as logically, this statement is irreversible: it would be absurd to state that only that can be created which has been destroyed. Neither is creation antagonistic towards destruction, for opposition is not the quality of primary forces. Nor does destruction counterbalance creation in order to keep the universe in equilibrium, or does sickness exist to equilibrate health for the same purpose. Evidently, this applies also to order and disorder, good and evil, and all the antagonistic opposites presented above.

According to a convention in physics, the electric charge of an electron is labelled *negative*, and that of the positron *positive*. The two charges complement each other: they are true polarities. A rule in mathematics states that the negative of a negative number is positive ($- [-x] = +x$). Double negation as a confirmation (not bad = good) is used in many languages. They *work* and are correct *in their own places*.

When, however, these conventions are used as analogies to pseudo-polarities, violent paralogisms appear: the absence of war becomes peace; the lack of hatred, love; who is not evil, is good; an inhibited regression becomes a progress; and a frustrated destruction turns into creation; the last two fallacies playing very much part in Freud's theories, enter alia on Eros and Thanatos, and the working of creative genius. The reason for the paralogism lies in the regarding both holon and pholon, creation and destruction, confirmation and negation, as manifestations and expressions of the same Principle, and of equal order and value.

While inherent potentiality in all concrete existence, the resistance to change is not a force acting in a predetermined direction; thus it is erroneous and misleading to define it as a force or a tendency in reciprocal interaction with another force or tendency, and define the two as polarities: even if active

and passive appear superficially as opposing characters, they are not of the same order, their relation being of the cause-effect, action-reaction kind, the second depending on the first for its existence. The resistance to change is, in fact, *inertia*.

In the Psycho-Physical Reality inertia is the passive resistance to change manifested by a holon as function of its own state of physical and/or mental energy and stimulus-response time. It is intrinsic in the holon as it is in the universe on all space-time-bound planes. By itself it is neither cause nor action, but, as the universe is in constant movement and change, inertia is in constant manifestation, accounting for the dynamic equilibrium of each fraction as of the whole. Change can arrive from any of the three levels: 1. evolution, degeneration or alteration of any of the constituents; 2. the holon's own motive force or evolutionary tendencies; 3. environmental influence, i.e., an alteration in the state of the constituted system; the chain being open in all directions. Adaptive response – based on individual reaction – on every level, establishes a new, momentary equilibrium, which represents the new – momentary – inertial state of the universe.

The principle that the universe is logical removes acausality. The postulate that everything that is and is happening, is and is happening primarily in the psychic sphere, and the fact that most human consciousness scans only – although not limited to – a by the brain preconditioned physically perceptible "physical survival" material, explain why many causal connections are not recognized as such. Due to a further human quality, not to acknowledge the existence of anything except through personal physical contact, preference goes to inventions of obscure, illogical theories in favour of acausality, in place of the recognition of the existence of a causal connection, but admitting the ignorance of its origin. Thus *Deus ex machina*, *hidden affinities* and *coincidence* are preferred to the exploration of a psycho-physical unity, which might eventually demolish the well-cherished dichotomy.

Thought, logic and creativity are as intrinsic in the microcosmic existence as in the macrocosmic one. Microcosmic logic and creativity produced and is constantly juggling and reshuffling all the fundamental and ephemeral subatomic particles, without ever leaving any of it to *chance*, providing dependable building blocks, basic rules and ordered energy supplies for a universe with infinite varieties of form and action. Macrocosmic logic and creativity maintains and recreates space-time – the thought-form defining inertial behaviour of matter –, every instant altering its curvature according to the momentary state of distribution of matter in the universe; and keeps on manifesting itself in galactic development, dynamic equilibrium and self-generated and self-sustained metabolic processes, as those of the whole universe.

So does each and every particle keep on existing in its essence, exercising its influence according to its universal life values, even after what is termed its physical death – dematerialization –. *Universal life value* is the measure of the holon's actual fulfilling its purpose, its self-realization, which comes to expression in its integration, harmony – its union – with the Universe.

