CONSCIENT FAITHFUL INTELLIGENT HUMAN EVOLUTION

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Abstract: Intelligence = Consciousness × Adaptability × Intention and Faith = Intuition × Inspiration × Imagination, are the complementary parts of the human mind. Conscience = Consciousness × Inspiration is the link between. Simulation is the relation between function and structure. Conscience simulation demands to transcend from computability to simulability, by integrating essential mathematical and physical knowledge, guided by philosophical goals. A way to begin is hierarchical simulation. Hierarchy is the syntax of abstraction. The alliance between arts and sciences is vital and demonstrates the unsolvability of the nowadays spirit-matter dichotomy, and of all secondary dichotomies, actually functionally generated by the space-time dichotomy that is necessary to the human evolution. The concentration of the mind on the reasonable control of the adaptability followed the spiritual revolution that tried to bring into individual and social conscience the human choice forEvolution without disregarding theEternity or the Way.

Keywords: conscience, faith, hierarchy, intelligence, simulation.

1. HIERARCHIC APPROACH

Algorithms, designs, artificial systems can be computer simulated so they represent computability, top-down (construction, design, plan) or bottom-up (understanding, verification, learning). The algorithmic approach is equivalent to the formal one. Knowledge and construction hierarchies can cooperate to integrate design and verification into simulation: structural object-oriented concepts handle data and operations symbolically.

Hierarchy types open the way to simulate intelligence as intentioned adaptable consciousness by extending the present limits of computability. We enrich the template concept to structures and create a theoretical kernel, for self-organizing systems, based on a hierarchical formalism. This permits theoretical development as well as efficient application to different cosimulation types of reconfigurable systems. Coexistent interdependent hierarchies structure the universe of models for complex systems. They belong to different hierarchy types, defined by simulation abstraction levels, modules, symbols, classes, and knowledge abstractions. Hierarchies of different types correspond to the kind of abstraction they reflect (↑):

1.   Class (↑concepts) ↔ virtual framework for any hierarchy, based on form-contents dichotomy, modularity, inheritance, and polymorphism
2.   Symbol hierarchy (↑mathematics) ↔ stepwise formalism for all types, including hierarchy types
3.   Module hierarchy (↑managing) ↔ stepwise managing of types on different levels by recursive autonomous block decomposition, following the *Divide et Impera et Intellige* principle
4.   Construction hierarchy (↑simulation) ↔ simulation (=design/ verification) framework of autonomous levels for different abstraction grades of description
5.   Knowledge hierarchy (↑theories) ↔ reflexive abstraction, *in a deeper sense*, aiming to each level having knowledge of its inferior levels, including itself, therefore enabling consciousness.

Knowledge and construction have correspondent hierarchy types: their syntax relies on classes, their meaning on symbols and their use/ action on modules.

The hierarchy types can be formalized in the theory of categories [1]. The hierarchical types are objects of equivalent categories (functorial isomorphic) that formally represent hierarchy types. The consciousness hierarchy type communicates to the other hierarchy types by countervariant functors, while the others intercommunicate by covariant ones.

Constructive type theory permits formal simulation by generating an object satisfying the specification. Applying similar abstraction kinds to hard and soft representations and operations based on object-orientation, symbolization and structural abstraction can be extended from soft to hard.

A generic type has the ability to parameterize with types a hard/ soft element. Recurrence is confined to discrete worlds while abstraction is not. This suggests searching for understanding following mathematical structures that order algebra into topology [2]. The alternative ways followed to extend the computability concept concentrate respectively on the mental world of the good managed by engineering, the physical world of the truth researched by science, and Plato's world of the beautiful abstractions discovered by mathematics [3]. We follow the mathematical paradigm of intelligent simulation by functionally modeling the self-aware adaptable behavior to simulate intelligence.

$$Simulation \in Behavior \times Structure \Leftarrow Knowledge$$
$$Knowledge \quad \Leftarrow Intelligence: information\ ()$$
$$Imagination \quad \Leftarrow |\,Intuition - Consciousness\,|$$
$$Intention \quad \Leftarrow |\,Inspiration - Adaptability\,|$$
$$Adaptability \quad \Leftarrow simplifying\_Abstraction\ (Imagination)$$
$$Consciousness \Leftarrow reflexive\_Abstraction\ (Intention)$$

