

ETHOS–PATHOS–LOGOS

The New Old Ways of Knowledge

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The formal-structural approach to the knowledge process is exhausted having reached its own limits. An *extended rationality* must be promoted in order to gain resources for future developments. We start from the assertion that *knowledge* is a specific interaction between the whole existence and the punctual entity of man. This process is triggered by the tension between the *phenomenological unity* of existence and the *triadic behavior* of the human, being characterized by *spirituality*, *imaginary* and *reason*. The original unity of knowledge was broken in the last two millennia of the Western cultures. The three ways of knowledge, each corresponding to a distinct human behaviour, have performed diachronically emphasizing in turn only one dimension. Man’s unity must be now restored starting with the attitude about of knowledge. The *complexity* reached by contemporary knowledge supports and imposes at the same time a rebuilding process, in which the phenomenological unity, the spontaneous performances of the oneness and the structural simplicity are together considered as distinct faces of the unitary existence. In order to know, the human being must regain his own deep unity. Moreover, the knowledge process must borrow from the object of knowledge a new dimension: the ability of **self-organizing**. *The deep understanding can not be organized, it must self-organize itself.*

Our confidence in the adding algorithm can be analyzed using the rhetorical techniques established thousands of years ago in ancient Greece. The ancient Greek philosophers classified the formal argument into three distinct classes:

- **Ethos**: Proof by authority. (“I am the teacher, and I say that it works.”)
- **Pathos** : Proof by emotion. (“It would make me happy if you believe that it works.”)
- **Logos**: Proof by logic. (“Here’s how it works”)

Our initial confidence in the addition algorithm comes from the ethos or pathos of our teacher (preferably the former, but lamentably often the latter), and increases as experience verifies that it is indeed correct. Logos often comes much later, if at all.

Ian Parberry, 1994

1. INTRODUCTION: LIMIT IN FORMAL-STRUCTURALISM

We are crossing a happy stage of knowledge dominated by the emphasis of many *limits*. The end of the millennium is full of the constructive optimism

imposed by a strong apprehension of the limits. Specifying the limits of a certain domain will be firmly outlined. Being aware of the limits concentrates thinking, thus promoting the performance. Assuming the limit we reach knowledge. The limit leads us beyond it, so grounding the deep knowledge.

The main limit emphasized in this century is the limit of *formal-structuralism*. Starting with Goedel's Theorem and ending with many forms of complexity, the formal-structural approach is under a serious debate.

Most problems rise in the knowledge domain. The last few centuries of rationalism have exhausted, in the most positive sense, the formal-structural paradigm. In order to go on further we must activate or, more correctly, reactivate some other ways of knowledge.

Besides, we believe that a new ability must be stimulated in order to make the deep knowledge possible. This new ability is an old behaviour of existence: **self-organizing**. We must "borrow" from the whole existence this feature and use it in the knowledge process. This new, maybe old, ability can occur or reappear only if man regains its triadic unity between *spirit*, *imaginary* and *reason*.

Man has exercised too much a one-dimension variant. Avoiding the imaginary and tolerating spirituality, man is directing towards the limited world of the formal-structural where reaching the limits is the rule.

The following three sections represent a short argument for a triadic approach. The last one advances a possible conclusion.

2. MAN'S TRIADIC UNITY

The great successes of the human knowledge are surpassed only by the spectacular domains in which ignorance is chronicied. We don't know almost anything about life, mind and consciousness.¹ We have a fragmentary image about the physical Universe, image mediated by two theories much too distinct (quantum mechanics and the theory of gravitation). Moreover, there is an explanatory gap between consciousness and the physical level of reality. The explanation of these facts could start from an inappropriate understanding of what man can be.

The incontestable successes of the formal and structural approach reached in the last few centuries of rationalism, can not hide a deep lack of knowledge. Even the great successes of the pure rational approach emphasize the limit problems remaining to be solved. We believe that an inadequate image of the human being about itself obstructs the way towards the searched solutions. Therefore, we must start with some point of views about what the human being is.