An element (H_n) realizes itself by expressing as an individual, and according to its best natural potentials, its differential function integrated within a higher order (H_{n+1}) that it constitutes, and by promoting its own growth in that direction. Integration, consequently, means not the being or becoming an anonymous part of a mass, a crowd, a conglomeration, for these concepts exist in the world of the pholon only. Self-expressive and integrative tendencies are, most emphatically, not antagonistic tendencies, analogous to separative and cohesive forces respectively – to be kept in equilibrium for proper functioning –, but represent, in fact, the same evolutionary drive, for the individual's self-realization happens on its integrated plane: integrated into an organism to form a higher order, and not into a conglomeration of the same one, increasing but its numbers; conglomeration that is not more than the sum of the parts it contains. Self-expression is not Egoism, which is ego-expression driven by the lower emotions of archicortical nature, while self-expressive and integrative tendencies surge from the mind through higher cortical activities.

A cell can come to self-expression only as a valuable part of a healthily functioning organ (not a growth!), which, in turn, expresses itself as an integral part of an organism, and the life it represents. Nota bene the continuous fulfilling of purpose on the integrarchic scale, as being the essential condition of self-expression and self-realization, which leads to the Universe having to possess and fulfil a purpose in order that all its parts can do the same; and inversely, the functional self-expression of each part reflects on the development of the Whole.

Within the evolutionary drive of a holon belongs its self-assertive tendency, which comes to manifestation on the holons individual level, and against other individuals of the same kind and function, through the intra-specific competition for the most suitable type to fulfil that particular function. It is in accordance with the law of the *survival of the fittest*, and is basically – in its natural

form – for something in a higher order, and not against someone in the same. Examples are the race of spermatozoa to fertilize one ovum; the competition of animals of the same species for territory – Lebensraum – and mating rights, where the success of the superior individual is at the same time – through its effects – the success of the entire system.

No cell exists for another cell, but to express itself by surviving and evolving, motivated by its self-assertive tendency; and by cooperating with other cells in constituting an organ and contributing to its healthy function, motivated by its integrative, self-transcending tendency. In this role it submits itself to the ordering principle of the by it constituted organ, just as its own constituents submit themselves to its own ordering principle. Thus it works with fixed rules and flexible strategies, interacting with all its constituents and with all that it constitutes. Its exchange of matter and energy does not happen with its similars, but with the natural systems it is composed by and composes. Part of what it receives, it uses for its own sustenance and growth, the other part for executing its function. If it takes more than what it returns, then it exists at the expense of the organelles and the organ, and is regressive. If it returns more than what it receives, it promotes the evolution of the whole system: it is progressive. The evolution of the organ reflects on every of its constituent cells, and thus on their evolution. The same correlation works between organ and organ-system, organ-system and organism, organism and ecological community, ecological community and major ecological community, major ecological community and the planet. Of this chain the organelle, the cell and the organism are individual symbionts, constituting as such, through the ecological communities and the major ecological communities the planetary life, which are at the level of quasi-autonomous survival, depending only on the radiated energy of the sun.

The perpetuation – not only the short term existence – of an individual organism depends on its self-assertive tendency within the trophic stratum, and on its integrative tendency towards the major community. Self-assertion means expression of superior ability, not aggression, while integration is the forming a constituting part through positive co-operation, and not subordination. In practice, this represents for the individual to fulfil well its function and keep its appetite, and for the species population to maintain its number within the limits defined by its position gained by ability in the respective trophic stratum. Ability refers to values of higher life-manifestations.

The self-assertive tendency belongs to the natural evolutionary drive of a holon, coming to manifestation on the holon's individual level, and against other individuals of the same kind and function, through the intra-specific competition for the most suitable type to fulfil that particular function. It is in accordance with the law of the *survival of the fittest*, and is basically – in its natural form – for something in a higher order, and not against someone in the same. Examples are the race of spermatozoa to fertilize one ovum; the competition of animals of the same species for territory – Lebensraum – and mating rights, where the success of the superior individual is at the same time – through its effects – the success of the entire system.

Before going further, the concept of the *survival of the fittest* has to be cleared, the tautological explanation of which – suggesting that the fittest is the one that temporarily survives – can hardly serve as a base in a logical discussion. Its resolution turns around the word *survival*: the ability of an individual to grow – coping with its environment – into an adult, to make positive impressions on its environment, and to produce offsprings in its likeness and with similar positive potentials. This is long-term survival as against short-term one. The definition, however, satisfies only partially; the life it refers to must have the criteria previously elaborated on: it must partake – at the level of its own being – as a subject, instrument and originator in Creation, including, *enter alia*, growth and development. Viruses, for example, have neither. Consequently the word and concept *survival* can be applied in the integrarchic system – the world of the holon – only where it could even be substituted by the word *prevalence*; sustentation would characterize the rest.