The integration between discrete and analog is needed [4], for a softer adaptability and for consciousness simulation as analog reaction. Recurrence of structures and operations enables approximate self-knowledge, with improved precision on the higher knowledge levels. A continuous model for superior hierarchy levels offers a better model for consciousness of intelligence. Oversimplifying to move towards intelligent simulation, we neglect the essential but hard to understand intuition and inspiration, formalizing reflexive abstraction by knowledge hierarchy type and simplifying abstraction by construction hierarchy type:

$$Consciousness = knowledge \circ simulation\ (Consciousness)$$

The fixed-point relation suggests to model consciousness associating a knowledge level to any hierarchical level of the construction. A metric space with a contraction representing knowledge ° construction, i.e., the elements implied in the construction get closer to one another in the formal understanding of the formal construct. More general functional relations between essentials of faith-assisted intelligence imply:

$$Consciousness = knowledge\ (intention\ (Inspiration, simulation\ (imagination\ (Intuition, Consciousness))))$$

Representation for design and verification is common $\Rightarrow$ algebraic structures on which the different hierarchy types are based on are extended to topological structures; the simulation entities are symbolic.

Reality is beyond Nature (IN $\subset$ IR)

The hierarchical principle is applied to the object of knowledge as to the knowledge structure itself: it mediates the action of a paradigm on an environment. Intelligent systems are capable of reflexive abstraction, controlled by problem specification and solving strategies. These are derived from a higher level of knowledge, representing approach principles, which are structured by a higher level with abstract types.

Applying the hierarchical principle both at environment and simulation level ensures flexibility of the framework, by defining it precisely only in the neighborhood of solved cases. For representation, the principle offers the advantage of open modeling, which enables reconfigurable realization. Formalizing hierarchical descriptions in continuous spaces we come closer to self-control, -organization, -awareness, i.e., (intention, adaptability, consciousness), hence to intelligence. Positive signs come from analog electronics, control systems, mechatronics. Unrestricted mathematics, integrated physics, and thinking by analogies are needed.

Knowledge uses morphisms between real system and simulator. An intelligent simulator learns generating and validating models. Mathematics contains appropriate structures for self-referent models. The richest domain for this is functional analysis that integrates algebra, topology and order, e.g., contractions and fixed points in metric spaces, reflexive normed vector spaces, inductive limits of locally convex spaces, self-adjoint operators of Hilbert spaces, invertible operators in Banach algebra.

$$Simulability = Computability^{\,Continuum}$$

EXAMPLE:

Let U be a universe that is structured by different hierarchies. U is a category, e.g., containing Hilbert spaces with almost everywhere-continuous functions as morphisms, enabling different ways to simulate self-organizing, -control, and -awareness. A hierarchical formal system is defined by: hierarchical universe, functional objects (global functions, level structures, simplifying abstractions, knowledge abstractions), initial functions, and transformation rules. Self-adjoint operators are objects on the higher levels of the knowledge hierarchy, that strive for self-knowledge whose degree rises as the knowledge abstraction in the context of the inferior levels knowledge and of the superior levels qualitative knowledge. Natural transformations on the functors of different hierarchy types solve the correspondence problem, i.e., the association of a knowledge hierarchy to a simulation one. Intention results by human-system dialog, and completes the simulation of the intelligence.

Further than modeling consciousness to simulate intelligence is the search to comprehend inspiration. An idea is to use Lebesgue measure on differentiable manifolds and/or non-separable Hilbert spaces. Mathematics will have to develop more philosophy-oriented to approach intuition. Evolution needs separation of faith and intelligence, understanding and using consciously more of faith's domain, and integrating them to human wisdom to be divided further to more humanity.

God's ways are uncountable. His plans are hopefully hierarchical.

2. FUNCTION AND STRUCTURE

To begin was the word. Words enable us to express ourselves, to be humans among humans. The expression is complex, so it has to be hierarchical in order to be comprehensible. Words are sequences of letters, sentences are sequences of words, and texts are sequences of sentences. Phrases, paragraphs, (sub)chapters, volumes, etc can enrich the levels of the textual

hierarchy. The hierarchy is not necessary linear. The basic hierarchical type is tree-like, to optimally represent the generic strategy of *Divide et Impera et Intellige*, or even graph-like, in order not to constrain the links between levels.

Class, concept, term are aspects (syntax, semantics, pragmatics) of the expression. *Class* is a primitive notion. Set is a class that belongs to another class. The set operations are paradigmatic: serial ($\cup$), parallel ($\times$), hierarchical ($\wp$ - set of all parts). The possible expressions form a *language*. Syntax, semantics, and pragmatics define any language; the rules of each of the former defining components refer, respectively, to correct construction, interpretation, and application. Syntax is determined grammatically: grammars are of different types building a hierarchy that corresponds to the reciprocal inclusion of the defined languages.