¹ David Chalmers considered: "We know consciousness far more intimately than we know the rest of the world, but we understand the rest of the world far better than we understand consciousness." [Chalmers '96, p. 3]

2.1. HOMO SAPIENS – HOMO LUDENS – HOMO FABER

In the Western world the debate around the problem of man's identity stressed mainly on the *spirit-reason* alternative. For example, Greek rationality is currently opposed to Christian spirituality, even if it can be proved that the ancient Greek was more than a simple rational being (see the famous *The Greeks and the Irrational* by E.R. Dodds) and Christian ideology had its own moments of imaginative exuberance or rational rigour.

But I believe that all the time the human being has manifested a triadic behaviour², thus justifying the three labels rarely used together: *homo sapiens*, *homo ludens* (*demens*³) and *homo faber*.

Homo sapiens is the wise or the spiritual man having the phenomenological⁴ experience⁵ of existence as a whole full of senses, thinking and acting accordingly.

Homo ludens is the imaginative man who uses his fantasy or his intuition in order to generate or to understand things hard to be rationally conceived or disclosed.

Homo faber is the rational man who knows the formal-structural ways that help him to build (technical objects, institutions, formal theories, ...) together with the other men, or to understand the truncated world in which only the forms and the structures are possible.

2.2. SPIRITUALITY – IMAGINARY – REASON

Man's unity is reached through a good balance of its three components: spirituality, imaginary and reason.

- Men uses **reason** for synchronizing its gesture with other men.
- *Imaginary* helps man to solve his problem beyond the rationally imposed rules or the traditional customary laws.
- **Spirituality** offers valuation criteria for the products of the rational or for the emanation of the imaginary.

The **co-occurrence** of the previous three components is a basic principle and is the main idea of understanding any act of knowledge performed by man. If we lay stress on only one of them, then we will assume the huge risk of a truncated

² Chalmers' approach with his *phenomenal mind* and *psychological mind* [Chalmers '96] imposes only a dual behaviour of mind. The first *feels* and the second *does*. Jackendoff distinguishes also only between two kinds of mind: the *phenomenological mind* and the *computational mind* [Jackendoff '87]. I "feel" that the third kind of mind must be added, and I "do" it proposing the **imaginative mind**.

³ Edgar Morin [Morin '73] told us about the ability of man to extract order from noise, using its huge imaginative capacity to develop itself in a self-organizing process.

⁴ [Drăgănescu '79, 85].

⁵ [Chalmers '96].

process. Even if a truncated process offers some successful results, on long time term we are wrong.

2.3. REVELATION – IMAGINATION – EXPLANATION

We have access to truth in many ways. The school taught us that the truth can be proved. It is nice to believe that for our inner peace, but since Epimenides the Cretan until Kurt Goedel people strived to understand that **there is truth beyond what can be proved**. Beyond what is rationally *explained* there are many true things that can be only *imagined* or *revealed*. The lack of **trust**⁶ has moved away the man from the results of imagination or of revelation. Man does not trust men and men do not trust the imaginative or the spiritual man.

There are three kinds of truth for which trust is very important:

- *theoretical truth*,⁷ for which we do not feel the necessity to have proof (the “directly accessed” truth, the truth of the axioms);
- *paradoxical truth*, for which we need a proof but this proof does not exist (various formal buildings belonging to the class of logic-mathematical paradoxes);
- *complex truth*, having a known but a much too complex proof (truth needing a proof that uses exponentially increasing computational resources).

Explanation consolidates the community, *imagination* outlines the communions and *revelations* isolated individuals. But we know that *the rules of the explanation are based on revealed facts and the performant use of them requires imagination*.

The way toward truth is a complex process in which all the three ways are involved. To avoid one of them implies an unacceptable risk for the knowledge process. The Christian civilization assumed this risk, stressing in turn (Orthodox) *revelation*, (Catholic) *imagination* and finally (Protestant) *explanation*.

Man must remember its triadic unity in order to (re)gain the ability to understand what existence is. *Homo faber* must be reconciled with *homo ludens* and *homo sapiens*, so as spiritual attitude, imaginative spontaneity and rational building be well balanced. The big challenge of the knowledge process implies man’s triadic unity to be opposed to the phenomenological unity of existence.