The whole evolutionary drive is directed towards a higher aim, higher form of self-expression, towards the realization of the self on a higher plane, which transcends the actual level of its being. It is the expansion of spirit towards higher realizations, and consciousness towards greater realities: this is self-transcendence.

To guard against any confusion of concepts, I want to state quite clearly that – according to the here presented thesis – the submission to authority, the identification with a conglomeration, mass, and the bovine acceptance of its cherished social, political, religious or scientific belief-systems are most emphatically not the manifestations of integrative tendency, nor of self-transcendence, but belong to the unworld of the pholons, where self-realization is corrupted into ego-preservation-at-any-cost, integrative into conglomerative tendency, and self-transcendence into the apotheosis of the ego through the apotheosis of the pack, all characterized by subservient impotence; and where cherished

beliefs are hardly more than rationalizations: attempts to find logical excuses for illogical behaviours. What is *normal* for a holon – where normal means conforming to the standard for a particular type or group – is, by the very principle of the holon, also natural, that is: of or according to or provided by Nature. What, however, is normal for a pholon, is – by its very principle – unnatural, anti-Nature.

Examining the relationships of the holon (H_n) and its organization (H_{n+1}) on one side, and the pholon (pH_n) and its conglomeration (ΣpH_n) on the other, it has to be remembered that the pholon always masquerades as a holon and a conglomeration as an organization. Being parasitic, the pholon/agglomeration will feed on the holon/organization, due to the latter's altruism, benevolence or non-recognition of the mask. A pholon can never win over a holon in an organized system, but within a conglomeration one always. Antagonism cannot be spoken of at this stage, for holons and their organizations simply ignore the being of a pholon. On the other hand, the conglomeration of the pholons is highly antagonistic towards every single holon, for they recognize in it – being of Nature and of higher order – an active danger to their own existence. The pholon to pholon, and consequently conglomeration to conglomeration relationship is – by the very character of their being – antagonistic, which can range from simple elbowing to outright conflict; characterized by each for itself and against the other, but all for the system. Correspondingly, pholons change – according to their particular interests or even by simple drifting – from one agglomeration to another, without either of them being affected by the change, because all that matters to them is to belong, act and survive according to some system that will make decisions and be responsible for them; that system will have their pseudo-loyalty, their pseudo-duty, their pseudo-discipline corresponding to their pseudo-morality. Neither the rivals nor the adherence will alter with the change.

I will illustrate the aforesaid with two examples:

The first one comes from Lewis Thomas' book *The Wonderful Mistake*, where he describes the symbioses of the *Australian termite* and a protozoan – a single-celled organism – called *myxotricha paradoxa*, living in its digestive tract, and of this and the to it attached *spirochetes*. The by the termite finely chewed wood-fragments are chased and swallowed up by the patrolling myxotricha, which supply the enzymes to break down cellulose into absorbable carbohydrate digestible by the termite, leaving only the non-degradable lignin, which the termite uses for its own constructions. The myxotricha has no flagellae to swim with, but is propelled with remarkable speed and directness through the co-ordinated action of spirochetes that have attached themselves, regularly spaced, all over the surface of the protozoan. There are also other, various types of organelles and bacteria forming a co-operative organization inside the myxotricha. This creature is erroneously classified as parasite: erroneously, because the term refers to an entity deriving nutriment from and to the detriment of a host (which definition will prevail throughout this text). The myxotricha does neither. It derives its nutriment from the wood-fragments, which would otherwise pass undigested through the termite. It actually feeds the termite, and is an absolute sine qua non in its existence. So are the spirochetes to the myxotricha – that would be immobile without them –, and consequently to the termite, to the termite colony (not only an agglomeration of termites), and so on. It is a vital symbiosis.

This termite ecosystem – an éclatant example of the integrarchic system of the Natural Order, where the holonness of each entity is beyond dispute – is placed against Swift's flees of successively diminishing sizes, which prey on each other in the same sequence ad infinitum, and which form by no means a co-operative organization or integrarchic system through this act, but express clearly the parasitic pholonness of their existence, also ad infinitum.