Grammar is a language that refers to the language that grammar defines, i.e., is beyond the defined language – a *metalanguage*. Beyond defines another hierarchy type than modularization (of a text) or inclusion (of the languages due to the stronger rules of the defining grammar). Its definition is based upon the principle that each level is a metalevel of its inferior ones. The idea is realized symbolically. Further, in a symbolic language, symbols symbolize other symbols, what is another hierarchy type. We classified, we symbolized, we divided into modules, and we reflected an inferior level (language) on a higher one (grammar).

Grammar is a language, so it has a grammar, which, if isomorphic to the initial grammar or to the language itself, would mean that we obtained a reflexive language, i.e., capable to express itself. Classes, symbols, and modules permit the construction of a system that structurally implements a function expressed in a language, i.e., behavior.

Classes, symbols, and modules can determine the behavior of a structurally described system. Another hierarchy type, simulation hierarchy, orders the variety of languages that describe function and structure. It assists the passing from the goal function (constrained by functional parameters) to the structural form, and inversely, to determine the mathematical function/ physical behavior of a system (characterized by structural properties).

Researching intelligence by simulating it, to enable intelligent simulation, demands the study of combined essential mathematical structures (algebra, order, topology), to understand the different hierarchy/ abstraction types. Being a hierarchical relation between static and dynamic structures, and even between structural and functional, the simulation can contribute essentially to understand the human mind. We try to model the consciousness for simulating the intelligence, then to reach for intelligent simulation. The power to abstract is the crucial difference between human and other natural beings. *Divide et Impera et Intellige* applies the hierarchical expressed abstraction.

$$Simulation \subseteq Function \times Structure$$

Intelligence and *faith*, like any dichotomy, can converge to integration or can destroy one another if not associated by *Conscience*. *Language/ system* is a generic form of a mathematical/ physical model. *Model* results of an inversion-able representation (simulation object). *Function* is a transformation that can be mathematically formalized, or physically instantiated as temporal behavior. *Structure* is a set of properties that characterize a mathematical/ physical space; the properties are constant or variable in time, reflecting static or dynamic structures. *Abstraction* is a human defining capacity that enables him to think.

The *simplifying abstraction* concentrates on a superior level the information that is considered essential for the current simulation approach. Reducing the informational complexity has in view to clear the operation and to ease its formalism; it can be only quantitative, but also qualitative. The *reflexive abstraction*, expressed as knowledge hierarchy

type, tries to understand itself better at higher levels, by understanding more of the inferior levels. *Hierarchy* is a functional/ structural concept that fulfils mathematically/ physically the concept of abstraction. Nature is not an ephemeral context, but the matter we are built of in order to develop spiritually.

The integration experiments for the spirit-matter dichotomy failed because of their extremism. The society is the memory of the past, the manager of the present problems, and the assurance for a right future. We have to live together in respect of the others on the way to understand each other, in order to evolve toward essential beings for an integrated existence.

Faith and Intelligence are ☯ *in Life* // Way, Truth, Life

Human among humans should reflect a strategic equilibrium, without hiding or even violating, as happens nowadays, the principle that the society has to assist unconditioned the individual, with correct continuous education, and assistance by an intelligent faith to search and research the *unknown*. The unknown can be interpreted as a *unique God*: the absolute freedom by understanding all the necessities, and the absolute unity by closing all the *Divide et Impera et Intellige* necessary for the Way to look for the Truth along the Life.

God is in us - as faith is part of our definition, with us – by the others, and for us – as the spiritual evolution is first conditioned, then assisted, to be followed by the social one.

Against the danger of dichotomy, we concentrate in three different ways on the unique Reality (*Plato*): Art for the art - to look for the essential Way, Science with God's fear - to search for the existential Truth, and Engineering - to understand the Being concentrating more on the Spirit in our Life.

Although the present society is extremely materialistic and tries to destroy every trace of ideal, we should go further, thinking while advancing, by dividing twofold, as we can not yet Intellige the dichotomies:

Spirit-matter
(force-substrate, function-structure, soft-hard) $\Rightarrow$
reality-nature (continuous-discrete, analog-digital),
form-contents (category-functor, class-function, representation-simulation,),
perspective-profoundness,
real-possible,
beauty-truth (arts-science, mathematics-physics)
$\Leftarrow$ *space-time (evolution).*

There should be no balance in most of the dichotomies. Yin-Yang can represent by rotation any dichotomy. Arts and sciences are equally noble, even if one appears rather spiritual and the other rather material. Their alliance is vital and shows the unsolvability of the nowadays *spirit-matter* dichotomy, and of all resulted secondary dichotomies, actually functionally generated by the *space-time* dichotomy necessary to human evolution. Reason is an extension of the nature. We have to surpass the limits imposed by the essential dichotomy by a unique Ideal, named God, that should be constructive by continuous intelligent reconfiguration. We extend the reconfigurability to the simulation itself (Figure 1).