3. THE WHOLENESS AS PHENOMENOLOGICAL UNITY

The wholeness of the entire existence is a fundamental principle, a *theoretical truth* beyond the necessity of a proof. Its main behaviour is the

⁶ Fukuyama.

⁷ From the Greek *theoria* having the meaning of *immediately* accessed knowledge, opposed to *episteme*, the knowledge occurred in a deductive process, *mediated* by proofs that start from *theoria*.

phenomenological unity. Moreover, the wholeness implies phenomenological unity. The entire existence is a phenomenon as against itself. Therefore, the phenomenological unity of the wholeness leads us to think about a *fundamental consciousness*, postulated in [Drăgănescu '98]. The wholeness can not be proved and at the same time to emphasize wholeness does not improve knowledge.

Man faced with wholeness acts according to his triadic unity: the phenomenological unity is substituted by a more complex “image”. Man’s *representation* of the phenomenological unity must take into account the triadic behaviour of the human being. But men’s *representations* can not follow easy man’s *representation*, thus we can explain most of wandering on the knowledge ways.

At the same time the phenomenal behavior of the wholeness contains non-phenomenal facts. Dominant facts allow to emphasize inside a phenomenon non-phenomenal behaviours. The human being has the ability to distinguish diverting from the phenomenality. Thus the *chaotic behavior* and the *structural equilibrium* become “components” of the phenomena.

3.1. WHOLENESS – SPONTANEITY – LOCALITY

We understand *wholeness* better setting it in opposition with *locality*. Locality makes a “strong opposition” against wholeness, thus generating an unstable pair of concepts. In order to gain “stability”, a third “weak opposed” concept must be introduced. Let *spontaneity* be this intermediary agent that *suggests a possible continuous transition* between wholeness and locality.

The spontaneous behaviour disturbs the stability of the local forms or structures and at the same time continuously obstructs the firm settlement of wholeness. Thus, spontaneity is an ineffable bridge between wholeness and locality. Spontaneity is responsible for the sources of diversity that support both the phenomenal evolution and the structural settlement.

A strong opposed pair of concepts is substituted by a weak opposed triad of concepts. A more stable image (like a three-foot stool) is imposed using the unforeseeable consequences of spontaneity.

3.2. UNITY – ONENESS – UNIFORMITY

The idea of **one** can be used to derive three very distinct attributes. Existence can be characterized, from different points of view, as having *unity*, as tolerating *oneness* and as delighting in *uniformity*.

Wholeness suggests unity. The *synchronic* unity of the whole existence does not allow a *causal* and a gradual knowledge.

Spontaneity implies oneness. Oneness surprises and we can’t catch up the fruit of spontaneity. The oneness of the spontaneous process disturbs and emphasizes, at the same time, phenomenal unity and structural uniformity.

Locality allows uniformity. Only local uniformity can be surprised by causal and hierarchical knowledge.

3.3. PHENOMENA – CHAOS – STRUCTURES

The phenomenon is a “fluctuation between” chaos and structure. Chaos is the hot kernel and the structure borders the space in which the phenomenon takes place. Any existential event is a phenomenon that appears within structural limits conditioned by a chaotic behaviour. The phenomenon is a *well-tempered process*. The structure is a *medium* and chaos is the *agent*.

A structure results ignoring the chaotic component of a phenomenon. Avoiding the chaotic behaviour inside a phenomenon we obtain the truncated form of structure. A phenomenon can be approximated by a structure only if its chaotic components are not dominant.

Chaos is the source of phenomena and of structure. Being restricted by structures, chaos generates phenomena. On the other side, phenomenological attractors allow chaos to degenerate into structures.

The current approaches oppose the phenomenon of the structures generating an **explanatory gap**. How can be thought the transition between phenomena and structures. Is there a structural or a phenomenological way connecting the phenomena with the structures? Because we believe that a catastrophic transition is not possible, we accept chaos as an intermediary agent that acts connecting “continuously” phenomena and structures.

4. KNOWLEDGE AS TENSION BETWEEN THE PHENOMENOLOGICAL UNITY AND THE TRIADIC UNITY

We understand the knowledge as a positive tension established between the phenomenological unity of existence and the triadic unity of the human being. The man broke the phenomenological unity imposing a point of view governed by its triadic unity. Thus, the structures became useful and the chaos came to fill up the “space” toward phenomena.