The spirochetes most emphatically do not belong, surrender their identity, sacrifice themselves, subordinate themselves, or submit to the demands of the myxotricha; neither do these to the termite. Each having its own unquestionable identity, form, with numerous other entities – all having their own unquestionable identities –, the termite, which without each of the entities expressing its identity would not be a termite, and neither would the entities have any identity, for none would have the condition for survival. There can be no meaningful separation between the termite and its constituents, as there can be no meaningful separation between their self-expression and integration, for natural self-expression is integration into a higher order.

As explained in connection with equation 5, the termite, myxotricha and spirochetes are of the same principle in its various orders of differentiation – where even the word interdependence loses its meaning – which is, as Lewis Thomas expressed it, the "underlying force that drives together the several creatures comprising myxotricha, and then drive the assemblage into union with the termite", and is "joining organisms into communities, communities into ecosystems and ecosystems into the biosphere."

Contemplating the simplified system of spirochetes, myxotricha and termite, it becomes obvious that there is an optimum dynamic relationship of numbers within that system, similar to the *pyramid of numbers* in the community metabolism, where the food-web defines the number of organisms in every of its levels of feeding interrelations – trophic levels –, and that any deviation from it would throw the system off balance. Considering the quantity of the by the termite finely chewed wood-fragments as constant, then, if the number of the myxotricha is inferior to the ideal, part of the wood-fragments would go through undigested; if superior, there will be less carbohydrate left for the termite for absorption. Both conditions will effect the collective economy inversely, and lead to the weakening of the termite and consequently to the whole system. The situation between the spirochetes and the myxotricha is analogous. Inferior numbers are seldom problems in Nature. It could happen only temporarily and is rapidly readjusted by reproduction, which generally oversupplies. This over-supply is in the service of evolution, because it creates intraspecific competition, where the more efficient, the fittest prevails. The competition consists of the asserting of superior individual abilities for the execution of a particular function, in this case higher digestive factors and higher motive factors. Should one of the symbionts allow their number to exceed the ideal, it would be to the detriment of the entire assemblage, resulting in its disorder, stagnation or regression, and would render the particular social system of these symbionts parasitic.

Thus self-assertion is – as previously stated – basically for something in a higher order, and not against someone in the same, but can come to expression – so Lewis Thomas – through "responses of aggression and defence as secondary developments in evolution, necessary for the regulation and modulation of symbiosis, not designed to brake into the process, only to keep it from getting out of hand." While there exists intra-specific competition for the occupation of the limited positions within a co-operative system, there exists also inter-specific co-operation between the symbionts in the execution of their task, constituting thus a co-operative of a higher level.

The above presented example applies to all types of integrarchic systems where the constituents are symbionts, and their symbioses create organizations of higher functional complexity.

The second example is cancer, an agglomeration of organismically inactive parasitic cells, that have changed their natural identity, and serve no useful purpose in the tissues or organs of their origin, nor in any other system. It exhibits unlimited and uncontrollable power of exponential growth – in size but not in structural or functional complexity – and has the ability and tendency to spread and metastasize to other locations, where it may lodge through filtration, and assume a renewal of growth. By its very nature it maims and kills the system it feeds on. In spite of this, cancer is not classified as a disease, for in its appearance – but not in its function – it is an actual part of the body itself. It *appears* to have as much *biological right* as any functional tissue or organ.

Genes are genetic blueprints which characterize the *way of existence* of a cell and of the organism it constitutes: its organic parts, physiological functions and essential nature. The first two classify it as a cell, the last one includes identity, purpose, attitudes, reactions, behaviour-patterns, which interrelate and which produce organisms of higher order with greater versatility and diversity. This is where the cancer virus – masquerading as a gene – interferes.

The cancer virus – a DNA or RNA molecule in an outer coat of protein, which in isolation possesses no criteria of life, that is, it cannot grow or multiply itself – infiltrates the natural cell, and joins its genetic material, which is composed of the same macro-molecules (nucleic acids), and becomes a *phoney gene* – an adverse thought-form of negation in the life and organismic function of the cell. Its influence consists of creating dichotomy between the cell and its inherent organismic tendencies relating both to function and to reproduction. One could say that it *converts* a *weak character* to an unnatural, pseudo *identity*, reverts its purpose towards itself, and – to secure the permanency of this state – changes its self-expression – attitudes, reactions, behaviour-patterns – accordingly. It is also directing the cell to propagate the same type of virus, which can then infiltrate and corrupt other natural cells. The original virus partakes in the mitosis of the nucleus, reproducing the cancer-cells through division.