By a self-aware simulation, we get self-control of the simulation process. Therefore, we build a knowledge hierarchy corresponding to the simulation hierarchy. Expressing both simulation and knowledge hierarchies in the reference system of the basic hierarchy types (classes, symbols, modules) we create the context for a self-organized simulation.

The triad of the basic hierarchy types corresponds to the fundamental partition of the real life (beauty-arts, truth-science, good-engineering), that has to be continuously integrated by philosophy (essence, existence, being). The absolute functionality is symbolized by ☯, while the waves suggest hierarchical levels, increasingly structured for knowledge simulation.

Hierarchy consists of a net that can represent any type of mathematical structure (algebraic, topological, order). It is the first step to model the Conscience.
The hierarchical types are objects of equivalent categories (functorial isomorphic) that formally represent hierarchy types. The consciousness hierarchy type communicates to the other hierarchy types by countervariant functors, while the others intercommunicate by covariant ones.
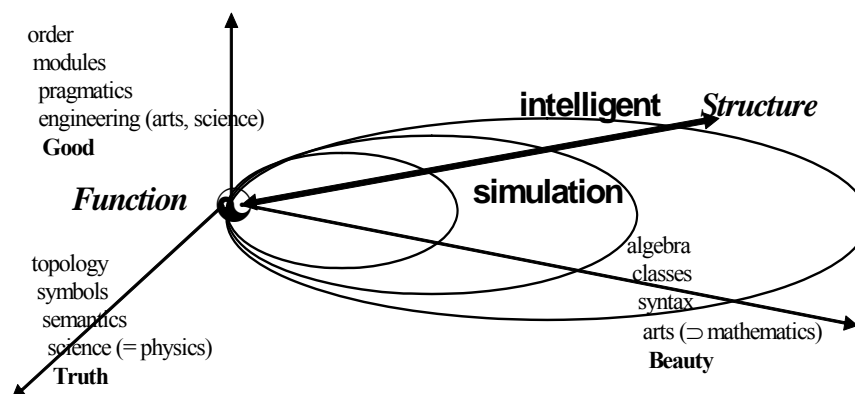

Fig. 1. H-diagram

Philosophy is not a specialty but a human right. There have to be schools to prepare the teachers of philosophy for the other humans. These schools have to develop respect for those that look for the Way on one of the three alternative paths that correspond to the fundamental partition (arts, science, engineering). Because recently the essential *Divide et Impera* do not *Intellige*, the only philosophers are the masters in: *arts*, e.g., mathematicians, and those that, aware or not, compose mathematically, *science* – physicists, and those that do not forget their science is a chapter of physics, *engineering* – mostly those working in domains that attain the limits of the pure Reason.

Mathematics is one of the arts. *Music* is at least as beautiful and expressive, but mathematics does not demand an extraordinary talent, allows a reasonable dialog about it, and has well-defined reconfigurable limits of that it is aware [5]. Mathematics has to be educated as soon as possible and not confounded with its handcraft. Music gets more often out of its character. Anyway, they evolved together: *Bach*, *Vivaldi*, *Haydn* were both mathematicians and musically gifted, who preferred the liberty of the music to the bands of the Reason. The Reason, as initial zone, makes mathematics more sure but less charming than the other arts that can refer directly to the Reality: music and literature. The visual arts are too dependent of the Nature because seeing is the most used sense for the human natural being.

Mathematics first expressed reasonably that Reality is not completely accessible by Reason (*Pythagoras*). The mathematics school is continuous, whereby the literature and the music can generate sooner higher singular peaks: *Shakespeare*, *Beethoven*. Mathematics is the most accessible of the arts, science of the abstract ideas, engineering of the Beauty; discovering and studying structure types: (algebra, topology, order) correspond to (construction, orientation, understanding).

Mathematics is an example to science and engineering of correct and complete integration. *Art for the art* defines itself, creating the Beauty, by thesis-antithesis-synthesis, dialectic principle that governs the evolution by closure to the inverse. Arts are free.

Physics is the Science. The other natural/ social sciences are its chapters, even if they are not yet aware of it, or just try to return to their riverbed by intermediary specialties instead of integrative bridges. As any artificial system, the society is structured on natural bases, and it develops by natural laws. While the modern age, these laws were forced towards Reason, and recently they got out of control. The social laws got also less than reasonable.