Homo faber needs structures and forms in order to build institutions, technical objects, theories, and so on. The man, a weak being, must *exteriorize*⁸ its own internal limits in order to improve them and thus dominating the nature using the world so built. The *rational* approach is the best way to synchronize the men in this process of building the *man’s world*.

Homo sapiens gave meanings of homo faber’s buildings. Homo faber builds systems using accurately the same rules in the same manner. The *internal* structure

⁸ The term is introduced by A. Leroi-Gourhan [Gourhan '64].

of a systematic building is very rigorous. But the *external* articulation of the resulting system does not have the same systematic look. Any system has systematic external connections and in the same time non-systematic connections. Homo sapiens is also responsible for the non-systematic meanings associated to a strict rational human building. A rational symbolic or physical building makes sense only in a deep dialogue between homo faber and homo sapiens.

Homo ludens helped both, homo faber and homo sapiens, by his fantasy and his intuition. The systematic search for a solution in the huge space of the all possible solutions supposes an algorithmic approach. All of these algorithms are formal buildings. But two problems rise:

- for some very important problems there are not physical and temporal resources to run the known algorithms
- to establish an algorithm is not a systematic work.

A “well trained” *fantasy* makes spectacular jumps in the space of solutions choosing solutions easy to be evaluated in a formal-structural algorithmic process.⁹ On the other hand, only an inspired *intuition* “discloses” efficient algorithms. Thus the *play* of the imaginary— with its two components, the intuition and the fantasy — defines homo ludens as a useful partner of homo faber and homo ludens.

4.1. SENSE – SIGNIFICATION – SYNTAX

In the framework of the knowledge process, the triadic unity of man induces its distinct components into the phenomenological unity of existence. Thus, meanings emphasized are ordered on three levels. Indeed, the knowledge process has three main components:

- discovers or constructs the syntactical order that is meaningless because it implies only the internal relations between the components of a system associates with maximal freedom significations of syntactical ordered facts (structures) or of phenomena using an external relation in different limited
- contexts (results a contextual meaning)discloses senses as significances defined by an external relation in the whole context of existence (results a whole meaning).

⁹ Suppose we have a problem with a solution space increasing exponentially with the input dimension. If the only algorithm we have must travel through all this space, then the temporal or spatial resources involved increase also exponentially. But, if there exists a “lucky guesser” that proposes a candidate for a solution, then this candidate is validated or invalidated in polynomial time. The algorithmic approach is thus involved only in evaluating, wasting only polynomial resources, in the attempt to find a solution performed by a “well trained guesser”. This can be a future full of sense interaction between the computing machine and man.

Any knowledge is expressed by a symbolic building having in the same time syntactic rigor, an accurate signification and a deep sense.

4.2. MYSTERY – EXPRESSIVITY – CLARITY

The subjective conditions are very important for the efficiency of knowledge. The same content can be imposed in many forms. Individual propensities will select the best way for understanding of a certain domain at a certain time. In turn,

- the truth must be revealed like a mystery
- the imagination must be stimulated by the expressiveness of our approach
- the explanation must have clarity in order to be unambiguously understood.

An *extended rationality* will take into account all this three forms to reach the knowledge. In order to achieve man's unity, men must interact using synchronously, with an appropriate weight, clarity, expressiveness and mystery. The clarity is useful only where a truncated approach is possible. But there are spaces in which only the expressiveness offers a useful image. And sometimes only mystery can disclose the truth.

4.3. SPIRITUALITY – CULTURES – CIVILIZATION

Men's attitude towards existence, nature or society is divided also in three distinct behaviours:

- a spiritual attitude dominated by a *holistic* understanding of phenomena
- a cultural attitude that promotes, more or less local, *values*
- a civilized attitude that accepts and promotes the pre-eminence of the *rules*.

We have many cultures, each corresponding to a distinct system of values, but there is only one civilization [Malița '98], because the formal-structural approach imposes the same rational rules anywhere. The spirituality is also in the singular, thus deeply sustaining the uniformity of the civilizing approach.