Two characteristics make the cancer more lethal than would be the direct attack of any disease or disorder, against which the whole resistance of the organism would be mobilized. The first is, that even if the cell has exerted originally some resistance at its own level, once the virus has joined the genetic code, it becomes *converted* – one could say brainwashed – into a full-fledged cancer-cell, which condition it will consider perfectly natural, and will exert all its energies to maintain. The second, to the organism lethal characteristic is, that the cell thus *possessed* does not alter its superficial appearance, and encounters resistance neither from the healthy cells on its own level, nor from the

tissue, organ or organism, which continue to sustain it as one of their constituents. The aberrant element receives all its necessities, but does not fill any function within the assemblage, existing on the expense and to the detriment of its host.

A singular parasite would go unnoticed, would it not reproduce itself exponentially, and potentially to an unlimited extent. Logically, the results are uniform identities with a pseudo-purpose, regressed to the state of mono-cellular existence, completely lacking any tendency both to integration and to evolutionary growth. While the natural elements of a complex are maintained in equilibrium by the essence of the complex, the parasitic elements expand themselves more and more in the form of a mass, a growth, uncontrolled and uncontrollable, as, in accordance with their nature, they will never – no matter what size or number they might reach – elevate that growth to the next level of the organismic, of the Natural Order. I want to call attention to the prominent distinction that one is a *co-operative* of *heterogeneous entities*, while the other an unruly *conglomeration* of *homogeneous non-entities*, a potentially pathogenic agent, closing the system below its own level. Consequently neither will millions or billions of them reach the heights – or life-value – of one singular, healthy, natural element, for they are without organismic essence.

If the cell was in its natural form weak and tired – for it had to *work* fulfilling its purpose within the organism, constantly competing for its position by proving its fitness –, in its new role as a parasite it is neither. Its purpose became itself – that is, grab as much as possible from the healthy and productive cells –; and competition being non-existent – for there are, in this state, no exigencies regarding either quality (all being equally base), or quantity –, it doesn't need to fight for its survival. All its energy is used to assert itself in its own actual situation, which is – from a mono-cell's point of view that became too ignorant to think and too impotent to act – optimum.

While there is no competition between the individual cells, neither is there any cohesion and co-operation. Clustering into conglomeration (growth) is purely accidental, as are the metastases: they have no co-operative purpose, nor collective value; they are only manifestations of individual proliferation, as if in an unlimited environment.

The growth causes first discomfort, then pain to the complex, which, due to the mask, never recognizes it as an *alien*, but continues accepting its *rights*, as that of those which are its *legitimate*, natural constituents. It is of importance to note that the parasitic growth only causes pain to the system by its effects, but does not hurt as such, because, although it is situated within the complex, it forms no part of it. If the singular parasites suffer, each does so within itself as a separate element, and as a consequence of its own nature, their suffering being of no concern to the complex.

Because the cancer-cell – being parasitic – is regressive both in its own existence and by dispersing energy taken from its host, and because its proliferation is unlimited, it comes to a state where its agglomeration is suppressing vital elements, and the energy taken is in excess of what the host can provide. This renders the whole system entropic, and leads to its fast extinction. With it die the cancer-cells, for – not functioning on collective level – they are incapable to recognize that their exploitive action leads to their own destruction as well as their environment's.

. . . in the full creation leave a void,
Where, one step broken, the great scale's destroyed:
From Nature's chain whatever link you strike,
Tenth or ten thousandth, breaks the chain alike.
From Alexander Pope's An Essay on Man

The pholonness of the cancer-cell is established by the fact that it is a dichotomous, unnatural element, a potentially pathogenic agent, which forms no active part of any tissue or organ, but agglomerates into a growth, closing the system below its own level. None of these statements needs elaboration.

The above example applies to all pseudo-systems where regressive elements cluster into a substanceless conglomeration.

The two descriptions served not only to epitomize the concepts of the holon and the pholon, but also the concepts of the progressive – natural, *integrarchic* – and the regressive – unnatural, anti-nature, *anarchic* – systems. Also, very strong emphasis is to be laid on the fact that the two do not represent polarities, or opposing systems of equal value; the second one being solely the negation of the first.