Physics is essential for the constructive reconfiguration of the Faith being the paradigmatic science, the art to represent the Nature - as exercise for the Reality, the engineering of the Truth. It has to integrate the fundamental forces in a theory, and all natural and social sciences as chapters, leading them to a real application of mathematics.

Social sciences study a universe as complex and nondeterministic as the natural one, therefore mathematics is at least as important. Recognizing the physics as the fundamental science, sciences could more directly inspire mathematics.

The science raises the fear of unknown and the research that is inspired by it to more abstract zones. It is hierarchically defined, with God's Fear, looking for the Truth; its evolution needs qualitative leap consequent to consistent convergent quantitative accumulation.

Engineering is most frequently both art and science, and is as important as arts and sciences in the fundamental partition of the Reality needed for evolution. However, it is more dangerous than its alternative approaches, of which it has to be strictly bridled. Reasons are twofold: its result, called technology, is defined by its complement – so it is not superior to this, and it does not impose spiritual proximity between the creator and the user – so it can be applied in a complete different scope than it was generated.

Denying the negation is not context-free. However, any engineering is the homonymous complement of a special science that collaborates with mathematics: the problem is solved if the sciences are integrated into physics and mathematics remains one of the arts. Engineering (art of construction, science of simulation, technology of Good) should develop closer to mathematics: approach, integration of parts, before applying techniques, and to science: courage, multiple perspectives, not just result-oriented (Traub 1999).

3. FAITH AND INTELLIGENCE

Each of the nondeterministic separated complementary pairs is functionally structured like (interface, kernel, complement's ambassador). The model was not randomly selected: it is formed of three tangent circles emphasizing the centers of the inner ones, retaining the essence of a dichotomy symbol that suggests a complete integration by vicinity and pointing one to another of the parts without loss of autonomy.
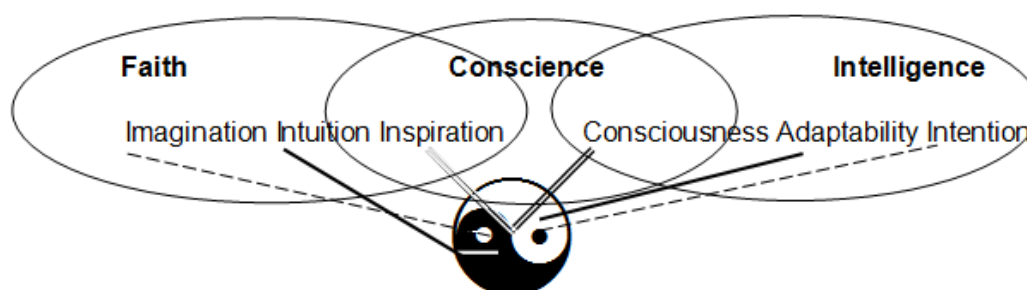

Fig. 2.   Functional Model of the Human Mind

The Chinese symbol reflects the reminding of creation as love for something else: three circles, each tangent to the others, models a partition of something to be understood in

order to get further, says Europe's center. Circle is *cerc* in our mother tongue, a perfect expression: *Cer* (sky) is the infinite while *cerc* is the finite representation of infinite by the permanent link of (never)begin to (never)end. π is the most famous real number. *Cerc* means perfection, which we permanently desire, therefore there exist integer numbers, having a perfect and beautiful theory, further searching and researching for evolution. Western Europeans attain research/ rechercher by recursive search/ chercher. Our Romanian language helps us to approach this by *cercetare*.

Religion had to learn us about God's existence in our being. Philosophy has to learn us about essence, existence, and being. Our conscience is our representation of the essence of our existence as being, i.e., God is in ourselves, for ourselves, and among ourselves. We have to be to search our essence researching our existence.

Divide et Impera et Intellige has three parts as *alle guten Dinge sind drei* of the most philosophic European people. Mathematics develops by 3 basic structure types, integrating them. We divide our Universe in 3 worlds: essence, existence, and being. We divide our existence in 3 interdependent components: arts, science, and engineering, corresponding to our beauty-loving ideas, our truth-searching efforts, and our good-oriented constructions - presently exaggerated to exclusivity.

As the Reality contains abstract ideas, even if physics could explain everything as being discrete, the power of continuum can not be forgotten. Consequently, the analog engineering has not to be neglected in modeling and simulation [6]. Physics permanently uses as dichotomy the discrete-continuous, while the engineering just adapts intuitively to the requests of a consumption-oriented society (characteristic for primitive life). The reason is that presently the engineering escaped of the control of the inspiring arts, as of the consciousness for the science that conditions its existence [7]. For physical or philosophical orientation, we need *cardinal* points. To inspire ourselves of the most pure of the arts, we learn about cardinal numbers - although, being sincere, mathematics leads the way to show that nothing is pure, so without leaving anything behind the Way has to be followed further).