For example, *beauty* is not a value, it is a spiritual entity. The *beauty of a haiku* represents a value in the Japanese culture. Pythagoras' theorem is a rule used in any civilized part of the world, and is *beautiful by its simplicity*.

Civilization synchronizes men, the cultures spread men and spirituality offers a deep unity of men, thus making civilization possible. But without cultures we lose the source of diversity that can be sometimes converted into new rules or other times distilled into "new" spiritual "values".

5. A POSSIBLE CONCLUSION: SELF-ORGANIZING DEEP KNOWLEDGE

Deep Reality grounds any universal behaviour and the human, being connected at the same time to Our Universe [Drăgănescu '97/79, '85]. The spiritual

gift of man helps him mainly to be connected to the Deep Reality and the rational abilities are used to approach mainly Our Universe. But, what are the ways to reach the whole image about existence? What is the role of **man's will** in "building" a useful knowledge about the entire existence?

Man's will implies a *controlled process* toward knowledge. Our image about any knowledge is tied to an *elaborated* building. The usual understanding about the building of knowledge leads us toward an *imperative* action. But man's will acts beyond what he builds in a controlled process. Man's will is part of existence and behaves accordingly, as a phenomenon and as a structure, both "interconnected" by spontaneous chaotic behaviours. The main game played in the knowledge act is supervised or guided by limits imposed by **complexity**.

Complexity results from the simplicity of the *structural* premises that ground the knowledge systems. Indeed, if we use simple "bricks" to build theories about complex realities, then complex buildings result.

At the same time, the phenomenological approach uses too much complex entities to build an image about existence: the *phenomena*¹⁰. We can even say that "to build with phenomena" is a paradoxical assertion. Indeed, *structuring with no-structures* is an impossible action, because the way from the structured to the non-structured can be neither structural nor non-structural.

Therefore: there is *the complexity of the simply founded systems against the complexity of the phenomenal premises*. Question: is there a way to avoid the huge complexity of the structural or of the phenomenological approach? Is there a solution to combine them into a structural-phenomenological approach? Yes, it is, but we need a *binder*!

We can not organize phenomena, because they are too complex, we can not organize structures because a too complex building results. Therefore, we must find a specific space where a **self-organizing** process is responsible for an *emergent knowledge*. This will be the space where men's imaginary meets with the chaotic behaviour of existence.

Thus, the deep knowledge can be an emergent self-organizing process that binds the structural with the phenomenal. *Causality* characterizes the relations in the current accessible world. As we advance into the deep existence the causal relation is substituted by synchronous processes. *Synchronicity* grounds the deep existence, where all the facts are synchronously together, without any causality. In between, chaotic *spontaneity* makes the games.

The *spontaneity* of the self-organizing knowledge puts together deep *synchronicity* and superficial *causality*. Thus, the knowledge process emphasizes one more triad:

¹⁰ The phenomenological-domain (P-Domain, Ştefan '98]) consists in phenomena without a (simple) structure, where the structure description has the same size as the described object. Thus, the P-Domain has the highest complexity.

SYNCHRONICITY – SPONTANEITY – CAUSALITY

Synchronicity and causality act together like, being more or less strange, attractors that lead the spontaneous processes to degenerate in structures or to flourish in phenomena. Accordingly, knowledge self-organizes having as deep guide marks the synchronous facts and as universal accepted facts the causal connected structures.

Fuzzy concepts, such as *information*, *complexity* and *time*, stimulate the imaginary, thus allowing the self-organizing process of knowledge. We must maybe preserve this kind of fuzziness in order to have a specific space for the imaginary.

Finally, a question arises: *teleology* or *spontaneity*? It is an alternative that divides the scientific community. Is it the emergence and the evolution of the living up to consciousness according to a becoming tendency of existence or is it the result of a spontaneous deviation (something like the “clinamen” of ancient Greeks)? The “games of the imaginary” are rejected by teleology and the becoming tendency are undermined accepting the spontaneous “behaviour” of existence. We have no other chance but to hope that existence’s *telos is the spontaneous* game and the man who knows must accept it in order to stimulate the imaginary on the way leading toward the **self-organizing knowledge**.

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