These conceptions – as stated before – refer not only to biological systems, but to every microcosmic or macrocosmic psycho-physical manifestation, which include all cosmological, inanimate, behavioural, social and symbolic systems.

That there is, within one integrarchic system, a co-operative interaction between the various holons of the same level, is logical. There exist, however, various interactions – at least over some area – of two or more kinds of integrarchic and/or anarchic systems, the mutual influence of which on each other and on their constituents need further examination.

Contemplating the problem, the following conditions appear to be logical right from the outset:

Interacting systems should not be contradictory in their rules and in their workings, for if they are, either one of them or both are pseudo-systems (closed systems), and consequently – by their very nature – antagonistic. As the two systems are not necessarily of the same intensity, one will be dominant and exert its influence over the other.

As pseudo-systems – like pholons – have the characteristic tendency to masquerade as natural ones, a precise criterion has to be established when qualifying an existing system.

The biological, which includes ecology, is – on this planet – the most fundamental system of the Natural Order, for which reason it can be considered to be the primary one, according to which all other systems can be judged, the empirically and intellectually established basic concepts of which can serve as criteria in the study of the other – secondary, tertiary, etc. – systems, and with which all the other systems have to be coherent and in harmony, to form part of the Natural Order.

The criteria previously established for the holons apply also to their systems. Recapitulated in their adjectives, which are overlapping, they are: logical, coherent, integrarchic, co-operative, evolutionary, creative, progressive, syntropic, active, positive; they have unity in diversity.

The above statement means that the social system of any species – simple or complex – has to converge in its development towards the biological one if it is to be considered natural. Here a secondary system's self-expression becomes synonymous with its integration into the primary one. A behavioural system – to be coherent with nature – has to work towards general evolution within the biological one. Remembering that all manifestations are psycho-physical, no symbolic system would make sense without its reference to the Natural Order.

The most primitive association of homogeneous, independent elements is a colony. The first step in socialization, it has some rudimentary co-ordination, and represents to its members a few conveniences, but is not vital. Its examples are cell-colonies, herds, packs, schools. Prolonged association and growing co-ordination can lead to specialization of the elements to perform particular tasks, changing the physical combination into a psychological one, resulting in increase of general efficiency. To this class belong the also convenient but not particularly vital associations of heterogeneous elements, like one that feeds on the parasites of the other, which is a primitive symbiosis.

Following further dynamic restructuring and systematisation of the inter-elemental organization – always improving the overall efficiency – the constituent elements can become so specialized as to be incapable of further independent existence, and form a heterogeneous, multi-elemental, irreducible organism (e.g. cell, plant or animal organism, insect state, major ecological community). This includes all vital symbioses (e.g. termite - myxotricha - spirochetes), all being holons and carrying the hallmarks of an integrarchic system. I stress here once more that no one-directional dependence exists within a natural organism, but a multidimensional interdependence, the natural corollary of interaction, and that the accent is not on the fact that the constituent elements are unable to live separately, but that it would make no sense for them to do so.

The gathering of homogeneous or heterogeneous elements – holons – into colonies, and orchestrating them into an irreducible organism – holon of a higher order – is a social evolutionary function. Its product, the holon of the higher order, incorporates all, for the system self-restructured – but not annihilated or absorbed – identities of the constituent holons – each having its own structural and functional constitution – and out of their integration developed higher identity. In its intermediate, developmental stages of becoming from the sum of its heterogeneous constituents a higher organism, the entity can be classified as an *inter-holon*. Thus, the social system, acting in the *interstratal space*, and producing increasingly complex elements, merges on each stratum into the biological system, indicating that individual and social developments are inseparable, and bringing once more to the logical conclusion that neither holons nor their systems of being and becoming make sense if isolated.

The above statement refers also to the behavioural system, which includes all mental, physical and physiological processes: the behavioural elements in reproduction, caring for the offsprings, building of

shelter, obtaining food, self-protection, self-expression, individual and social conduct, etc., be they the products of immediate conscious mentation, or pre-developed instinctive response. They are tools of expression of both being and becoming, partially by directly promoting evolution, and partially by *natural self-elimination* of the unsuccessful trials, thus indirectly promoting evolution.

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