Cardinals are just numbers of elements in a set, but also for infinite sets. Nature demands the least infinity and is defined by (0, successor, induction). Adding is in Nature's definition. However, the inverse operation, subtraction, needs negative numbers. We close mathematically the Nature to an Integer that opens the physics for recognizing the limits of Reason (electrons), in the meanwhile, attracting marvelous engineering solutions for different technologies. Electronics is among the most advanced engineering sciences; therefore, it has to be practiced by the most conscient human beings.

Recurrent addition is multiplication, a most important parameter for the Nature. Mathematics closes the integers to the multiplication inverse, defining the rational numbers. These are not more than the naturals, but we can do many useful things with the Reason, from strategy to computer. So "what else do we need?" say too many, forgetting that the limits of the, so-called, pure Reason are caused by the fact that it bounds itself to close the Adaptability to (discrete) sequential operations.

Thanks God, neither the mathematicians, nor the physicists accept the all-happiness. They discover in three ways (order, algebra, analysis), which assisted all of them together to think, the power of continuum and that of the patience. In this context, "mathematicians and physicists" means the theorem, natural laws, or even new approach discoverers, but also the engineers that understand the essential of mathematics and of physics.

We should not forget the third meaning of cardinal. It points to an unwise use of *Divide et Impera et Intellige* as a strategy called when two fight, the third wins. It is intervention only when the fighting forces begin to get unbalanced, in favor of the less strong, not for establishing the equilibrium but for conquering all the fighters. If the victory must be completed, both the pseudo-ally and the pseudo-enemy are firmly assisted, discretely or

continuously, to loose control, because of all-happiness, respectively, all-unhappiness. The 20th century is a too convincing example.

Presently, we talk about electronic computers, but the nowadays trend is to copy from the living Nature, i.e., the emulation of the advantages the living beings show to achieve unconsciously complex duties. Vanguard domains are biotechnology or computational intelligence. Neither intelligence nor life is well understood; remember *Goethe's Zauberlehrling*.

More important is that emulation is less human than simulation, so they should always develop at least in parallel, permanently exchanging experience. Reality does not reduce to Nature, as cardinal (IN) is strictly inferior to cardinal (IR). The Reason is the closure of the Nature relative to the primary operations, as $\mathbb{Q}$ is the closure of IN to the inverse operations of addition and multiplication. However, the Reason is dense in Reality – as reals analytically close the rationales, $IR = \{ \lim_{n \to \infty}(q_n) | (q_n) \in IN \to \mathbb{Q} \}$

Reality extends beyond Nature and Reason, not just for the quality of the quantity, but also regarding the power of transforming operations. IR partially closes $\mathbb{Q}$ to the inverse of power rising, the last arithmetic operation resulted by recurrence of the prior one that can be pursued by Reason, and completely to the inverse of power's commutation - the exponentiation. Further, closing to the inclusion order, the set of all subsets of IN, $\mathbb{Z}$, $\mathbb{Q}$, or in general, of countable sets, is the uncountable IR, the power of continuum. To get to complex numbers is a matter of Imagination.

Reason closes the Nature to the inverse of natural operations. Reality is the closure of the Reason to the inverse of artificial operations, or to the reasonably deducted infinite, or to an order over the Being itself. We know that if there were no cardinal number between the natural / integer/ rational discrete and that of the real continuum, then the logic would include the principle of the excluded tierce. This, pure and simple, hurts the Human, who is fond of nuances. Therefore, we can prove that there is an intermediary level between Reason and Reality - *nonconstructive*. There are angels between Human and God, said the wise.

The density of Reason into Reality means that every real is the limit of a sequence of rationales. Therefore, we hear nowadays that if we master the Reason, Reality becomes a complexity problem, i.e., speed of convergence. The density of $\mathbb{Q}$ in IR shows that between any two real there is a rational numbers one. Therefore, Reality is much greater than Reason can even imagine but something reasonable exists between any two real objects - *nonintuitive*. Neither Intuition nor Reason arrives to something that mathematics proves elementary.

As any true art or beautiful Science of the ideas or the phenomena, mathematics does not limit itself to either Intuition or Reason, allowing them to collaborate by Conscience. We dare use mathematics as metaphor for relating Nature to Reality, but it is only a correct inspiring analogy. IR is an initial step in mathematics for algebra, topology, order, or their collaboration. Mathematics is for Reality just one of the favorite ways to get the Human closer to it [8].

Society is conservative – it tries to last forever at any evolution level, using a common measure. Everything can be evaluated, although most of the essential things on that our existence bases its being are not measurable.

The so-called pure Reason, i.e., the context-free Reason – most adaptable, conscious only for having, intended by the tactics of the consumption society, and totally unfaithful, gives the necessary force to stagnation or even to choosing a wrong way.

Unfaithful means here that the components of the Faith (inspiration, intuition, imagination) are used separately to serve the competition for the Good that makes presently Life credible. However, the irrational of arts, particularly in mathematics, is more than reasonable, whereby the society is less than reasonable.

On the contrary, *metareason* opens the way to Reality by closure to an essential and

radical operation. To master the new power of the continuum is beyond Intuition and Reason, if they do not integrate by Conscience and future. The adaptability-based Reason can not explain or control thoughts, even if sequential is extended to unlimited parallel/ nondeterministic. Anyway, these desired operational properties can be found mainly in the right side of the human mind.

Further, the difference between continuous and nondeterministic sequential is positive. Therefore, the Reason has to be Faith-dependent completed to Intelligence. A being needs more than Intuition and Adaptability to surpass the Matter by Spirit; only the integration of Intuition and Adaptability by Conscience can explain the Human being.

$$\textit{Conscience closes itself to } (\textit{knowledge} \text{ o } \textit{simulation})^{-1}$$

The idea can be formally sustained in the category theory. The essential limit of discrete computability, inherited by the computational intelligence, is generated by the necessity for self-reference to integrate the level knowledge with metalevel knowledge in Conscience modeling. A hierarchical type expressing reflexive abstraction can represent the conscient knowledge. The aspects of the Reality, and of the human mind reflecting it, have not to be neglected, although they are neither constructive nor intuitive. A way from Reason to Intelligence is to integrate Consciousness and Intention, then further to integrate Intelligence and Faith to become Reality-aware.

We could consider just the simplifying types of hierarchy (classes, symbols, modules) and then express the construction, hoping to aim the absolute liberty, if we considered God as the simplest, totally unconstrained, essence of the Reality. However, we can simulate/ construct/ work/ live, associating knowledge hierarchies to all our activities, aiming to constructive understanding of the most complex absolute necessity, by this defining God. Abstraction is the human gift for going beyond natural limits, meanwhile extending pure reason to real intelligence. A metaphorical thesis results:

$$\textit{God is the absolute abstraction} \rightarrow \textit{the evolution goal for faith-assisted intelligence}$$

4. THE PURE REASON EXPERIMENT

The historical experiment of the pure Reason was the necessary intellectual condition of the first, and by now – the last, social revolution. The initial goal of this event was a reintegration of the ways to search for the Spirit from the Matter (knights) and for the Matter from the Spirit (monks). It failed because it kept the arms, the wars, and the social classes, against it had risen. More important, the experiment continued beyond its historical limits, what created the context to renounce to human dignity in order to reduce the human mind to adaptability and to throw Conscience and Faith into facultative.

The reduction of the constructive thinking to pure Reason weakened the human mind and made possible to restrict the point of views to the most dangerous of them. The number of alternative paths, totally different but convergent to Reality, must be three – the last prime number successor of another prime. The concentration of the mind on the reasonable control of the Adaptability followed the spiritual revolution, which tried to bring into individual and social conscience that the human has chosen the evolution without disregarding the Eternity or knowing the Way.

This spiritual revolution selected a primitive form of *Divide et Impera et Intellige*, to begin researching what is partially known, leaving the unknown to be approached when the first step is finished. If this intention is not forgotten, the *Intellige* is contained in the *Impera* of the unknown that has to begin after the *Impera* of the partial known, with the completed

knowledge that results. This first step was done simultaneously by the institution that pretends to serve God - (*Luther*, the knight Popes), and by the most human Reality approach – the Arts (*Rinascimento, Descartes*). Their strategy was human-oriented.

The contradictory sentence "to serve God" had sense as long as the Church tried to simulate the human conscience. Perhaps was its partition thought as *Divide et Impera et Intellige* for the Way – Catholic, the Truth – Orthodox, and the Life – Evangelic, but there came no *Intellige*, and all of the alternatives fell into the exaggerating "-ism". Perhaps is this analogous for Christians searching a beautiful Way, Jews researching a true Truth, and Muslims engineering a good Life. But many of us, of any religion, and respecting the traditions, are conscious of the Way to follow, do not expect anything from a metareal God (sounds like material), and are free to laugh even of their deepest Faith. Moreover, they are able to have a good Life, just enough to concentrate on the Truth and to follow a beautiful Way.

The concentration of the society on the material component of the human existence was necessary to liberate them of inhuman problems, not to attract the humans on secondary path. Antique Greece is an inspiring model (substituting slaves with intelligent systems). The Reason experiment had to finish two centuries ago, when: the pure Reason experiment climaxed by an unprecedented number of contemporary geniuses. This proved that people has to select wisely and to construct in good understanding and courageously a society that encourages/ assists them to evolve beyond the attained peaks as *Beethoven, Mozart, Gauß, Cauchy, Fourier, Laplace, Goethe, Schiller, Franklin, Kant* or *Hegel*.

The cathedral builders tried to extend their work at a continental scale, neglecting the people on the building area, whose culture did not concentrate on *to have* but godly simple on *to be*; *Napoleon*, a genius of the military and social strategy art, showed that a new social form, reasonable in his plans, can not be imposed by the force against the revolution had fought. We note that a century after Napoleon Bonaparte, a German genius of strategy, Otto von Bismarck, learning from his predecessor's experience, was even more successful in unifying Europe. However, this time the materialistic forces were already masters of exploiting the instabilities, and hurried up to transform Europe in a laboratory to compromise any idealistic movement.

5. INTELLIGENCE SIMULATION

Simulability demands explicit formalization of the knowledge hierarchy in the formal system frame. Inference is the discrete strategy of intelligence to advance in knowledge. The monotonous inference means conclusion conservation when new hypotheses are added.
The daily, scientific, engineering inference is not monotonous; therefore, the prior conclusions must be revised when knowledge enriches. Mathematics grounds any inference form by adequate formalism. Informatics is the mathematics of the algorithmic information processing. Intellectics is the mathematics of intelligence based on that of knowledge that is built around knowledge representation. Intelligence simulation designates the project to understand and technologically implement hardware-software a conscious adaptable knowledge generation/ processing. We changed the standard name of *artificial intelligence*, to emphasize the need to understand the simulation; everything we know on simulation approaches us of the intelligent simulation of intelligence. Formalization requires computer-oriented knowledge representation, and inference compatible to computable reasoning.

The present work hypothesis considers the human as the only model for behavioral/ structural intelligence, different from a syntactical machine. The system that results of intelligence simulation should be able to explain itself without referring to its internal representation, i.e., to be *conscious*, and to have a causative behavior. This behavior is due to

its internal structure and independent of the exterior interpretation, i.e., it is *adaptable*. By dialog, it can be aware of an *intention*, and by all this, it is *intelligent*.

Intelligence simulation is researched functionally and structurally; however, the present trend is the intelligence emulation -*computational intelligence*. It is more efficient, especially for adaptive learning, i.e., it does not care for conscience.

6. CONCLUSIONS

The hierarchical simulation, assisted by mathematics to get theoretical and formal, can lead to comprehension of the results. The approach has to be concentrated on the knowledge hierarchies, to simulate metaknowledge, for the system's adaptability, and for searching the way to simulate the Conscience. The recursively controlled sequential soft/ hard process has to be replaced by a reactive controlled continuous soft/ hard process. Most probably only the sequential reasoning distinguishes two limits of the computability, i.e., speed and possibility, in the essentially unique problem: *Conscience*.

Simulability is computability to the power of continuum: metaphorical thinking, unrestricted mathematics, analog electronics. Mathematical measurability is a way to formalize it. *Fixed points* help to formalize the simulation goal. *Self-adjoint operators* and *eigenvalues/-vectors* assist the knowledge concentration/ stability. *Inductive limits* direct the convergence of hierarchical types, enabling the compatibility of partial simulations and contributing to the correctness by construction of the design. *Banach algebra* introduce, additional to the topological vector spaces, a commutative multiplication that, by an adequate transformation, results in a commutative functional composition, eliminating one of the most important constraints in a classical sequential model. *Hilbert spaces* ground the behavioral model for quantum physics, more precisely, the part that is independent of any concrete intervention (in the world of abstractions). The link to the complementary part of the model, representing the interface to the physical world, can not be algorithmically expressed, what suggests that the model is not correct in the Reality. *Reflexive topological vector spaces* contain the necessary ingredients for the representation of the Conscience, by reflecting the adaptability in the variability of the space dimensions. *Nonseparable spaces* can instrument the understanding of inspiration and intuition. An *analog simulability* and an integrated mathematical-physical-comprehensible modeling the *Intellige* of the three approaches are promising ways.

<div align="center">Freedom is understood necessity   Hegel</div>

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